"Complex Adaptation and Permissionless Innovation: An Evolutionary Approach to Universal Basic Income"

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Abstract: Universal Basic Income (UBI) has been proposed as a potential way in which welfare states could be made more responsive to the ever-shifting evolutionary challenges of institutional adaptation in a dynamic environment. It has been proposed as a tool of "real freedom" (Van Parijs) and as a tool of making the welfare state more efficient. (Friedman) From the point of view of complexity theory and evolutionary economics, I argue that only a welfare state model that is "polycentrically" (Polanyi, Hayek) organized as an evolving network of distributed decision-making can respond to the challenges of complexity in an adaptively efficient manner. UBI has the theoretical possibility to facilitate flexible, bottom-up innovation, since a) it embodies the "rule of law" principles of generality, nondiscrimination, simplicity, and transparency, and b) it grants people widespread freedom to experiment, innovate, and deviate from established practices and norms; but whether it can be made to work as intended depends on a number of variables in its design.

I situate my research in the contemporary UBI debate around automation and technological development, which I interpret creatively through the lens of contemporary evolutionary political economy. I advance a syncretic model of institutional design based upon the shared insights of the Santa Fe, Neo-Hayekian, and Neo-Schumpeterian schools of evolutionary economics that, following Adam Thierer and Michael Munger, I call the framework of Permissionless Innovation (PI). Under the PI framework, which is a development of the tradition of evolutionary liberalism (Hume, Smith, Mandeville, Mill, Hayek, Polanyi, Schumpeter, Hodgson), individuals are granted the default *right to innovate* without having to ask for permission, and the *right to basic income*, which they can use to support their right to innovate, mutate, and experiment. This framework is a *liberal* framework to the extent it relies on widespread human freedom as a means of fostering innovation and social learning. And it is an *evolutionary* framework to the extent that it seeks to facilitate evolutionary socioeconomic processes for the sake of social progress and welfare advancement.

I proceed to show, through an analysis of how innovation operates in both the economy and the cultural domain, that UBI can be used as an important cornerstone of an evolutionary liberal model of "ecostructural" governance that treats the socioeconomic order as an ecological garden of spontaneous growths, adaptations, and innovations. I call this the Permissionless Innovation Universal Basic Income (PIUBI) framework. In it, the right to innovate, deviate, and mutate is upheld as the "gold standard" of institutional design whereby individuals are granted widespread freedoms combined with the provision of UBI and other innovation-fostering (carefully bound) services and regulations. In the coming decades, UBI may even enable poor people to take better advantage of Human Enhancement Technologies (HETs) and other experimental innovations. Such a framework is compatible with a fast pace of evolutionary development, but the regulatory model accompanying such a framework must be capable of responding to evolutionary lock-ins, maladaptive innovations, self-destructive behaviour on the part of UBI recipients, and the management of catastrophic and existential risks. In the end, I will have shown that the PIUBI framework can be justified as a plausible default institutional mechanism for responding to radical uncertainty, but it needs to be experimentally adapted to changing circumstances with the help of various situation-specific, polycentric, multi-level, approaches.

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Chapter 1: Introduction

1.1. Evolution and Society

It is almost a truism that the world is constantly changing. But it is not only changing (aimlessly or chaotically), it is *evolving*. Whether or not it is meaningful to speak of the whole world evolving, we can clearly observe several of its parts doing so.[1] Evolution means change, or adaptation, in the direction of increased fitness between an organism and its environment. (Darwin, 1871) Such increased fitness is "good" from the point of view of the organism since it ensures its survival in an often hostile and uncertain world. Human society takes part in this evolutionary process in two ways, through *biological* evolution and *socioeconomic* (or, more colloquially, *cultural*) evolution. These two levels of human evolution are interlinked and entangled in *gene-culture coevolution* (or, as it is sometimes called, *dual inheritance*), but they operate according to their own laws which can be studied separately. Our cultural norms, habits, economic structures, political structures,

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[1] The idea that the world is evolving, goes back, at least, to the process philosophy of Heraclitus. It was also prominent in the proto-atomistic theories of a self-organizing, dynamic world articulated by Leucippus, Democritus, Epicurus, and Lucretius, and in the cosmologies of the Stoic philosophers. (Lucretius, 2001; Epictetus, ca. 135; Aurelius, 2006; G. Campbell, 2003) Such thinkers also heavily influenced the paradigm shift in the *Weltanschauung*, during the Renaissance and Early Modern periods, towards the scientific view of the world and the liberal view of the state. (Greenblatt, 2011; M. Stewart, 2014) The ensuing Enlightenment materialist philosophy radicalized these ideas further. (D'Holbach, 2001; Le Mettrie, 1996) In particular, I would like to highlight the role played by Hobbes, Spinoza, and Machiavelli in advocating naturalist proto-liberalism capable of societal, cultural, political, and material progress. (Spinoza, 2002; Machiavelli, 2008; Deleuze, 1988; James, 1996, 2020; Israel, 2001; Del Lucchese, 2009; Kisner, 2011; Feuer, 2017; Herold, 2014) The two key modern thinkers whom I consider the most important innovators of evolutionary theory for my own purposes are Charles Darwin (1871) and Adam Smith (1776), in biology and economics respectively. The names "Darwin" and "Smith," here, are really shorthand, a synecdoche, for rich intellectual traditions composed of hundreds, even thousands, of authors, all of whom I cannot possibly hope to honour in this footnote. In subsequent chapters I shall articulate the social evolutionary theory that draws from this lineage through the modern social sciences of complexity theory and evolutionary political economy. In so doing, I will largely brush aside the cosmic visions of Teilhard de Chardin (1959) and other important but speculative authors. This should not be taken as a dismissal of the value of the cosmic visions for the scientific imagination. For example, Lucretius's speculative imagination, which predates empiricism, was the impetus for modern science. Indeed, to the extent that evolutionary theory facilitates the construction of new visions of the future of society, politics, and morality, it necessarily has a speculative, Utopian dimension.

technologies, scientific practices, and ethical values emerge from the interaction between our biological and cultural inheritance. As of today, biological evolution is largely fixed and subject to little human manipulation (although in later chapters I will explore how this is changing) but socioeconomic evolution is partially the outcome of various human choices (both intended and unintended) and therefore amenable to institutional intervention; it is a legitimate object of evolutionary governance. Evolution, whether in biology or the human society, is a process that lacks moral compass or direction, but it can be made to serve (*or* undermine) various human ends when constrained by appropriate institutional rules (what I shall call, following Colander & Kupers [2014], *ecostructural rules*). More controversially, and more fundamentally, evolution can also be used to generate, explore, and try out *new* ends and *new* values. It can be used as a tool of moral and cultural progress, since it can allow people to experiment with new "ways of living" while jettisoning old ones.

In the subsequent analysis, I will argue that social philosophy and political economy must tackle the normative dimension of socioeconomic evolution head-on, since many (if not most) things that people *should* care about, and *do* care about, depend upon (well-managed and rule-guided) evolutionary processes. As the corollary hypothesis, institutional interventions should be partially judged by their ability to increase the *adaptive fitness* of our institutional structures. Solving complex and ever-changing problems requires evolutionary learning, and solving such problems is what adaptive welfare state governance is (or should be) about. Whether we like it or not, we are the products of biological and socioeconomic evolution. This does not mean that our institutional design is beholden to the naturalistic fallacy, since what we are allowed to do today is not foreclosed by what has been done in the past. Nonetheless, a clearer understanding of our genetic and cultural evolutionary history can give us a more accurate picture of the cause-and-effect chains underlying economic and social processes, and therefore also of the institutional possibilities open to us today.

As I write this, society has been brought to its knees by the Covid-19 pandemic. The crisis highlights the power of evolutionary forces to create powerful innovations (viral variants) that can create massive disruptions on a global scale and the catastrophic risk of serious harm. At the same time, the crisis highlights the importance of *adaptive governance*:

increasing the capacity of institutions to generate adaptive and creative responses to emerging problems. Indeed, if we remove ourselves from the human tragedy, the virus provides a useful – even inspirational – model for human governance. After all, the virus exhibits the generative power of evolutionary learning. Its capacity to evolve is based on its capacity to generate mutations that are selected in competitive environments and diffused across the whole population. This adaptive capacity makes the virus capable of surviving environmental challenges and most deliberate human attempts to contain and eradicate it. Without such capacities, the virus could not pose an ongoing threat that can bring a global human civilization to its knees. I will assert something that may sound controversial but should not be, namely, it would be good if human beings could take better advantage of similar evolutionary and adaptive powers. It would be good if human beings could better imitate and replicate the creative powers of viruses, animals, and plants in the service of consciously designed human ends. Evolution is a *versatile general-purpose problem-solving mechanism* that can be harnessed to serve various human ends. Not only does it drive biological evolution, but it has proved vital in the development of A.I. through machine and reinforcement learning (Goldberg & Holland, 1988; Sutton & Barto, 2018; Lapan, 2020). It can also be used, as I shall show, in normative ethics and political economy. Both our natural heritage as complex adaptive biological organisms and our cultural heritage as complex adaptive social beings have together prepared us, however imperfectly, for the task of adaptive governance that we face today. Even then, evolution must be recognized as an unpredictable and uncontrollable factor that we cannot ever fully tame.

1.2. Correcting the errors of Social Darwinism: Empowering the poor as social epistemic agents

Since Richard Hofstadter's (1944) coinage of the term "Social Darwinism", an appeal to evolutionary thinking in political theory has been associated with opposition to government safety nets, if not downright cruelty towards the poor and those who are deemed "unfit." Both Malthus (1798) and Spencer (1851) explicitly recommended the

abolition of all governmental welfare because it allegedly makes poor people unfit for the future. Indeed, some influential critics have argued that all adaptationist thinking in sociology, especially in the form of so-called "sociobiology" (E.O. Wilson, 1975, 1998), constitutes "abuse of biology" (Sahlins, 1976) and/or a nefarious form of reactionary "ideology." (Gould & Lewontin, 1979; Lewontin, 1991)[2] However, a dissenting lineage of evolutionary thinkers from T.H. Huxley (1888) and Peter Kropotkin (1889) to contemporary figures like Michael Polanyi (2002), F.A. Hayek (1960, 1982), Peter Singer (2000, 2011), David Sloan Wilson (2019), and Geoffrey Hodgson (2002, 2004a, 2018, 2019) have questioned the inevitability of the link between appeal to evolutionary principles and opposition to (some forms of) government support to the poor. Building upon such contemporary advances in evolutionary political theory, this paper challenges the received wisdom according to which an appeal to (Darwinian or Lamarckian) "fitness" necessary lead to anti-poor politics. The Malthusian-Spencerian assumptions of "Social Darwinism" are challenged on purely evolutionary grounds. At the same time, the boogey-man version of "Social Darwinism" as created by Hofstadter is rejected as an imprecise and ideologically loaded caricature. (Bannister, 1989; Hodgson, 2004a; D.S. Wilson, 2019) Against Malthus, Darwin, and Spencer, on the one hand, and also against Hofstadter, Gould, and Lewontin, on the other hand, it will be argued that evolutionary political economy, far from being a gateway to reactionary, "anti-poor" politics, lends robust support to a government backed safety net. Indeed, I shall show that caring about "fitness" supports various institutional reforms that grant poor and disadvantaged individuals improved access to various "social epistemic" learning mechanisms (including science, technology, markets, and civil society) that enable poor people, together with the broader society, to discover creative solutions to their problems. The type of regime that maximizes the fitness of the poor (and the fitness of the social order more broadly) may *not* be an austere one where the social safety net is kept deliberately weak but one where the social safety net is *strong but flexible*. And to the extent that poverty is perpetuated by insufficient or unequal access to social epistemic mechanisms among disadvantaged communities, it is partially remediable by government action. Poverty, in this sense, should not be understood as (merely) the lack of *income*, but as the lack of *capabilities*, (Sen, 1980, 1999) lack of *rights and freedoms*, (Easterly, 2016) and the lack of

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[2] For a nuanced critique of Sociobiology and Social Darwinism, see Alex Rosenberg (1980, 2000).

(diverse, heterogeneous, multidimensional, often tacit, and often unquantifiable) *solutions to problems*. (Beinhocker & Hanauer, 2014) Addressing poverty is equivalent to addressing problems across all these dimensions, on multiple levels and in multiple domains, which requires a combined *rights-enhancing*, *institutions-enhancing*, and *income-enhancing* approach. A plausible means of encouraging poor people to improve their socioeconomic outcomes, therefore, is to grant them the rights, opportunities, and resources that improve their capacity solve their problems through access to better information and knowledge contained in social networks. If this is so, contrary to the prejudices of Malthus and Spencer, well-designed social programs and safety nets may lead to the *strengthening* of the fitness of the poor, measured in terms of the ability of poor people to survive and thrive in a complex socioeconomic environment. In particular, programs like UBI that delegate open-ended resources to poor people without dictating how the resources should be used have some potential advantages from the point of view of increasing the *social epistemic capacities* of disadvantaged epistemic communities.

My thesis therefore contributes to the emerging field of *social epistemology* by applying the insights of philosophy, evolutionary political economy, and complexity theory into the question of how to achieve effective long-term poverty relief and broader social amelioration. Social epistemology is an active field of interdisciplinary research that is well poised to tackle the challenges of collective problem solving in the face of evolutionary complexity. (S. Fuller, 1991; Anderson, 2006, 2017; Landemore & Elster [Eds.], 2012; Landermore, 2013, 2017; Benson, 2018, 2019) In the later chapters, I show how complexity theory and evolutionary political economy, informed by ethical debate, can illuminate the possibilities available for non-hubristic evolutionary governance. In this enterprise, the language of "fitness" should not be shunned despite the fact that it carries connotations of Social Darwinism, since "fitness" is an important part of evolutionary modelling, and poverty relief is essentially an evolutionary process. Evolutionary modelling is required to understand how resources, capacities, institutions, and rights available to poor and disadvantaged people and communities generate a "fitness landscape" that can be tuned to increase the compatibility between the needs of the people and the constraints of the circumstances. Turning Social Darwinism "on its head" makes it is possible not only to appreciate the importance of evolutionary thinking for the welfare state debate but also to

justify a liberal, rule-of-law based version of UBI as a tool of adaptation, innovation, survival, and fitness. This uproots several common assumptions in the welfare state debate, such as that poor people should be treated as passive recipients of aid, or that applying Darwinian ideas into governance is dangerous, outdated, or unhelpful in solving the problems of the poor. A welfare state is compatible with caring about the fitness of the poor, and vice versa.

1.3.   The Hypothesis: UBI as a Tool of Evolutionary Adaptation

My thesis inserts itself into the present debate around Universal Basic Income (UBI) by combining, and responding to, two major strands of that debate: a) the philosophical work on UBI as a tool of *freedom* and *autonomy*, and b) the social scientific work on UBI as a response to the challenges of *technological change* and *income insecurity.* My argument, in a nutshell, is that increased freedom will facilitate increased social adaptation, and to the extent UBI contributes to the former, it will tend to contribute to the latter.

There are growing concerns that the 20th century frameworks of the welfare state are ill-suited to respond to the growing challenges faced by the global economy. Arguably, many of the biggest challenges faced by the existing welfare states of today are best conceptualized as challenges to *institutional adaptation in a dynamic environment*. These include the various threats to human welfare, worker security and income security brought about by automation, globalization, technological change and flexible labour markets. In the realm of technology, they also include the unpredictable effects of disruptive technologies like Artificial Intelligence (A.I.), the Internet, and Human Enhancement Technologies (HETs). But institutional adaptation extends beyond the economic realm. Adaptive governance needs to countenance and manage evolutionary disruptions, not only in business practices, consumer technologies, and modes of industrial organization, but also in the broader realm of social norms, cultural habits, lifestyles, and even moral dispositions. It goes without saying that evolutionary adaptation is riddled with uncertainty and complexity, but this does not mean that political economy is toothless in the face of the future. Developing robust tools of

adaptive governance is difficult but potentially fruitful. This requires understanding the insights of *evolutionary economics* and *complexity theory*.

My research question is as follows **Can UBI be an adaptive governance solution to the evolutionary challenges posed by a rapidly evolving market society?**

Universal Basic Income (UBI) has been richly debated from multiple ethical, economic, and political perspectives, and there is no consensus on its consequences. In the contemporary context, it has been increasingly proposed as a potential way in which welfare states could be made more flexible and supportive of the freedom and autonomy of individuals in an era characterized by rapid evolutionary disruptions. (Stern & Kravitz, 2016; Standing, 2017, 2020; Yang, 2018; C. Hughes, 2018; Munger, 2018) There has been a fresh new wave of interest in UBI of late thanks to the increased fear of, on the one hand, rising economic inequality (Feenstra & Hanson, 2001; Jaumotte & Tytell, 2007; Piketty, 2014; Atkinson, 2015; International Monetary Fund, 2017; Novak, 2018) and, on the other hand, rapidly advancing automation and technological unemployment. (Rifkin, 1995, 2014; Brynjolfsson & McAfee, 2014; Ford, 2015; Frey & Osborne, 2016; Frey, 2019; Arntz, Gregory, & Zierahn, 2016; Manyika, Chui, et al., 2017; Yang, 2018; Munger, 2018) In the influential phrasing of Klaus Schwab (2017) from the World Economic Forum (WEF), this can be called the "Fourth Industrial Revolution" context. This literature, although subject to many interpretations, provides sufficient empirical support, I think, to motivate my basic claim that the emerging disruptions of today and tomorrow, across economic, political, and cultural domains, even if we cannot know their precise nature, are likely to generate an onslaught of *complex adaptive challenges*.

However, I think that this debate has focused too much on the issue of technological unemployment, which, in fact, has a long history (Bellamy, 1888, 1897; Keynes, 1930; Theobald, 1963; R.B. Fuller, 1969). The focus on unemployment, while important, understates the complexity and diversity of the evolutionary challenges ahead. The key challenge is responding to *emergent complexity* and the threat of *permanent uncertainty*. My hypothesis, therefore, is that a UBI-centric welfare state model, one that supports an evolving network of distributed decision-making from the bottom up, can respond to

emerging evolutionary challenges in an *adaptively efficient* manner. This means that UBI could increase the fitness of poor people in the face of radical uncertainty. Such a welfare state has the theoretical possibility to bring about an improved benefit system, but whether it can do so in practice depends on a number of variables in its design and implementation. To explore this question, I will critically engage with contemporary (normative and descriptive) literature around welfare state governance in relation to the issues of *freedom, innovation,* and *adaptation.* I will analyze this contemporary literature through the insights of the complex adaptive system framework of Neo-Hayekian and Neo-Schumpeterian evolutionary economics and complexity theory. This will ground my "evolutionary liberal" case for UBI as a tool of freedom, innovation, and evolutionary adaptation.

Before proceeding further, let me define a few key terms. Many of these terms will be explored in depth in subsequent chapters, but some early clarity is helpful.

Welfare State can be defined in many ways, but I take it to be 1) any state that engages in systematic redistribution towards the poor and the needy with the aim of helping them through the tax-and-transfer state. (So, any state with a UBI is a welfare state even if it is otherwise libertarian. A libertarian welfare state is *not* an oxymoron.) On another level, it can also be defined as 2) any state that prioritizes or gives special weights to (responding to) the needs and interests of its poor and disadvantaged members. Combining these two, we get: *the welfare state is any state that prioritizes (responding to) the needs and interests of the poor in ways that include redistributive tax-and-transfer schemes*.

Complex Adaptive System **(CAS)** is a dynamic, evolutionary system composed by many heterogenous agents acting and interacting in rule-bound ways to generate spontaneous order, creative outcomes, and emergent complexity. Such systems are creative, innovative, disruptive, far-from-equilibrium, and hard to predict or control. Flourishing in such systems takes the form of mutual adaptation ("as if by an invisible hand") by all the agents.

Adaptive efficiency (or **adaptive capacity**) describes the dynamic capacity of agents or institutions to survive and thrive within evolutionary ecosystems by engaging in creative problem solving, experimentation, and learning. Sometimes called **evolvability**.

Permissionless innovation refers to creative problem solving, experimentation, and learning from the bottom-up undertaken by evolutionary agents. It entails the search-and-discovery of experimental solutions to problems without having to appeal to the epistemic or discretionary standards of centralized decision-making bodies. Permissionless innovation in the social order can be codified by granting all agents the legal *right to innovate*.

Universal Basic Income (UBI) entails supplementing or partially replacing the existing welfare state, or certain parts of it, with a single and comprehensive redistributive program that provides an automatic income floor to all (adult) citizens or permanent residents of a polity. It is given as a modest uniform cash grant at regular intervals.

1.4. Universal Basic Income (UBI)

1.4.1. UBI: A Brief Introduction

Universal Basic Income (UBI) is the idea that the state should give everybody a modest, regular, and unconditional cash payment. A typical contemporary definition of UBI is that of a "a regular cash payment paid to all, on an individual basis, without means test or work requirement." (Van Parijs & Vanderborght, 2017, p. 1) This is the uncontroversial core definition of UBI. For the sake of comparison, here is Guy Standing's (2017, p. 2) nearly identical definition of UBI: "a modest amount of money paid unconditionally to individuals on a regular basis (for example, monthly)." Variants of this definition can be found in almost any authoritative source on UBI. One more criterion can be added to this list: UBI should be *high enough* to provide a sufficient basis of economic security but *not too high* as to be

unsustainable or unworkable.[3] Lastly, although basic income is supposedly "universal" and therefore paid to "all," in practice, UBI contains the minimal eligibility requirements of 1) residency/citizenship status, 2) adulthood, 3) legal and moral competence, and 4) obedience to the laws of the country. Practically anybody who fills these rather minimal criteria is *eligible* for the program and perhaps automatically enrolled into one. This, of course, still excludes categories like foreigners, minors, and criminals. The institutional policing of the "in-group/out-group" boundary is wrought with ethical difficulties. It is worthwhile to engage in a continuous debate around where to draw the line.[4]

The following list from Browne & Immervoll (2017, p. 4) is a succinct summary of some the ways in which UBI differs from most existing welfare and workfare programs:

1) "In contrast to existing social insurance benefits, the amount received is flat-rate and not related to previous earnings.

2) It is also not means-tested, so the amount received does not depend on individual or family income or assets.

3) Coverage is universal among the working-age population, not focused on particular categories of individuals or families,

4) A [UBI] is individual rather than family-based, and amounts received per adult or per child do not depend on family composition, or on the circumstances of other family members."

UBI has been described a "disarmingly simple" idea (Van Parijs, 1992, p. 3), but it goes under various synonyms and near-synonyms, such as "basic income guarantee" (BIG), (Zwolinski, 2014) "negative income tax" (NIT), (Friedman, 1962) "national/resource dividend,"

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[3] Practically speaking, to illustrate the point, I take this to mean something along the line of €600-1200 a month per person (in 2022 euros), adjusted to local circumstances and inflation. Basic incomes much below that level seem insufficient to provide basic material security and freedom while basic incomes much above that seem excessively expensive and come with potential work disincentive effects. However, it is important not to get hung up on transient numbers, since what is "sustainable" changes as society evolves.

[4] For example, in the U.K. context, LSE economist Malcom Torry (2016, p. 3) has proposed a four-tiered model that includes a full £50/week UBI for adults between the ages of 25 to 64, a reduced UBI of £40/week for young adults aged 16-24, a children's UBI of £20/week for children under the age of 16, and a separate pension scheme of £30/week for people over the age of 65. Such proposals are worth taking seriously. However, my model assumes that UBI is primarily targeted at all adults, excluding children but including the elderly, at a uniform rate in all age groups. This basic model can then be adapted to local circumstances.

(Tabatabai, 2012) a "citizen's income," (Torry, 2016) a "freedom dividend" (Yang, 2018), and a "demogrant" (Buchanan[5], 1997). Models that share *some* of the features of UBI, but not *all* of them, include economist Tony Atkinson's (1996a) (conditional) "Participation Income" and Ackermann & Alstott's (1999) (one-time cash payment) "Stakeholder Grant." Historically, proto-UBI models were proposed by people like Thomas Paine (1797) and Thomas Pence (1793), but it the idea only fully matured in the hands of contemporary economists and philosophers, such as Milton Friedman (1962), James Meade (1964; see also Atkinson, 1996b), James Tobin (1966), Philippe van Parijs (1991, 1992, 1995), Anthony Atkinson (1995, 2015), and Karl Smith Widerquist (2013).

Henceforth, I will use UBI as the umbrella term for all versions of the same idea (under whatever moniker) that, more or less, embody all the "core" design principles contained in Van Parijs & Vanderborght's canonical definition, namely, *universality, unconditionality, nondiscrimination, sufficiency, sustainability, cash payment, regularity of payment, and individual targeting*. To avoid confusion, I will advocate a rather strict interpretation of UBI, according to which the "ideal" UBI model that adheres to *all* or *most* the "core" UBI principles is preferable to models that significantly deviate from them. The reasons for this preference for "purity" will become apparent as I explain the value of abstract and general rules, and especially of the rules of generality and nondiscrimination, in due course. For now, let me provide some more background to the contemporary state of the UBI debate.

UBI enjoys support, but also faces opposition, from a wide variety of perspectives. The arguments for and against UBI cut across two dimensions: *ethical desirability* and *pragmatic desirability*. Any comprehensive case for or against UBI must combine the two types of arguments. (An ethically desirable UBI that is pragmatically unfeasible is just as irrelevant to public policy as a pragmatically feasible UBI that is ethically undesirable.)

The **moral** dimension involves interrogating whether all people, regardless of circumstances, should have access to some basic amount of economic resources in the form of unconditional cash transfers. The proponents of an affirmative answer include, e.g., Spence

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[5] Henceforth, "Buchanan" always refers to "James M. Buchanan." When I mean Allen Buchanan, I write "A. Buchanan."

(1793), Paine (1797), George (1885), Steiner (2016), Van Parijs (1995), Widerquist (2013), Zwolinski (2014), and Standing (2017). Opponents of UBI from the moral point of view include, e.g., Nozick (1974), Elster (1987), Rawls (1988), White (1997), Vallentyne (2011), and Lister (2020).

The **pragmatic** (or **efficiency**) dimension involves interrogating whether UBI could reduce some of the problems associated with today's conditional and means-tested redistributive schemes, make the welfare state more compatible with the market economy, or make society more responsive to the emerging policy challenges of globalized capitalism. The proponents of an affirmative answer include, e.g., Stigler (1946), Friedman (1962), Kliemt (1993, 1995), Buchanan (1997), Buchanan & Congleton (1998), Nell (Ed.) (2013), Murray (2016), Van Parijs & Vanderborght (2017), and Munger (2018). There is also emerging literature that debates the effectiveness of conditional and unconditional cash transfers, including basic income programs, in solving problems of poverty. (Rawlings & Rubio, 2005; Easterly, 2006, 2013; Moyo, 2009; Baez & Camacho, 2011; Banerjee & Duflo, 2011; SEWA & Unicef, 2014; Hidrobo, et al., 2014; Haushofer & Shapiro, 2016; Government of India, 2017; Lehto, 2018a, 2018b; Molina-Millán, Barham, et al., 2019; Banerjee, Niehaus, & Suri, 2019; Dietrich, et al., 2020) Critics of UBI from the pragmatic/efficiency point of view include, e.g., Atkinson (1996a), Sen (1999), Birnbaum & Wispelaere (2011), Boettke & Martin (2012), Rallo (2019), Colander (2019), and Coote, Kasliwal, & Percy (2019). Both sides of this debate also draw on the broader welfare state literature to buttress their claim that UBI either corrects or worsens some of the perceived inefficiencies and unintended consequences of existing welfare state structures. (Friedman, 1962; Esping-Andersen, 1990, 2002; Murray, 1994, 2016; Gaus, 1998; Cowen, 2002; Shapiro, 2007; Alston, 2008; Moynihan, Herd, & Harvey, 2013; Bergh, 2015, 2019; Dwyer, 2018)

1.4.2.   Thomas Paine's Argument for UBI

Thomas Paine is often considered the father of the UBI proposal. Giving such credit is only *partially* accurate, since Paine did not propose regular guaranteed monthly payments to all residents. Instead, he proposed the establishment of a guaranteed old age pension to all

people above the age of 50 combined with a modest one-off grant to all people who reach the age of 21. (Paine, 1945, pp. 612-613) While the establishment of a guaranteed old age pension was radical enough for its time, it was the proposal for a one-off, no-strings-attached grant to all citizens that inspired much of the subsequent literature on UBI. Of all the moral arguments in favour of UBI, aside from the evolutionary argument made in this thesis, the Paine-George argument, also called the "Georgist" or "left-libertarian" argument, seems to me the most convincing (Paine, 1797; George, 1879, 1885; Steiner, 2016, 2017). According to the left-libertarian authors, the monopolistic institution of private property in land (understood in the broadest sense of *all* natural resources) in select hands is unjustifiable without due compensation to those who are excluded from land, because everybody has an equal and natural right to the fruits of the earth. This is a "left-wing" interpretation of Locke's arguments in the Two Treatises of Government (1689, 2nd Treatise, §27) that private property is justifiable only if there is "enough and as good in common left for others"– with the added observation that there isn't, which justifies compensation to the propertyless. According to the Paine-George thesis, then, the private ownership of land and natural resources constitutes an illegitimate monopoly that should be taxed (with land-value taxation, LVT) to rectify the injustice of the existing unequal ownership of natural resources. The other side of the equation is that those who have been denied access to their fair share of natural resources should be compensated either in the form of various public works or in the form of a cash. This justifies a guaranteed basic income. Of course, many Lockeans would dispute the "Lockean" justification for UBI. (Epstein, 1986; Schmidtz, 1990; Layman, 2011) Incidentally, *any* "historical entitlement" theory of justice is subject to fallible empirical disputes. Indeed, even Nozick's (1974) stringently anti-redistributive theory could yield justification for a temporary welfare state under some conditions. (Lomasky, 2005; Mack, 2006) That said, the case from Lockean grounds seems more promising.

Under the Georgist proposal, incomes should not be taxed, only land ownership. Such a UBI would be quite different from most currently proposed UBI schemes, which rely (at least partially) on the taxation of labour income and capital income. Arguments derived from such strict Georgist line of reasoning underlie the "left-libertarian" case for UBI, as made by Hillel Steiner, Peter Vallentyne, and others (Steiner, 1995; Vallentyne & Steiner, 2002a, 2002b; Steiner, 2015, 2016). Such neo-Georgist arguments are not identical with, but they

share some aspects with Waldron's (1986, 1988, 1991) liberal egalitarian claim that freedom requires access to basic resources[6], Zwolinski's (2015, 2019) "bleeding-heart libertarian" case for UBI, Philippe van Parijs's (1991, 1995) "real libertarian" case for UBI, and Karl Smith Widerquist's (2010, 2013) idiosyncratic "Indepentarian" case for UBI.

The Paine-George thesis seems compelling to me, but it is far removed from the evolutionary considerations with which I grapple. Therefore, I will not rely on it, nor attempt to defend it, in my thesis. That said, the argument that land, not income or capital, should be taxed, not income, is both morally and pragmatically appealing. Although many people, especially on the progressive side, would object to a UBI system that left income and capital inequalities (except those that derive from unequal land ownership) untaxed, such a world might have much superior work incentives than the world we currently live in. After all, if we tax work, capital, or investment, we tend to get less of it (*ceteris paribus*), whereas society benefits from having ample access to work, capital, and investment. So, it seems to me that one of the main challenges of UBI discourse going forward will be to develop models of basic income that do not rely (so heavily) on income or capital taxation. My UBI proposal is compatible with a Georgist tax regime but does not require it. Nor will I emphasise the importance of moving away from income and capital taxation, although this may be desirable in the long run. Instead, I will proceed on the assumption that the UBI tax regime in the near future will incorporate some unspecified combination of taxes on income, capital, land, consumption, and other sources. My argument for UBI, I believe, holds *even if* UBI is used to (moderately) raise income and capital taxes, but raising such taxes is not to be celebrated. The Alaskan and Iranian oil revenue funded basic income schemes provide examples of how natural resource based UBI schemes could be developed, although their transferability to resource poor countries is unclear. (Tabatabai, 2012)

1.4.3.   The Feasibility of **UBI:** Does it pass the test?

Before I can continue, I need to respond to the objections that UBI is *clearly* and *obviously*

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[6] G.A. Cohen's (1995, 2011) neo-Marxist argument reaches very similar conclusions to Waldron's; except, of course, justifying a regime of private property rights (which Marxists regard as unsalvageable).

inefficient, or unworkable, or undesirable. The most common such arguments against UBI, aside from moral objections, are that 1) it would cost too much money and 2) it would incentivize laziness. It is important to respond to such objections since either of them, let alone both of them combined, if true, would render my subsequent (and more sophisticated) argument for UBI moot. After all, if UBI bankrupts the state, or leads to widespread indolence, it cannot be reasonably entertained as a fiscally sustainable and politically feasible reform! For the proverbial car to get moving, it needs to have some gasoline in it. This comes before we can analyse its other flaws and virtues. Therefore, the following arguments provide the first serious challenge to the UBI reform. However, I think that these arguments against UBI fail because they overstate its dangers. For now, I will offer quick responses that are not meant to be comprehensive refutations but only preliminary observations whose function is not to belittle the seriousness of the worries, or to claim that nothing of them remains, but to show that they are *prima facie* overblown.

Overall cost and tax rates. These two objections are separable but related so let me tackle them together. Many people object that UBI is simply *too expensive* or requires excessively high (marginal or average) *tax rates*. And indeed, it seems obvious that giving everybody money is very expensive. The *gross costs* of the system appear very large on the paper, but this does not mean that the *net costs* of the system are necessarily excessive. David Colander (2019, unpaged) provides a nuanced summary of the scholarly consensus: "if the basic income plan is simply added to our current system of personal income taxation, critics are largely correct, and any substantive plan would be administratively and politically too costly to implement. However, if the plan is accompanied by changes in the structure of our income tax system (…) those costs can be reduced." The devil is in the details, and the choice of the model matters a lot for determining fiscal and administrative feasibility of UBI. Overall, the emerging consensus among most critics and proponents of UBI is that, whatever its other pros and cons, "a basic income guarantee is financially feasible at a cost of certain side effects." (Widerquist, 2005, p. 68) Whether the costs of the program are tolerable requires a careful cost-benefit analysis across both moral and pragmatic dimensions. However, I take it be firmly established, based on a careful analysis of the existing UBI models and decades of randomized control trials, that it is possible to fund UBI

within budget neutrality or, at most, with modest increases in net government spending. (Lehto, 2018) While obviously not all UBI models are sustainable – and indeed some of the worst ones would lead to a fiscal crisis – there *are* many revenue neutral and non-revenue neutral UBI/NIT schemes which are "financially feasible." (Sommer, 2016, p. 176) It is even possible to fund UBI with modest *decreases* in government spending. (Torry, 2016[7]) One of the most important tasks In the UBI debate is to discover the sustainable level of basic income that can be guaranteed to all without exploding the government budget or imposing excessive burdens on taxpayers. (Berggren, 2000; Boettke & Martin, 2012) The classical liberal and libertarian models of basic income take this challenge most seriously and are therefore, on average, the most fiscally responsible. (Friedman, 1962; Hayek, 1982; Buchanan & Congleton, 1998; Murray, 2016) But as long as the model is carefully balanced and instituted in a responsible manner, the literature suggests that there is no hard fiscal limit that prevents even the more social democratic and social liberal UBI models, which are more fiscally burdensome, from being implemented in some contexts. (Van Parijs, 1995; Van Parijs & Vanderborght, 2017, et al.) I will therefore proceed on the assumption that a robust UBI proposal, *ceteris paribus*, can be implemented in a fiscally responsible fashion that would only modestly increase the tax and fiscal burdens. This eliminates certain basic income models from consideration but leaves others (including, in my view, some suboptimal and undesirable ones) intact. Whether this level of public spending is still too high, too low, or perfectly fine is another question – and one that takes us back to the arguments for and against redistribution in general, rather than UBI in particular.

The question of work incentives. The charge that UBI incentivizes "laziness" is a very serious one that is directly related to the tax burden discussed above. From the fiscal point of view, the impact on marginal tax rates remains a major negative effect of, and an argument against, any UBI scheme funded through income taxation. Low-income people will likely see a reduction in effective marginal tax rates whereas middle income and high income will see their tax rates go up slightly. (Van Parijs & Vanderborght, 2017, pp. 133-138) The only way

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[7] Malcolm Torry of the Citizen's Basic Income Trust has calculated that if his proposed UBI scheme "had been introduced in 2015 then no additional public expenditure would have been required (and in fact a small saving would have been generated), low income households would have experienced very few losses, few households would have experienced unmanageable losses, and Income Tax rates would have increased by only 3%." (Torry, 2016, p. 11)

to prevent this outcome is to organize UBI in a "Georgist" fashion, by abolishing all taxes on income and capital (George, 1879; Steiner, 1994). But such proposals are not very popular. So, given that most realistic UBI proposals entail increases in marginal tax rates, and given that the unconditionality criterion ensures that people have the increased ability to drop out of the labour force without penalties, the net impact of UBI on work incentives is likely to be negative, *ceteris paribus*. But will the disincentive effect be *negative enough* to lead to economically catastrophic results? If we limit ourselves to UBI models that are set at a modest level, it does not seem so. There is now a pretty solid body of evidence, based on randomized control trials around the world, including experiments in the United States, Canada, Finland, India, Kenya, and Uganda, that the disincentive effects are likely to be modest or even zero. (For a summary, see Lehto, 2018) Two things are apparent: 1) *moderate* reductions in working hours are to be expected, although not universally so (Widerquist, 2005, pp. 68-69; Browne & Immerwoll, 2017, p. 19); 2) the "common argument against basic income, that it will lead to *major* reductions in employment, is not supported by the evidence" (Gibson, Hearty, & Craig, 2020, p. e173; see also Kangas, Jauhiainen, et al., [Eds.] p. 188). As Karl Widerquist (2005, p. 68) wrote in his summary of the results of decades of NIT experiments: "The experiments found *no evidence* that a negative income tax would cause some segment of the population to withdraw from the labor force, and the experiments found *no evidence* that the supply response would increase the cost of the program to the point that it would be unaffordable." So, several experiments have shown modest work disincentives that need to be recognized as downsides of UBI (and count against it) but these effects are unlikely to be catastrophic.

Overall, I have attempted to show that the *overall cost*, *tax rate*, and *work disincentive* worries about UBI (even if we just assume static neoclassical assumptions which, as I shall show in later chapters, I do not think we should), have some basis in reality, but they fail to materialize catastrophic outcomes. The UBI reform has some incentive problems and cost problems at its core that are likely to become permanent bugs in the system. But while there might be *good* reasons, moral and pragmatic, to wish to curtail welfare spending on able-bodied adults who are capable of working (i.e. the "lazy" and the "undeserving poor"), there might be *even better* reasons to insist on universality and unconditionality in redistribution as soon as we take into account the full costs of monitoring and

administration. (Fleischer & Lehto, 2019) Effective means-testing and conditionality might be difficult, or even *impossible,* to reconcile with the epistemic and technocratic constraints of the market economy. Indeed, the complexity perspective speaks against the desirability of bureaucratic conditionality monitoring and in favour of the abolition or minimization of most conditionalities. (Lehto, 2023, forthcoming) The universality and unconditionality requirements of UBI might seem overgenerous, but the hidden costs of the bureaucratization of the welfare state might override any short-term gains in fiscal efficiency and marginal tax rates: "The introduction of means testing will increase rent seeking or political inefficiency as it promises to reduce, somewhat, conventional excess burdens. Classical liberals, in particular, should beware of following a false god." (Buchanan & Congleton, 1998, p. 151) In this sense, from a comparative institutional point of view, it might make more sense to "bite the bullet" and to accept the visible costs of UBI's overgenerosity as the second best, non-ideal solution, as long as the ideal solution of perfect technocratic efficiency is outside the reach of human design.

If we there does not exist a better and sustainable alternative to UBI, it makes sense to support something like a UBI *even if* one thinks that, according to one's preferred principles of justice and efficiency, it has some severe faults and shortcomings. The most defensible argument for a full-blown UBI is thus not best conceived as trying to institutionalize an ideal framework of justice but rather a "non-ideal" (Gaus, 2016b, 2021; Valentini, 2012) framework of evolutionary (or adaptive) governance. Whether "surfers" or "lazy people" *deserve* UBI or not, the real question is whether *most* of the money, *most* of the time, and over the *long* run, generates beneficial uses. If so, certain degrees of waste and immorality are tolerable. The unavoidable inefficiencies of the UBI scheme might be a cost we have to bear if the comparable inefficiencies of *non*-UBI welfare schemes surpass them in scope. This conclusion holds *a fortiori* if the expected innovation-fostering and problem-solving properties of UBI give it an additional edge, as I shall claim, in terms of (evolutionary) "adaptive efficiency." If this viewpoint is correct, although there remain many unresolved questions about the desirability of UBI, such as about institutional sustainability (De Wispelaere, 2015), or about the optimal trade-off between targeted social policies and a non-targeted UBI (Anderson, 2000), this trade-off might, in the long run, be worth making.

1.5. From Lavoie to Hodgson: "Scientifically Sound Radicalism"

In this section, I will give a preamble to the kinds of motivations that underlie my subsequent analysis of welfare state governance in the face of the evolutionary pressures of complex adaptation under radical uncertainty. To do that, I will look at two contemporary scholars, Don Lavoie and Geoffrey Hodgson, whose work falls within the evolutionary liberal application of complexity theory. Don Lavoie, one of the most prominent Neo-Hayekian scholars of the past half a century, levelled a challenge at progressives in his book, *National Economic Planning: What is Left?* (1985b). As the title suggests, the book wanted to interrogate the past, present, and future of the "Left" (the mixed home of progressives, liberals, and socialists) in a world that took seriously the complexity insights about the impossibility of socialist calculation and the public benefits of widespread decentralized experimentation as a means of complex adaptation. To that end, Lavoie wanted to provide a "nonconservative critique of contemporary proposals for national economic planning" in favour of a "scientifically sound radicalism" capable of combating "war and militarism, political oppression, and special privilege, and [setting] in motion progressive forces that will begin to solve such difficult human problems as poverty, disease, and environmental decay." (Lavoie, 1985b, pp. 1-2) The epistemic limits faced by all agents in a complex world imply that "any attempt by a single agency to steer an economy constitutes a case of the blind leading the sighted. In other words, the social function performed by a particular complex of legal and market institutions makes them indispensable tools for the solution of certain unavoidable economic problems involved in the day-to-day production and allocation of scarce resources." (ibid., p. 4) What is needed is "a radical ideology that abandons planning but retains most of the other traditional hopes of radicals for a more rational, just, peaceful, and prosperous world. (…) Planning is not an end in itself; it has been proposed only as a means for the attainment of the progressive goals of the radical movement. Its failure suggests that what is needed is a completely different ideological foundation for the Left." (ibid., p. 9) I think that Lavoie's conclusions with regard to the permissibility of welfare state legislation err too much on the side of caution, since there is no reason why, say, the provision of UBI necessarily leads to socialism. Nonetheless, his challenge to the Left needs to be taken seriously by all who are sympathetic to the aims of the "progressive" movement (broadly conceived). The key question is: *How can we set in*

motion *"progressive forces" that will begin to solve difficult human problems while simultaneously avoiding the Scylla of socialism* and *the Charybdis of conservatism?* Beginning to answer this question – which is what I set out to do in this thesis – requires going beyond Lavoie and turning to another evolutionary political economist who frames the same challenge in terms that are better suited to the contemporary context.

Geoffrey Hodgson is one of the most prolific and influential of contemporary evolutionary economists. In his two recent books, *Wrong Turnings: How the Left Got Lost?* (2018) and *Is Socialism Feasible? Towards an Alternative Future* (2019), he provides a critique of socialism that does not fall back on market fundamentalism but argues, similar to Michael Polanyi (2002) and F.A. Hayek (1960, 1982) before him, that there is still room for different forms of epistemically humble, complexity-aware, and evolution-sensitive welfare state governance arrangements. His starting point, like Lavoie's, is to accept the Polanyi-Mises-Hayek critique of socialist calculation: "We need to learn from past experience. Using theory and evidence, this book shows that a humane classical socialism on a large scale is unviable." (Hodgson, 2019, p. vii) People "have to accept markets and much private property. To do otherwise is to ignore the twentieth-century lessons of devastating socialist failure." (Hodgson, 2018, p. 213) Markets are a flawed but necessary tool of decentralized social coordination. The consequence of this is obvious: "In one form or another, and to a greater or lesser extent, all large-scale complex economic systems must fall back on *decentralized coordination mechanisms involving relatively autonomous mutual adjustments of some kind between local actors*." (Hodgson, 2019, p. vii, my italics) However, Hodgson also argues that "people cannot function effectively in a system of contracts and markets if they are deprived of food, shelter, basic education or fruitful social interaction. (…) Hence effective libertarian political principles imply a welfare state." (Hodgson, 2018, p. 214) In this way, in a move similar to Hayek and Polanyi (as I shall show later), Hodgson goes beyond Lavoie in allowing for, and even requiring, some welfare state measures as corollaries of the bottom-up decentralized coordination mechanisms. Hodgson's concrete institutional recommendations include "universal education, a welfare state, a guaranteed basic income, the promotion of worker cooperatives, employee share-ownership schemes, corporate law reform, inheritance taxation and vigilant public regulation of the financial system." (Hodgson, 2018: 214) My aim is not to endorse Hodgson's proposed solutions (many of which I remain

sceptical towards), but to highlight the inclusion of a "guaranteed basic income" among his policy recommendations. In fact, he prominently discusses UBI in *both* of his recent books. In the context where he discusses Thomas Paine's (1945) and Ackerman & Alstott's (1999) stakeholder proposals as plausible ways of implementing UBI, Hodgson details his own case for UBI:

> [Such a] basic income would be paid to everyone out of state funds, irrespective of other income or wealth, and whether the individual is working or not. It is justified on the grounds that individuals require a minimum income to function effectively as free and choosing agents. The basic means of survival are necessary to make use of our liberty, to have some autonomy, to be effective citizens, to develop ethically, and to participate in civil society. These are conditions of adequate and educated inclusion in the market world of choice and trade. (Hodgson, 2019, p. 204)

In my own normative analysis of the complexity-aware welfare state, I raise UBI to an even higher prominence – indeed, to a central one – while other proposals, such as those included in Hodgson's vision of welfare state governance, recede into the background, and my own preference will be shown to lie in the general direction of classical liberal solutions. Indeed, the precise constellation of complexity-aware welfare state policies is not the salient point here, but their contested and open-ended nature, and the fact that UBI probably features in many (or even most) of them. I will take it as the starting point that what is needed is a "reformed capitalism with an effective welfare state" (Hodgson, 2019, p. x) The question is, how should it be organized, which functions should be given primacy in its institutional design, and what role, if any, should UBI play in such a framework?

My proposed model is within the ballpark of Hodgson's proposal, but it leans even more strongly towards UBI as the core guarantor of decentralized experimentation, adaptation, and innovation. At the same time, my model is limited in its ambition, since it is concerned with delineating only the *core* tax-and-transfer functions of ecostructural governance as the rough blueprint that can be seeded and planted into many different local soils and climates where it will grow into unique shapes and forms. So, I will not attempt to delineate a full list of acceptable or desirable welfare state arrangements next to UBI. I only wish to argue that they should be designed in a way that leaves the maximal amount of leeway for decentralized experimentation as the central mechanism whereby the society can solve its

problems. Indeed, I will go one step further to argue that UBI is rather *unique* (or at least *rare*) among institutional design mechanisms in its capacity to be robustly freedom-preserving, innovation-preserving, and experimentation-preserving.

The right to UBI, to be implemented together with the *right to innovate, deviate, and experiment (without having to ask anybody for permission)*, will be justified, in this thesis, as the *core* function of ecostructural welfare state governance. This still leaves it open that several other functions can be implemented, if the public so chooses and the science backs it up, as *auxiliary* mechanisms in a context-sensitive manner. Although the precise list will not be settled here, it could include several highly promising complexity-aware government functions, like public education, macro-financial stabilization, environmental regulation, and catastrophic risk management, that can together (at least in theory) empower citizens with improved epistemic capacities. Such a framework, which focuses on "solving social problems from the bottom-up" with some ecostructural guidance from the top (Colander & Kupers, 2014) seems like a plausible version of "scientifically sound radicalism." (Lavoie, 1985b) Taking seriously the complexity-aware and evolution-aware insights of Lavoie and Hodgson allows a reimagining of "progressive" politics using the tools of the market-friendly and innovation-friendly mechanisms of social amelioration.

The "progressive" model of permissionless innovation is progressive in two key senses of progressive: 1) tending towards social amelioration, cultural progress, and radical structural change, and 2) tending towards the alleviation of the problems of the poor, the disadvantaged, and the oppressed. Nonetheless, the old "Left-Right" paradigm is largely outdated in the world of complexity theory and evolutionary economics. For example, Beinhocker (2006, p. 418) argues that the "complexity approach to economics offers not just a muddled middle— it is neither Neoclassicism with a few market failures, nor socialism with a few market mechanisms—but a wholly new perspective. The fundamental question isn't Left versus Right; it is how best to evolve." Nonetheless, it is worthwhile to rescue some of the core impulses and ethical principles that underlie what the traditional "Left" has stood for, namely, "fighting for social progress, defending the less privileged, and remaking society for the better." (Beinhocker, 2006, p. 416) Such ideals need to be reconciled with evolutionary theory. Out of such a reconciliation, at least in theory, might emerge something like an "Evolutionary Left" that is somewhat similar to the vision of the

"Darwinian Left" that utilitarian philosopher Peter Singer (2000, p. 62) has advocated. Singer's aim, in developing his new theory of the Left, was to urge philosophers to "[s]tand by the traditional values of the left by being on the side of the weak, poor and oppressed, but think very carefully about what social and economic changes will really work to benefit them. In some ways, this is a sharply deflated vision of the left, its Utopian ideas replaced by a coolly realistic view of what can be achieved." Deflated Utopianism lacks some inspiration, sure, but it has the advantage of providing a solid innovation platform for making real changes in the lives of ordinary people. This vision is robustly articulated in the emergent field of "effective altruism" to which I hope my own research contributes by showing the possibilities and limits of evolutionary governance as a means of "doing good better." (MacAskill, 2015; Singer, 2015) Effective altruism motivates combining progressive normative concerns with the epistemic and institutional insights of complexity theory in order to know how to do the most good under conditions of radical uncertainty and emergent complexity. Such concerns lead me to sympathize with the evolutionary liberalism of Lavoie and Hodgson, and also with the so-called "bleeding heart libertarian" claim that classical liberal principles, which are compatible with rule-bound redistribution, provide promising (if imperfect) guidelines for complexity-aware governance. (Tomasi, 2012; Zwolinski, 2013) It seems to me that the Utopian power of politics is not necessarily deflated when it is moderated by a dose of realism. Indeed, the Utopian potential is, in many respects, *amplified* through the amplification of evolutionary social intelligence which is capable of producing, in the social order, "endless forms most beautiful and most wonderful" (Darwin, 1859, p. 425) – of which humankind has barely seen anything yet. Most viable Utopias remain unevolved. In later chapters, therefore, I will focus on the *ecostructural rules* of social organization and the concrete UBI model that will be presented as the best approximation of such "progressive" and "liberal" hopes.

1.6. The Central Task of Adaptive Governance

Let me conclude this introduction by discussing the normative foundations of the perspective of evolutionary liberalism detailed above. According to the insights of the complexity perspective and the insights of Lavoie, Hodgson, and the long lineage of

evolutionary liberals (Hume, Spencer, Polanyi, Hayek, etc.) before them, the central problem of welfare state governance under complexity and uncertainty is *not* the production and allocation of scarce resources with multiple competing uses, but the facilitation of *the bottom-up discovery of solutions to human problems*. This view celebrates the power of complex adaptive networks, as epistemic carriers, to connect and incentivize people (including poor and disadvantaged people) to bring their tacit knowledge, and private intelligence, to effectively bear on the discovery of solutions to collective problems. This way, people can work together – both cooperatively and competitively – to consciously design, or accidentally bump into, creative solutions to their pressing, ever-changing problems: "Innovation is often assumed to be the work of a talented few, whose products are passed on to the masses. [In fact,] innovations are instead an emergent property of our species' cultural learning abilities, applied within our societies and social networks. Our societies and social networks act as collective brains." (Muthukrishna & Henrich, 2016, p. 1) The ethical design problem is how to devise a fair and efficient framework within which the "progressive" forces of evolution can be given maximal reign to solve difficult social problems through the "collective brain" while still making sure that all human beings are included (*social inclusiveness*) and that special weight is given to those problems that affect the poor and the disadvantaged (*prioritization based on the urgency of one's problems*).

The *1st assumption* I make is that *people have unsolved problems that stand in the way of a better and happier society.* In fact, I doubt many people would cast doubt on this assumption. However, in the absence of a robust and widely accepted objective theory of what counts as a problem to be solved, we should conceive of a "problem" in the most abstract way possible, as the (open-ended) class of all the surprising and changing ways in which human beings are not, at any given time, fully at home, or happy, or truly flourishing, in the world (but *could* be). At this stage, let me cast aside all initial intuitions, hypotheses, and reasoned judgments about the precise nature of such problems. Let me simply postulate the presence of unsolved human problems, or, what comes to the same thing, the presence of unsatisfied human desires or needs.

Problems are there to be solved. Solving problems is inherently a good thing, since getting rid of something that is a problem counts as an improvement *by definition*. (At the same time, getting rid of something that only *appears* as problem, but is not, does not count as an

improvement; hence problem-solving is a fallible and error-prone process.) Solving a problem consists of two independent "discovery phases": 1) the discovery of the accurate and relevant *identification of the problem*, followed by 2) the discovery of the accurate and relevant *identification of the solution* (or set of solutions) to the problem. The end result of this two-phased discovery procedure (i.e., social learning or complex adaptation procedure) is the *subtraction* of one item from the hypothetical class of all social problems.[8] This view is compatible with the idea that problems are not easily quantifiable into "bits" or "atoms"; we may more appropriately think of them as existing on a "wave-like" statistical distribution. The correct working assumption, at any rate, is that problems are not immediately obvious or available to us, but they are discovered as the result of (the interaction of) various decentralized social "search" processes, like science, markets, media, and civil society. Before problems can be solved, they need to be discovered. Problems are not "given" to the social scientist, the politician, or any social organization – and often not even to the individual who suffers from personal problems – but they must be discovered, analysed, communicated, tinkered with, and hopefully solved, through a dynamic social process of discovery. Once we realize that problems themselves are "hidden" in the world, it becomes apparent that the same must hold, *a fortiori*, so to the solutions of those problems. Problems, and possible solutions to them, may, at any given moment, be *partially* or *tacitly* – and always imperfectly – be revealed to agents in their thoughts, beliefs, preference rankings, value hierarchies, habits, customs, and social interactions.[9] This is what Michael Polanyi (2005) has called the problem of "personal" or "tacit" knowledge.

This discovery procedure, consisting of a) the identification of problems and b) their continuous solving, can be called *the epistemic process of evolutionary welfare*

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[8] The issue of the discovery of solutions to problems can, of course, be formalized in terms of "utility maximization," but the utilitarian connotations are potentially misleading here, since I am not necessarily assuming that problems are quantifiable, commensurable, or interpersonally comparable, beyond the minimal assumption that resource poor people have more (urgent) problems than others. Even the Pareto criterion, which avoids many of the problems of the Benthamite utilitarian calculus, raises its own set of problems in relation to the assumption of the game theoretical rational choice calculus of social interaction that can obscure the nature of the social discovery procedure. Such issues need not be entered into more detail here.

[9] It might be said that there is a subjective dimension and an intersubjective (or objective) dimension to the social discovery procedure in all its manifestations. The relevant psychological states, like beliefs and desires, are best expressed in a *subjective* or *mentalist* language, while the relevant sociological states, like belief systems or customs, are best expressed in an *intersubjective* or *objective* language. Scholars can therefore identify and study the same problem in either subjectivistic-mentalistic terms or in sociological-semiotic terms, depending on which is more relevant to their methodology or their chosen object of the analysis.

improvement. We may also describe it in terms of *growth* or *prosperity* or *wealth accumulation*, as Beinhocker & Hanauer (2014, p. 4) do: "Prosperity in a society is the accumulation of solutions to human problems." This definition is acceptable enough, although it underplays the welfarist and subjective dimension of human problems which suggests that the language of "accumulation" may be hard to justify. Since problems are only problems to the extent that there is some agent to identify them as such, it seems correct to identity the process of solving problems as a process of increasing subjective welfare. At any rate, regardless of which nomenclature we use, whether we prioritize the ethical language of happiness and welfare, or the economic language of wealth and progress, "[u]ltimately, the measure of the wealth of a society is the range of human problems it has solved and how available it has made those solutions to its people." (Beinhocker & Hanauer, 2014, p. 4) This, too, was the ultimate aim of Don Lavoie's definition of "scientifically sound radicalism" defined as the process of "[setting] in motion progressive forces that will begin to solve such difficult human problems as poverty, disease, and environmental decay." (Lavoie 1985b, pp. 1-2) Solving problems counts as *social progress*. This is compatible with the view that some problems are unsolvable.

We should avoid smuggling into the definition of a "solution" any thick ethical assumptions about what constitutes a good life, or any articulated vision of a teleological end state. Let us assume that we lack sufficient knowledge to fully articulate and ascertain – even to ourselves, let alone to a social collective capable of converging on a singular ethical ideal – the full shape and clear vision of a good life or an optimal society (a society without problems). Such a vision of a good life, we can assume, may emerge from the social process of discovery if it is to emerge at all. If no unified vision is found or agreed upon as a collective project, we can still make progress towards the solution of human problems and the eradication of dissatisfaction, which is a good enough goal to settle for. This suggests *liberal neutrality* as the appropriate normative viewpoint. To be sure, the conviction that progress towards a good (or better, if not best) life is possible and not a pipe dream is an artefact of the preceding axioms, since I have *defined* the process of discovery as that which approximates a vision of a good life – *if,* by a good life, we mean a life with minimal unresolved problems and minimal dissatisfaction (which, of course, is a contested definition). If the social discovery procedure does not approximate a vision of a better life in

this sense, it has not functioned properly as a discovery procedure. Whether in fact a robust social discovery procedure can be created in the real world, and whether it can be institutionally, economically, and ethically sustained over the long term, remains the difficult task of the rest of these chapters to prove (or at least gesture towards).

The *2nd assumption* that I wish to make – and one that justifies the "welfare state" label for my theory – assumes that a) some people tend, by definition, to have more problems and unmet desires than others, and b) this fact is relevant to the theory. Let us call such people, who have more problems and unmet desires than others, using a rough shorthand, as *the poor and the disadvantaged*. The reason for drawing such a subtle distinction is to differentiate between people who cannot solve their problems (primarily) because they are *resource poor* (the poor) from people who face more than their fair share of problems for other reasons, such as *discrimination, disability, lack of social capital, unique preferences*, and the like (the disadvantaged). The only assumption that I wish to make here is that as long as we assume the desirability of a social discovery procedure that aims to solve the problems of all the people equally (or rather, the class of all social problems unevenly distributed across separate individuals), we should pay special attention to those people who have temporally accrued the most problems upon themselves, i.e., "the poor and the disadvantaged."[10] As a consequence of the unequal accretion of problems and dissatisfactions, the social discovery procedure should take these inequalities into account. In fact, it should take the full scale of unequal distributions of problems and dissatisfactions into account in the design of its mechanisms. Everybody's problems and desires count equally in the design of institutional structures, but since some people (let us assume) have *more* or *more serious* problems than others (or more reasons to be dissatisfied with their circumstances), the discovery of solutions to *their* problems will be given relative (but not absolute) priority. The logic of this prioritisation is inversely analogous to the logic of a capitalist society where every unit of money counts for one, but since some people have more units of money than others, their purchasing power is higher. Likewise, since in the real world some people have more (or more serious) problems than others, their problems have a higher "purchasing power" in the "game" of the social discovery procedure. This

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[10] Using Rawls's definition, we could also speak about "the least well-off group," but I reject this for practical reasons, since I wish to separate myself from the ethical assumptions underlying Rawls's maximin rule.

conclusion follows naturally from the principle of welfare maximization (if we make no further assumptions about the separateness of persons, legal rights, and the like).

My normative theory of social discovery is, therefore, pretty close to what is sometimes called "prioritarianism" (Parfit, 1995; Arneson, 2000; Adler & Holtug, 2019), which is best understood as a kind of weighted welfarist consequentialism. In its simplest form, prioritarianism refers to the idea that "justice requires us to maximize a function of human well-being that gives priority to improving the well-being of those who are badly off." (Arneson, 2000, p. 340)[11] Most prioritarians, like utilitarians, tend to assume that "(lifetime) well-being is both interpersonally and intrapersonally comparable and measurable on a cardinal scale" (Adler & Holtug, 2019, p. 103). Something analogous to cardinal utility has to be assumed by my theory in order to make normative comparisons between states of the world according to their social discovery capacities. State of the world A is assumed to be better than state of the world B if more problems get solved in it and more satisfaction is being achieved. In order for such comparisons to make sense, it seems to me that I have to rely upon some (weak) means of interpersonal comparisons that go beyond Paretian ordinal utility, despite the well-known problems associated with them, (Robbins, 1938) since otherwise relative weights cannot be put on the different problems of different agents. In the broadest sense, therefore, this kind of comparative institutional analysis approximates the classic Benthamite calculus. (Bentham, 1789) And indeed, the restatement of utility theory in terms of priority-weighted "problem solving" and "innovation production" does not indicate a fundamental break with consequentialist reasoning, only its retranslation into the preferred terms of the evolutionary paradigm. Note that the justification of such an inequality-sensitive problem-solving mechanism is *not* in any egalitarian assumptions about "fairness" or in any liberal assumptions about "individual rights" but only in the impersonal

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[11] Arneson himself defends a form of luck egalitarianism what he calls a "responsibility-catering prioritarianism" which adds the following addendum: "… and [it gives priority to the well-being] of those who, if badly off, are not substantially responsible for their condition in virtue of their prior conduct." (Arneson, 2000, p. 340) For Arneson, therefore, prioritarianism should not give priority to the well-being of irresponsible people who are substantially to blame for their own bad luck. However, it seems to me that such an assumption of "personal responsibility," which is doing a lot of work in luck egalitarianism, is merely one possible social norm or institutional rule that can be introduced (or ignored) when we think about the set of social rules that are needed to solve social problems. However, at this initial stage, perhaps controversially, I am treating social problems as impersonal *givens* without any moralizing about their origin. Since I am not (yet) even assuming the separateness of persons (!), there is no way to make sense of the psychology of responsibility.

weighting of *the unequal distribution of problems* within a population. (Or, which comes to the same thing in the final analysis, its long-term *welfare* distribution.) At this point, the theory does not give any special attention to the separateness of persons or other ulterior ethical doctrines. The only thing that matters are the aggregative social consequences – namely, the discovery of solutions to problems and the consequent removal of dissatisfactions. Such a theory of progress as the discovery of solutions to social problems converges on the prioritarian view to the extent that prioritarians generally pay special attention to those people who have more problems and dissatisfaction than the rest of the population. However, upon further analysis, it becomes clear that my version of prioritarianism is actually close to traditional (impersonal) utilitarianism. I do *not* give priority for the welfare gains of people at the bottom *simply because they are at the bottom*; I do so because they tend to have more problems and dissatisfaction than the rest of the population, so there are more discoveries to be made, and more social welfare gains to be had, by directing social discovery efforts there, rather than elsewhere.

In practice, when we move into the practical application and social negotiation stage of institutional design, for well-known contractarian or relational egalitarian reasons, it may be wise or even sometimes necessary to temper the impersonality assumption according to which the consequentialist principle of the maximization of the discovery efforts is independent of the personhood of the person whose problems we want to solve. It is hard to imagine a social contract, or an egalitarian legal-political order, under which all (or the majority of) social efforts and resources were directed at the discovery of solutions to the problems of a few extremely problem-ridden and discontented agents, even if we could prove without a shadow of a doubt that this would lead to the biggest increase in social well-being (measured in terms of the most social problems being reliably solved). This, of course, relates to Nozick's famous objection that utilitarianism seems to be susceptible to "utility monsters who get enormously greater sums of utility from any sacrifice of others than these others lose. For, unacceptably, the theory seems to require that we all be sacrificed in the monster's maw, in order to increase total utility." (Nozick 1974, p. 41) The utility monster objection remains one of the most compelling arguments against aggregative utilitarian theory. Taking it seriously – as most moral philosophers rightly believe we should – seriously undermines the case for any impersonal social discovery mechanism that ignores

the separateness of persons. Therefore, it might be wise to assume (counterfactually) – whether because of social cohesion, or because we accept relational egalitarianism, or because we embrace some notion of innate individual rights, or simply because we wish to acknowledge that we do not know how to aggregate social utility well enough to have confidence in our interpersonal calculations – that each person, *qua* a unit of calculation, has an *equal* claim to having his or her problems solved, *regardless* of the severity of their problems, or the extent of their welfare dissatisfaction. This is not a particularly satisfactory solution, since it ignores the distinct possibility that social problems are best understood impersonally, and the arbitrary boundary that exists between the skin of one person and the skin of another person stands in the way of an effective socialization of the task of problem solving, but it might be an acceptable compromise position that solves the utility monster objection and the related separateness of persons objection.

To sum up, the central assumptions that I wish to defend are that a) solving problems is desirable (and thus one of the core tasks of governance), b) solving the problems of the poor and the disadvantaged should take relative priority, c) solving problems requires setting up an adaptive governance framework that facilitates the decentralized discovery of solutions to them, and d) the framework of evolutionary liberalism provides a plausible and perhaps the best available (albeit fallible) framework for it. The Utopian goal of such a framework is the maximal solution of all the social problems of all the individuals. Of course, the fact that such a goal can never be fully reached does not mean that it cannot be approximated and moved towards. In this paradigm, although the society is seen as a largely self-governing, self-steering system, it is possible, and sometimes necessary, to intelligently "design" the rules of the "spontaneous order."[12] This motivates "mechanism design" (Maskin, 2017) and "ecostructural governance." (Colander & Kupers, 2014) Such efforts fallibly aim at "rule of law" institutions that create, facilitate, referee, and/or improve the cooperative-competitive framework of complex adaptation and permissionless innovation. The following thesis evaluates the merits of two interrelated rules as parts of adaptive governance: 1) the liberal *right to innovate* and 2) the right to *basic income* (UBI).

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[12] For the conceptual quandaries involved the Hayekian distinction between "Planned" and "Spontaneous" orders, and seemingly paradoxical project of "planning for freedom," see Sandefur (2009). Regardless of how much or little power is granted to the central government, socioeconomic development always results from the complex interaction between the forces of top-down human design and bottom-up spontaneity.

1.7. A Brief Outline of the Thesis

Finally, let me sketch a brief outline of the chapters.

Chapter 2 provides an overview of the methodology, historical origins, and contemporary manifestations of *evolutionary political economy* and *complexity theory*. The chapter has two interrelated functions: a) to serve as a (selective) literature review of the origins of complexity and evolutionary thinking in economics and the social sciences, from Adam Smith and Alfred Marshall to F.A. Hayek, Joseph Schumpeter, and others; b) to introduce the central concepts and methodological tools that I shall employ in my analysis, namely, the concepts of *complex adaptation* and *permissionless innovation*.

Chapter 3 extends these insights into the realm of *institutional design* and *public policy analysis*. I analyse the similarities between the institutional design implications of the three prominent schools of evolutionary political economy: the *Neo-Hayekian*s, the *Neo-Schumpeterian*s, and the *Santa Fe Institute* scholars. My analysis synthesises some overlapping governance insights shared by these schools to offer some basic guidelines for evolutionary governance. I show how the "synthetic" contemporary literature in applied evolutionary economics contributes to a better understanding of the shared insights of these three schools. To that effect, I focus on Eric Beinhocker (2006) and Colander & Kupers (2014). These authors offer a plausible model of institutional design that can be encapsulated in the phrase "ecostructural" or "adaptive" governance. The central lesson of this approach is that the socioeconomic order as a complex adaptive system that calls for ongoing decentralized experimentation and trial-and-error learning from the bottom-up. I propose "evolutionary gardening" as the appropriate model for such governance. I conclude by interpreting these insights through the tradition of "evolutionary liberalism" in a way that generates normative guidelines for revaluating the public benefits of liberalism.

In **Chapter 4**, I apply the "ecostructural" approach to institutional design to the welfare state governance. I argue that UBI can be conceptualized as a bundle of "abstract and general

rules" that are amenable to the classical liberal and libertarian interpretations of the constitutional order of the rule of law as the institutional guardian of the "rules of the game." I propose the classical liberal framework of the *Rule of Law* and the *Polycentric Order*, as developed by Michael Polanyi (1962, 2002) and F.A. Hayek (1960, 1982), as the most promising framework for an ecostructural approach to UBI governance. I argue that the UBI scheme can support decentralized experimentation and what Van Parijs (1995) has called "real freedom" if (and only if) it is supported by a robust regulatory protection of the *right to innovate*, which buttresses the comprehensive freedom and autonomy of the UBI recipients. I call this the *Permissionless Innovation UBI* (PIUBI) model. I then analyse several classical liberal and libertarian models of UBI for their capacity to co-secure the dual ecostructural rights to *innovation* and *basic income* and to approximate the formal conditions of the PIUBI model. These include F.A. Hayek's model of the *Guaranteed Minimum Income*, Milton Friedman's model of the *Negative Income Tax*, and James M. Buchanan's model of the *Demogrant*. Finally, I show how the sustainability of the UBI scheme depends upon *meta-rules* that determine the institutional adaptability and flexibility of the model in the face of social evolution.

In **Chapter 5**, I show how the PIUBI framework offers institutional protection for all citizens, but especially poor and disadvantaged citizens, to exercise their freedom and resources in ways that are conducive to bottom-up experimentation and innovation. This constitutes a "cybernetic" mechanism for solving social problems – not just private problems but also collective and social problems – through the "polycentric" order. UBI therefore has an *innovation platform* function in addition to an *income cushion* function. I further show how the freedom to experiment, deviate, mutate, and innovate should extend beyond consumer choices, entrepreneurial actions, and business practices (however important these may be) to the realm of *cultural* experimentation, *lifestyle* experimentation, and even *moral* experimentation. In all these realms, evolutionary processes are facilitated on quasi-Darwinian lines based on *variation*, *selection*, and *diffusion*, with the result that some innovations/mutations spread and flourish while others wither away. For this reason, "Generalized Darwinism" provides the best approximate model of evolution.

In **Chapter 6**, I discuss the limits of the PIUBI model in the controversial domains of *Human Enhancement Technologies* (HET) and *Transhumanism*, where UBI can be seen as a potential

tool of biomedical and technological innovation. I argue for the special relevance of these technologies for the welfare of poor and disadvantaged communities in the coming decades. I argue against the bioconservative position, which states that HETs should be suppressed, in favour of the evolutionary liberal position, which states that HETs should be tolerated. So, I defend *the right to innovate* and the right to *morphological freedom* in the realm of HETs. However, I argue against the neo-eugenicist position, according to which people not only have the *right* to enhance, but also the *moral duty* to do so. Instead, I defend *liberal neutrality* supplemented with optional nudges, subsidies, and regulations. I offer the *proactionary principle*, constrained only by the need to regulate against catastrophic risks, as the appropriate model for HET governance. It offers a liberal alternative to most forms of *(Social) Democratic Transhumanism*. From the point of view of *justice in the diffusion of innovations*, I argue that UBI is a necessary but probably not sufficient means to ensure that technological development is inclusive of the interests and welfare of *all* citizens. It may be combined with a universal health care system, although one that supports the *right to innovate*.

In **Chapter 7**, I sketch some challenges to the PIUBI models. *Permissionless innovation* can lead to *permissionless stagnation*, *social isolation* and *toxic networks*. However, the benefits of regulation need to be balanced against by the costs of government failure. I further argue that the PIUBI model, like any evolutionary model based on trial-and-error learning, entails tolerating a high degree of *risk*, *waste*, and *inequality.* This imposes costs and burdens on individuals, communities, and whole societies that may be hard to bear. This justifies mitigating and pooling risks through the welfare state. However, under reasonable assumptions about the public benefits of continued innovation, the net benefits of bottom-up evolution can be expected to outweigh the costs.

In **Chapter 8**, I go through challenges to the UBI from the point of view of *alternative welfare state models*. I critically analyse the evolutionary potential of *job guarantee programs*, *participation income*, and *Universal Basic Services* (UBS) programs. I find each model wanting as a *substitute* for UBI, although elements of each may be useful as optional *complements* to UBI. After that, I dissect Maccucato's (2013) *Entrepreneurial State* model and argue that there it relies on a confused notion of entrepreneurial experimentation.

Finally, I compare the evolutionary model of development with Solow-Swan's and Romer's neoclassical growth models and find some commonalities and differences.

In **Chapter 9**, I conclude.

Chapter 2: Evolutionary Political Economy

2.1. Introduction

In the previous chapter, I have introduced the central themes of this work and tied them to the contemporary policy context. I have argued that the evolutionary perspective provides fresh new perspectives into conceptualizing the challenges and demands of the contemporary welfare state debate. In this chapter, it is time to explain in detail the key concepts of evolutionary political economy and complexity theory as they pertain to the topic at hand. So, this chapter focuses on evolutionary political economy in order to do the following: 1) Introduce the methodological difference between evolutionary economic theory and neoclassical equilibrium theory. 2) Trace the brief history of evolutionary political economy from Adam Smith and Alfred Marshall to contemporary scholars. 3) Introduce the contemporary insights of three main schools of evolutionary economics: the Santa Fe, Neo-Schumpeterian, and Neo-Hayekian schools. 4) Explain the deep origins and continued relevance of the concepts of *complex adaptation* and *permissionless innovation.*

This chapter serves secondarily as a literature review. My theory is an outgrowth of a long historical tradition of evolutionary political economy, especially in the tradition of liberalism, so it is important (and thematically appropriate) to explore the *deep evolutionary history of evolutionary theorizing*. For this reason, the chapter may be somewhat heavy-going at times, compared to the others. However, exploring the deep origins and theoretical foundations of evolutionary economics is methodologically necessary in order to discover sufficient practical tools to develop a well-founded complexity approach to institutional and

public policy design (Chapter 3). This will ultimately be used to develop an epistemically grounded and complexity aware "evolutionary liberal" or "ecostructural" UBI model, in Chapter 4, where the *right to basic income* is tied to *the right to innovate*.

One final note on methodology. This chapter focuses primarily on *economics* in a way that places philosophy and the other social sciences into the margins. This is not to deny the importance of the other social sciences. Political economy, properly understood, is inseparable from such interdisciplinary engagement. As it happens, evolutionary economics provides the most systematized and well-developed of all social scientific discussions of innovation and adaptation, so it shall serve as the best "benchmark" for evolutionary theorizing. At the same time, the economic perspective is insufficient to model some of the important factors of evolutionary development and innovation, such as cultural evolution and memetic diffusion. Hence, in later chapters, I will draw resources from fields that I shall bracket out for the time being, including philosophy and evolutionary biology. (e.g., A. Buchanan, 2011a; Persson & Savulescu, 2012; Dawkins, 1976, 2003; Boyd, Richerson, & Henrich, 2011; Henrich, 2016, 2020) However, there are distinct advantages to limiting one's gaze, for a time being, to a single tradition with its self-contained discourse, so I will bracket out those interdisciplinary conversations for the duration of this chapter.

2.2. Evolution and Economics

2.2.1. What Is Evolutionary Political Economy?

Evolutionary economics is a heterogeneous field.[13] It would be reductive to distil the various approaches to a single formula. I will argue that there are, nonetheless, some common

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[13] Here are a few sources that give an overview of the contemporary research field. The Journal of Evolutionary Economics (1991-) has been an important publication platform for articles. Important book-length publications include the three volumes of "The Economy as a Complex Evolving System", published by the Santa Fe Institute in 1988 (Vol. I), 1997 (II) and 2001 (Vol. III). For an overview of the neo-Schumpeterian branch of evolutionary economics, see "Evolutionary theorizing in economics" (Nelson & Winter, 2002) and "Schumpeter and the revival of evolutionary economics: an appraisal of the literature." (Fagerberg, 2003) For an analysis of the role that information science and network theory in evolutionary economics, see "From simplistic to complex

insights that are shared by the Neo-Schumpeterian, Neo-Austrian, and Santa Fe schools of evolutionary economics. These insights make evolutionary economics meaningfully distinct from the mainstream neoclassical economics which has dominated the discussion for a long time. To pinpoint these common insights, I will summarize some of their key arguments. These three schools form the evolutionary bedrock of my methodological framework of complex adaptation. My aim is not to provide a comprehensive overview of the history of evolutionary ideas in economics. Regrettably, there are some important historical subbranches of evolutionary economics which I can only mention in passing, such as Keynesian and Marxian evolutionary economics (Marx & Engels, 1848; Sherman, 1998; Keynes, 1936). However, it should be mentioned that Schumpeter's (1942) theory of economic evolution was influenced by Marx, while Colander & Kupers's (2014) complexity approach to public policy was influenced by Keynes (and Hayek), so the legacy of Marx and Keynes still lives on in my subsequent analysis. I will also largely set aside the important work in evolutionary game theory. (Wright, 1932; Trivers, 1971; Axelrod & Hamilton, 1980; J.M. Smith, 1982) Game theory relies on the assumptions of rational choice theory and equilibrium analysis. Although there are interesting parallels to be drawn between game theory and evolutionary economics (e.g., Witt, 2008), "the two genres differ on their modes and styles of theorising" in ways that would require a lot of work to bridge; I shall no attempt to do that here. (Hodgson & Huang, 2012)[14] In addition, I will draw insights from the burgeoning self-organization literature around "polycentricity" (Aligica & Tarko, 2012; Aligica, Boettke, & Tarko, 2019; Lewis, 2017, 2020a, 2020b; Thiel, Blomquist, & Garrick [Eds.], 2019; Carlisle & Gruby, 2019; Lehto, 2021). Within the polycentricity literature, I will specifically focus on the tradition of Michael Polanyi (1962, 2002, 2005) and F.A. Hayek (1982), while setting aside the important work on community self-governance and common pool resource management associated with Elinor (and Vincent) Ostrom. (Ostrom, 1990,

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systems in economics." (Foster, 2005) For the link between evolutionary economics and general systems theory, see "What is Evolutionary Economics?" (Boulding, 1991). For the link between Austrian economics and evolutionary economics, see "How Complex Are the Austrians?" (Rosser, 2015). For an overview of the many internal debates within the field, see "What is specific about evolutionary economics?" (Witt, 2008),which highlights the ontological, the heuristic and methodological dimensions of disagreements among evolutionary economists. For a decent anthology, with historical contributions from multiple disciplines, see Kurt Dopfer's (2005) edited volume, "Evolutionary Foundations in Economics."

[14] See e.g. Battigalli, Panebianco, & Pin (2018) for interesting parallels between game theory, equilibrium theory, complexity theory, and network theory.

2005, 2009, 2011) Pursuing connections to the theories of Marx, Keynes, evolutionary game theory, and Ostromian polycentricity will have to be left for another time.

Historically, evolutionary theories have been advanced by many political economists[15], including Smith (1776), Mill (1848, 1859), Veblen (1898), Schumpeter (1934, 1942), and Hayek (1982). Many of the contemporary insights of evolutionary political economy owe their origin to the interdisciplinary crosspollination between the natural sciences and the social sciences. Within economics, it would be most accurate to describe evolutionary economics as a *modification* rather than a *replacement* of the central ideas of neoclassical economics. Its insights help to explain the origin, nature, and policy implications of some of the equilibrium-breaking anomalies produced by the highly idealized and formalized neoclassical theories. It allows for the validity of the equilibrium models of neoclassical economics a special case of economic coordination under certain fixed environmental conditions. (Arthur, 2006, p. i)

Before starting, let me add a terminological clarification. The phrase "*complexity* economics" is often used in conjunction with "*evolutionary* economics." (Arthur, 2015; Elsner, 2017) These are not necessarily identical terms, but there is an inherent link between complexity and evolution. In the complex adaptive system approach, such as in the work done at the Santa Fe Institute, social evolution is seen as inherently enmeshed in complexity, and vice versa. (Foster & Hölzl [Eds.], 2004; Hausmann, Hidalgo, et al., 2013) Most real-world evolutionary systems, whether natural or social, produce inherently *complex* adaptation, which takes place in an open system that cannot be contained (thermodynamically or semiotically). This link holds true, *a fortiori*, in the complex world of the global economy in the era of rapid technological change. Complexity economics, therefore, helps to explain the epistemic and technocratic struggles faced by political entrepreneurs. An understanding of these struggles explains the systematic failure of contemporary welfare states to provide sustainable welfare within a complex economy

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[15] "Political economy" is the preferable term for the scientific study of the interrelationship between economic, social, and political institutions. A contemporary near-synonym is "Philosophy, Politics, and Economics" (PPE). It is in this realm that the present thesis falls. However, in the following, "evolutionary economics" is sometimes used as convenient shorthand for "evolutionary political economy."

characterized by radical uncertainty and permanent mutability. In the words of Martha Nussbaum (2001), uncertainty and complexity lead to the "fragility of goodness."

2.2.2. Contemporary Schools of Evolutionary Economics

The idea that economies develop and change is a commonplace among economists. In the trivial sense, this can include nothing more than the recognition that people's attitudes, customs, and institutions develop and change over time. Most economists are "evolutionary" in this trivial sense. But this does not mean that they should be called evolutionary economists. To be an evolutionary theorist, one needs to have some theory about the *mechanism* and *laws* of social evolution. This theory is encapsulated in my concepts of complex adaptation and permissionless innovation. In later chapters, I will show that these concepts can also be modelled in terms of Darwinian natural selection and Lamarckian imitation, which opens up further avenues for research.

The diversity of the field is significant, but to simplify, I will focus on three important branches of evolutionary economics: The Santa Fe, Neo-Schumpeterian, and Neo-Austrian schools. They lay the foundation for thinking about economics and public policy from the point of view of evolutionary tendencies, especially in relation to complex adaptation and permissionless innovation.

1) The Santa Fe Institute approach provides interdisciplinary tools to model the emergence of spontaneous orders, novelty, shocks, disruptions, and the unpredictability of evolution. It also highlights the dangers of evolutionary lock-ins, stalemates, and path dependency.

2) The Neo-Schumpeterian approach introduces the key term "creative destruction," which provides a useful model of quasi-Darwinian competition, entrepreneurial experimentation, and bottom-up innovation. It also highlights the way in which the costs and benefits of unfettered capitalism are unpredictable, significant, and chaotically distributed.

3) The Neo-Hayekian (and Neo-Austrian) approach provides tools to model the role that markets play in solving the knowledge and incentive problems of complex adaptation and

the role that abstract and general rules ("the rule of law") play in securing the competitive order.

Together, these three mutually reinforcing approaches – the Santa Fe, Neo-Schumpeterian, and Neo-Hayekian – give us the integrative analytical tools to analyse the complex evolutionary challenges faced by welfare states in an era of rapid evolutionary development. These approaches highlight the institutional relevance of an "adaptively efficient" *ecosystem*, which prioritizes the system-level nurturing of *permissionless innovation* as a tool of *complex adaptation*:

1) *Complex Adaptation:* A) The emergent capacity of a complex system to coordinate the various actions of its heterogeneous and autonomous agents (ideally, but not always, towards mutually beneficial outcomes). B) The evolutionary process generated by the operation of this capacity over time.

2) *Permissionless Innovation*: The capacity of heterogenous and autonomous agents to act freely within a complex adaptive system to generate bottom-up experimental solutions to the evolutionary challenges of complex adaptation without having to appeal to the epistemic or discretionary standards of centralized decision-making bodies.

These two concepts are, I believe, *representative* of all the schools of evolutionary economics mentioned above, as well as some of their historical precedents, even if they only capture a small part of these rich and diverse traditions. The concept of "complex adaptation" is borrowed from the Santa Fe school *and* the neo-Hayekian school, both of whom use it, and I believe it also describes relatively well the Neo-Schumpeterian method of competitive, trial-and-error learning. The concept of "permissionless innovation" is borrowed from the Neo-Hayekian economists, Adam Thierer (2014) and Michael Munger (2018). My usage of the concept is only minimally related to theirs, but the basic idea is the same: *the default position should be "innovation allowed*." This means that nobody should have to beg for the right, or the permission, to try out new things. (Thierer, 2014, p. 6) Indeed: "Permissionless innovation is about the creativity of the human mind to run wild in its inherent curiosity and inventiveness. In a word, permissionless innovation is about

freedom." (Thierer, 2014, p. 3) My contribution is to "exapt" this concept from its original context to apply some of the core Insights of evolutionary political economy for my liberal UBI model.

2.2.3. Evolutionary Biology and Evolutionary Economics

It should be emphasized that "complex adaptation" is a process that is not unique to economics. Evolutionary theory is interdisciplinary because the laws of nature do not respect disciplinary boundaries. There are many parallels between evolutionary biology and evolutionary economics. They both deal with complex, adaptive systems that exhibit hard-to-model, emergent, evolutionary processes, as often emphasized by the advocates of the three schools themselves. It is therefore necessary to briefly explain the link between economics and evolutionary biology.

Many historical sociologists and economists have used striking biological analogies. Three noteworthy examples are Mandeville, Spencer, and Kropotkin: 1) Bernard Mandeville's "The Fable of the Bees," (1714) sought to explain complex adaptation in an industrial society with an analogy to a beehive. According to Hayek, "Dr. Mandeville" was a complexity theorist who "for the first time developed all the classical paradigmata of the spontaneous growth of orderly social structures: of law and morals, of language, the market, and of money." (Hayek, 1967a, p. 129) 2) Herbert Spencer's "synthetic philosophy" sought to provide a sociobiological account of economic evolution through the Lamarckian concept of "spontaneous adaptation" as the process of mankind's evolutionary perfectibilism. (Spencer, 1851, 1884, 1896) 3) Peter Kropotkin's *Mutual Aid* (1889) sought to model human cooperation across various levels of emergent interaction based on an explicit analogy to animal communities. Not coincidentally, all three were also interested in individual freedom as a political concept suitable for an understanding of human society as a complex adaptive system: Mandeville was probably a liberal, Spencer a libertarian, and Kropotkin an anarchist. They were all living exemplars of "evolutionary liberalism" (see Chapter 3 for more on this concept).

In contemporary evolutionary economic literature, biological metaphors are equally prominent. The "Santa Fe" approach – which I analyse later in this chapter – is committed to an interdisciplinary framework where biological and economic systems are modelled under the assumption that they both, despite their differences, consist of many heterogeneous agents interacting in complex ways to generate often surprising and non-linear higher-order functionings from the bottom-up. Likewise, the Neo-Schumpeterian school takes advantaged of many biological metaphors, from Schumpeter's concept of "industrial mutation" (1942, p. 82) to Nelson & Winter's (1982) analogy between business competition and natural selection. Hayek (1967b, 1982) was also fond of biological metaphors in the context of cultural evolution.

Darwin contributed greatly to the development of the analytical rigour and proper methodology of evolutionary thinking. Most importantly, of course, the formal model of "natural selection" (Darwin, 1859, 1871) replaced the prior fuzzier, misleading, or inaccurate notions of evolution with a new rigorous – and surprisingly simple – model based on the central triad of *variation*, *selection*, and *replication*. In relation to human society, the impact of Darwin's ideas was equally profound. The evolutionary origins of humanity, as hypothesized in *The Descent of Man* (1871), compounded by the influence of T.H. Huxley (1888), laid the foundations of "Sociobiology" (E.O. Wilson, 1975, 1998) which today has evolved into "evolutionary psychology." (Tooby, Cosmides, & Barrett, 2003; Haidt, 2012; Christakis, 2019) The contemporary science of evolutionary political economy would look very different without Darwin's influence. However, the influence went both ways. Darwin's theory was *influenced* by political economy in the first place: 1) The idea of the struggle for existence through the process of natural selection was inspired by economist Malthus's theory of the supposed "mathematical" limits of population growth. (Malthus, 1798) 2) The concept of "the survival of the fittest" was borrowed from Herbert Spencer, who was the leading evolutionary philosopher and sociologist of the 19th century. (Spencer, 1851) 3) In economic philosophy, Darwin was also influenced by the classical liberal political economy tradition of Adam Smith and the Whigs. (Weikart, 2009, pp. 25-27) So, the application of evolutionary thinking into political economy is *not* simply a matter of borrowing ideas from biology. The fields co-evolved together, and, in fact, biology owes many of its ideas to the economists. (Laurent & Nightingale, 2001, pp. 1-35.) The British tradition of educated

secular discourse cultivated a close link between the two fields. It is no accident that Darwin speaks of the struggle for existence between animals in terms of "the economy of nature." (Darwin, 1871, p. 212) Evolutionary biology is partially a *product* of political economy, as much as the other way around.

Finally, let me point out that the several bold and controversial attempts have been made to derive the very principle of *life* (Schrödinger, 1992; Kauffman, Logan, et al., 2008; England, 2013, 2015) as well as the emergence of the *mind* (Hayek, 1952; Lehto, 2009; Deacon, 2011) from the complex physical interaction of lower-level components. An evaluation of such theories – the origins of which can be traced back, arguably, all the way to Lucretius (2001) and Spinoza (2002) - falls outside the present study. However, such theories, if true, will undoubtedly impact political economy and philosophy down the line. Indeed, an understanding of the emergence of life and mind would make it easier to ingrate physics, biology, psychology, and the social sciences into a coherent meta-framework of complex adaptive systems and emergent naturalist processes.[16]

2.3. Neoclassical Theory and Evolutionary Theory

2.3.1.   Neoclassical Equilibrium Theory

From the late 19th century to the middle of the 20th century, the formal mathematization of equilibrium economics pushed complexity out of economics. At the heart of the neoclassical model is the model of the *Homo economicus*, which is a theory of idealized rational human behaviour based on utility maximization within an idealized model of a competitive marketplace. The influence of the *Homo economicus* model is ubiquitous. For example, it underlies not only the field of evolutionary game theory as mentioned earlier (Trivers, 1971,

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[16] However, even if our models get better, it remains possible that evolution has not endowed our minds with the capacity to track "truth" or "reality" in the ultimate sense. (Joyce, 2016; Hoffman, 2019) Also, improved knowledge can, at first, only change what Wilfred Sellars (1962) called the "scientific image" of man. As a result, the gulf – already big – between the "scientific image" and the "manifest image" will likely widen. This may cause popular democracies to ignore, vote against, and rebel against the scientific image – and therefore also against the policy recommendations of the social sciences that rely ("too much") on the latter.

et al.), but also those of contemporary welfare economics and game theory. (Pareto, 1892; Nash, 1950, 1951; Von Neumann & Morgenstern, 1953)

Neoclassical economic theory arose out of an interest in the statistical science of "orderly and analyzable average properties." (Weaver, 1948, p. 3) The Walrasian equilibrium models were based on a conscious application of 19th century scientific methods. In the words of Walras himself, "economic science (…) is a physico-mathematical science like mechanics or hydrodynamics." (Walras, 1896, p. 27) Walras developed an influential equilibrium model based on "an ideal market [where] ideal prices (…) will be in a rigorous relationship to ideal demand and supply." (Walras, 1896, p. 28) This was useful in the description of certain economic phenomena, but it also obscured some other aspects. Despite its ideal nature, or perhaps because of it, the combination of rational choice models and general equilibrium theory has proven fertile in mathematically modelling many complex aspects of the economy and insights of classical economics (Samuelson, 1947; Arrow, 1951, 1962; Arrow & Debreu, 1954; Debreu, 1959). These models have emphasized the static and timeless nature of the equilibria, which have been very useful in modelling microeconomic interactions, such as supply and demand curves, indifference curves, equilibrium market prices, capital markets, and production possibility frontiers. At the same time, due to the self-imposed limitations of their models, neoclassical economists have failed to model the many "disequilibrating" fluctuations, such as technological innovations, cultural megatrends, economic depressions, and various other endogenous shocks to the system: "When examined out of equilibrium, economic patterns sometimes simplify into a simple, homogeneous equilibrium of standard economics; but just as often they show perpetually novel and complex behavior"" (Arthur, 2006, p. i)

The neoclassical model of equilibrium economics was based on the best science of the 19th century, and it led to important discoveries in the realm of "ideal" economic theory. Today we understand the limits of those models, and we can apply complex systems thinking and evolutionary models, to the best of our limited ability, to model those aspects of social systems that exhibit evolutionary characteristics. Models based on a zealous or misleading misapplication of equilibrium mathematics can lead astray. And indeed, while economists and social scientists can and should develop new models of complexity (mathematical and computational), we should be wary of the limitations of *all* models, including the new formal

models of complexity. After all, "most realistic [complex adaptive] systems are much too difficult to handle mathematically." (Allen, 1988, p. 110) The best we can do is to improve our formal models to generate fruitful results while recognizing their limits.

Indeed, the choice of appropriate economic methodology is context dependent. The theoretical and empirical context determines the most appropriate analytical model, whether mathematical, statistical, computational, logical, philosophical, or some combination of the above. Pluralism – or "plurodoxy" (Colander, 2019, p. 1) – reigns when models are allowed to compete in the free marketplace of methodologies. The value of such a normative commitment to methodological pluralism in the search for truth has been recognized by some liberal philosophers of science. (Popper, 1972, 2002; Caldwell, 1988) Since we are concerned with evolutionary modelling, it should be remembered that *science itself is subject to complex adaptation*. It is surely no coincidence that the scientific enterprise itself can be modelled on the model of a "spontaneous order" or an "invisible hand" process as evidenced by Michael Polanyi's metaphor of the "Republic of Science [as] a Society of Explorers" (Polanyi, 1962, p. 19). Polanyi suggests that pluralism and competition are required because "no single scientist has a sound understanding of more than a tiny fraction of the total domain of science" because the real system level strength of science lies in its open-ended "network" of exploration (p. 6) which is the emergent result of "the spontaneous coordination of scientific efforts" (p. 8). At the same time, to control for errors and quacks, the dissemination of scientific results and the modification of established theories has to be filtered through certain "orthodox" disciplinary standards. (p. 8) As it happens, the key ideas about network learning, distributed competences, and experimental exploration are not unique to Polanyi but shared by contemporary complexity theory and its application in political economy and institutional design.[17] A consistent application of complexity theory will apply its insights, self-reflexively, to the realm of science itself, including in the choice of its own models, methodologies, and epistemic assumptions.

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[17] Polanyi's work also has interesting parallels to Bruno Latour's (2005) Actor-Network Theory in sociology. This is also a good place to highlight the special contribution of Jane Jacobs as a pioneer of the study of complexity theory and network sociology. Her work analysed both the economy on the whole (Jacobs, 2000) and also, famously, the *city* as the creative cornerstone, and the primary network hub, of the complex adaptive economy. (Jabobs, 1958, 1961) She showed that creative innovation is often an *urban* process.

Although evolutionary economics, including my subsequent analysis, does not find much use for equilibrium and rational choice models, their broader usefulness in the social sciences cannot be denied. Although some formal equilibrium models may indeed be "irrelevant" (Colander, 2018), their traditional domain of application is already quite extensive and will undoubtedly keep growing thanks largely to the diffusion of game theory and the work of brilliant rational choice theorists like Buchanan & Tullock (1962). They will undoubtedly continue to be useful tools of analysis in the social sciences. If the institutional safeguards of effective pluralism are sustained, and multiple models and methodologies can compete freely, the accusation of "economic imperialism" levelled at *Homo economicus* models (Mäki, 2020) ceases to be warranted. The Polanyian "republic of science" may cultivate a pluralistic "orthodoxy" that avoids the double pitfalls of single model imperialism (Becker, 1968) and "anything goes" relativism. (Feyerabend, 1993)

Lastly, I wish to emphasize that there is plenty of overlap between neoclassical and evolutionary economics. Some neoclassical thinkers have been interested in the same questions that evolutionary thinkers focus on, such as complexity, innovation, qualitative growth, socioeconomic evolution, economic and psychological behaviour that deviates from the Homo economicus model, etc. For example, Kenneth Arrow has been vital for both neoclassical economics and the birth of evolutionary economics (through his involvement with the Santa Fe Institute). Indeed, even the most orthodox neoclassical and game theoretical models can be used to map out aspects of socioeconomic complexity, since various socioeconomic phenomena often approximate, in some conditions, the assumptions of neoclassical economics and game theory.

2.3.2. Evolutionary Out-of-Equilibrium Theory

Evolutionary economics is only one of many branches of economics to have offered criticisms of the rational choice and equilibrium models of neoclassical theory.[18] Its unique contribution, however, lies in its understanding of complex adaptation as an essential

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[18] Many economists and social scientists, in various subdisciplines, have questioned the truthfulness of the *Homo economicus* model based on its unrealistic informational and behavioural assumptions (Tversky & Kahneman, 1974, 1981, 1986; Sen, 1977; Stiglitz & Grossman, 1980; Stiglitz, 1991).

feature of evolving economies that produces emergent "out of equilibrium" phenomena that limit the long-term ability of the economy to approximate equilibrium conditions as well as the ability of economic actors to approximate *Homo economicus* behaviour. In a pioneering 1898 article on economic evolution, which marks one of the beginnings of modern evolutionary economics, Thorstein Veblen criticized "the hedonistic conception of man" involved in the neoclassical ideal model as "a lightning calculator of pleasures and pains, who oscillates like a homogeneous globule of desire of happiness under the impulse of stimuli that shift him about the area but leave him intact (…)." (Veblen, 1898, p. 389) Veblen's metaphor highlights the equilibrating nature of the Walrasian process where the human being is seen as stimulus-responder with a fixed set of preferences and motivations.[19] The inadequacy of the standard equilibrium models has been pointed out by many economists, e.g. Veblen (1898), Alchian (1950), H.A. Simon (1945, 1955), Hayek (1982), Buchanan & Vanberg (2001, 2002), North (1993, 1994, 2005) and De Soto (2009). The Neo-Hayekian Mark Pennington (2010, p. 17) expresses this scepticism well: "Though it remains dominant in contemporary economics, the standard use of equilibrium theory does not meet the requirements for a robust political economy." Certain (evolutionary) economic phenomena include complex adaptation that cannot be reduced to 19th century "mechanics or hydrodynamics." (Walras, 1896, p. 27) The neoclassical equilibrium picture fails to account for the evolutionary emergence of "surprises" and disruptions – including *innovations*, whose function is precisely to create something new.

The framework of complex adaptation, by contrast, does not depend upon a theory of man as a rational, utility-maximizing *Homo economicus*. It is better captured by Herbert Simon's (1955) conception of "bounded rationality" and its offshoot, "ecological rationality" (V. Smith, 2003; Todd & Gigerenzer, 2012). The complex adaptive system view provides a model of economic agents as adaptive and experimental innovators groping in the dark, prone to both rational thinking and intuitive reasoning, guided by various "biases and heuristics." (Tversky & Kahneman, 1974, 1981, 1986) Complexity theory sees systems as characterized by permanent uncertainty and unpredictability. *Suboptimality,*

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[19] In another striking passage worth quoting, Veblen describes *Homo economicus* as "an isolated, definitive human datum, in stable equilibrium except for the buffets of the impinging forces that displace him in one direction or another. Self-poised in elemental space, he spins symmetrically about his own spiritual axis until the parallelogram of forces bears down on him, whereupon he follows the line of the resultant." (Veblen, 1898, pp. 389-90) There is no better criticism of the 19th century mechanistic conception of man.

miscalculations, malinvestments, and imperfections are, in fact, to be expected from a well-organized complex adaptive system. Thankfully, the agents within the system can be endowed with better or worse "adaptive efficiency," which grants them an improved capacity to survive and thrive across the complex transformations of an ever-mutating economy. In Hayek's (1952) pioneering theory of the mind, our very "sensory order" is the emergent result of our complex adaptive interactions.[20] Bottom-up experimentation – what I have called "permissionless innovation" or "innovation in disequilibrium" – allows for the emergence of novelty, or innovation, as a factor in economic evolution. As the Santa Fe Institute affiliated researchers Felin, Kauffman, Koppl, & Longo (2013, p. 17) point out, "[t]he emergence of new (…) opportunities is constant and continual. The phase space of the evolution of organisms and phenotypes (…) is never fixed. It is radically emergent." The birth of a new species in biology, or a new market in the economy, is the emergence of an order of organisation – a bang of radical novelty – that cannot be predicted. But conditions for its emergence can be cultivated through the creation of an evolutionary ecosystem that supports bottom-up experimentation. The complex adaptive system encourages agents to *react* to their environment, but also to *innovate* and to *change* their environment. As Veblen (1898) already put it in his influential paper on evolutionary economics: "The economic life history of the individual is *a cumulative process of adaptation* of means to ends that cumulatively change as the process goes on, both the agent and his environment being at any point the outcome of the past process." (Veblen 1898, p. 391, my italics) Individuals perform complex adaptation, via networks of communication, taking advantage of information flows and the social incentives present in their environment.

According to the view of evolutionary economics, the adaptation of an economic agent to their environment, in an evolving economy, takes place across two dimensions: 1) "Equilibrium" conditions of market coordination; 2) "Out-of-equilibrium" conditions of evolutionary innovation. This corresponds to two types of adaptation, which I shall respectively call "type 1" and "type 2." Understanding these concepts helps to understand the difference between traditional economic analysis and evolutionary economic analysis.

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[20] Oliva (2015) has documented how cybernetic theory influenced Hayek's theory of the mind as much as his theory of society. For further implications of Hayek's mental theory, see Butos & McQuade (2015).

2.3.3.   Two Kinds of Adaptation: Type 1 and Type 2

The neoclassical view on equilibrium ("optimizing" behaviour) and the evolutionary view on out-of-equilibrium innovation ("complex" behaviour) are quite different in character. Economics deals with two kinds of adaptation: "type 1" adaptation and "type 2" adaptation. "Type 1" adaptation is the kind of adaptation that neoclassical equilibrium models predict will take place under idealized market competition. "Type 2" adaptation, on the other hand, is the kind of adaptation that evolutionary economics predicts will take place under out-of-equilibrium, innovation, and emergent conditions. It states that market economies do not merely grant agents the capacity to *coordinate* their given preferences, endowments, and technology into the most efficient and socially beneficial uses. They also grant agents the capacity to *reshape* their preferences, endowments, and technology, with the help of complex adaptation and permissionless innovation. Take, for example, Buchanan & Vanberg's explanation:

> The idealized competitive market [i.e., the neoclassical equilibrium model] works so as to 'squeeze out' all of the value potential that is ultimately defined by the coexistence of preferences, endowments and technology. The imagined allocative exercise of the organized market order in this stationary setting is categorically separated from the operations of this order that may modify the structural parameters, those operations that may shift the preferences, endowments or technology of the economy. (Buchanan & Vanberg, 2002, p. 22)

The competitive market process performs **type 1 adaptation**: the squeezing out of "the value potential" that is exploitable within a given "coexistence of preferences, endowments and technology." The evolutionary process performs **type 2 adaptation**: the evolutionary emergence of innovations and novelty "that may shift the preferences, endowments or technology of the economy." The two types of adjustments together constitute *complex adaptation*, which sometimes breaks out of present equilibrium conditions.

Let me explore the similarities and differences between the two types of adaptation. Both are "invisible hand" processes, but of a different nature. Both are compatible, at least minimally, with Lionel Robbins's (1932, p. 15) famous description of economics as "the science which studies human behaviour as a relationship between ends and scarce means

which have alternative uses." However, the understanding of those "ends" and "means" (as either *given* or *dynamic*), as well as the nature of the "human behaviour" assumed (as either *utility maximizing* or *ecologically rational*), are quite different between the *type 1* and *type 2* models. The former has appeal because its assumptions and tools are simpler and arguably more elegant. Buchanan & Vanberg (2002, p. 22) emphasize that "there is no explanatory paradigm for this second level of operation [i.e., the process of "Type 2" adaptation] that is even remotely comparable in scientific acceptability or aesthetic beauty to the idealized market's maximization of economic value." Part of the reason for the lack of such an explanatory paradigm lies in the difference between equilibrium dynamics and non-equilibrium dynamics. It is much harder to model, predict and control systems that operate, *as a norm*, "far from equilibrium." This imposes an inherent limit to any aspiration for explanatory parity, either in terms of "scientific acceptability" or "aesthetic beauty." This does not mean, however, that social sciences cannot make advances *towards* the formal modelling of complex adaptive systems that exhibit out-of-equilibrium processes. Important work in systems theory has been done by von Bertalanffy (1968), Mandelbrot & Hudson (2004), Holland (1992), and Arthur (2006). Other notable models include Prigogine's models of "far-from-equilibrium" systems (Prigogine, 1978, 2005; Prigogine & Stengers, 1984) and Taleb's work on "Black Swans" and complex "anti-fragile" systems. (Taleb, 2007, 2012)

Both type 1 adaptation and type 2 adaptation can be used to justify various market and government reforms, but the policy recommendations can diverge based on which kind of adaptation we focus on. I will go through the ways in which the policy recommendations diverge in subsequent chapters. For now, let me just state that focusing on type 1 adaptation at the expense of type 2 adaptation can give a false picture of the evolving policy needs of a given society. To understand the evolving economy, it has thus been important, here, to look at the differences between neoclassical models of equilibrium economics and the complex adaptive systems models of out-of-equilibrium economics.

Much before the contemporary interest in complex systems, many classical economists have been interested in complex adaptation and permissionless innovation. Some of the key thinkers, like Smith (1776) and Marshall (1890), imbued economics not only with non-evolutionary and equilibrium models, but also with evolutionary and out-of-equilibrium models. Before moving on to contemporary theories of evolutionary economics, therefore,

let me take a brief illustrative excursion into the history of complex adaptive ideas in political economy. To that end, I will explore the presence of evolutionary ideas in the thought of some key thinkers in political economy, including Adam Smith, Alfred Marshall, and John Stuart Mill. This is not meant as a comprehensive history. It is only meant to illustrate the deep and surprising history of evolutionary ideas already in classical economics. This will show the ways in which contemporary evolutionary economics continues the legacy of classical thinkers like Smith and Marshall, while simultaneously making its own contributions to the discipline.

2.4. Evolutionary Theory in the History of Political Economy

2.4.1.　Adam Smith and the Invisible Hand

Smith provides us with an interesting case study of "type 1" vs. "type 2" adaptation. In his work, we find the tension between equilibrium and evolutionary models. *The Wealth of Nations* (1776) was an important precursor to the more formal models of Walrasian and Samuelsonian equilibrium economics.[21] At the same time, Smith's key concepts of "the division of labour" and "the invisible hand" have an important evolutionary dimension to them. First, the "division of labour" represents the diversification of a complex economy that produces the possibility of "mutual and reciprocal" gains between free individuals: "The division of labour is (…) advantageous to all the different persons employed in the various occupations." (Smith, 1776, p. 295) Second, the production of value in the economy comes about through "the invisible hand." (Smith, 1776, p. 349) This is somewhat similar to Darwin's idea of natural selection. The "invisible hand" model is one of the first systematic attempts to model the complex adaptation of individual agents. It has been the origin of neoclassical equilibrium models, but as Kenneth Boulding (1991, p. 12) argues, Smith was not only the father of equilibrium economics, but also of evolutionary economics: "This

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[21] As Herbert Gintis recounts the history of ideas, Adam Smith's market-oriented "vision was given explicit analytical formulation by Leon Walras in 1874, and a rigorous proof of existence of equilibrium for a simplified version of the Walrasian economy was provided by Wald (1951 [1936]). Soon after, Debreu (1952), Arrow and Debreu (1954), Arrow and Hahn (1971) and others provided a fairly complete analysis of the existence of equilibrium in decentralized market economies." (Gintis, 2011, p. 9)

equilibrium theory of market and normal price goes back to Adam Smith's *Wealth of Nations* (…) [, but he] saw very clearly that all these equilibria were temporary, constantly undergoing change in what may be described as an evolutionary direction." Complex adaptive system theory "allows us to look inside the black box of the metaphor of the invisible hand and to understand the underlying interactive processes that govern the behavior of decentralized economies." (Kochugovindan & Vriend, 1998, p. 64)

Thus, Smith's account of the progressive market economy dealt with two levels of equilibria: 1) the *static* equilibrium of market adaptation under the short-run market nexus, and 2) the *evolutionary* equilibrium (or "out-of-equilibrium equilibrium") of market innovation in the long run. Smith has been influential in the subsequent development of both equilibrium *and* evolutionary models. Neoclassical economists generally followed Walras in interpreting the "invisible hand" as a "type 1" process that can be formally modelled as a competitive equilibrium. For them, Smith's theory provides a complex "vision of a decentralized economy that leads to an efficient allocation of resources through the 'invisible hand' of market competition." (Gintis, 2011, p. 9) But real-life markets, as Smith already saw, exhibit complex adaptive processes – such as technological, cultural, and business innovations – that deviate from, and reshape, short-run market equilibria.

The efficient allocation of the Smithian marketplace consists of *both* equilibrating optimization *and* out-of-equilibrium innovation, i.e., both *type 1* and *type 2* processes of adaptation. As Randall Holcombe suggests, "the two concepts are consistent with each other, and even jointly necessary to have a complete understanding of the way an economy works [… but] there is an inherent tension between them." (Holcombe, 1999, p. 227). The invisible hand *can* (at times) lead to an equilibrium, but it can also (at times) lead *away from* it; equilibrium conditions are the emergent property of a certain (unstable) subset of invisible hand processes: "In an equilibrium setting, the invisible hand might be thought of as those forces that keep people from straying from equilibrium, but (…) this meaning is much too restrictive (….)." In fact, Holcombe argues, "efficiency-enhancing actions" produced by the invisible hand in the marketplace can be divided into two quite different categories: "In one category are the maximizing actions that are a part of neoclassical economics. The other category consists of entrepreneurial actions." (Holcombe, 1999, p. 232) However, instead of entrepreneurial actions, it would be more accurate to talk about

"*complex adaptive* actions," which encompasses both *entrepreneurial* actions (narrowly conceived) and *other* types of *evolutionary innovations*.[22]

Smith was also aware of *cultural* evolution. He agreed with Hume, his friend and mentor, that "[p]references, morals, and institutions can be studied as endogenous" to cultural evolution, and that cultural and economic evolution are deeply interlinked, so that "different norms of moral conduct and different preferences evolve from differences in the level of wealth in the environment." (Paganelli, 2018, pp. 26-27) Economic progress is therefore intimately connected with social, cultural, and moral progress, understood as "ecological adaptation." (ibid., p. 25) On the surface, this suggests a point similar to Marx's famous argument that the economic base determines the social superstructure, but it is better understood as an integral form of cultural adaptationism where the material and non-material components of the social nexus "co-evolve."

2.4.2. Alfred Marshall on "Increasing Returns" and the "Tendency to Variation"

Alfred Marshall is one of the founders of the neoclassical equilibrium theory. He synthesized and improved upon the insights of Adam Smith and Leon Walras by mathematizing many of the underlying principles of marginalist economics. However, several scholars (Georgescu-Roegen, 1971; Hart, 2013; Raffaelli, 2003) have argued that Marshall also tended to view economics through an evolutionary lens. Let me highlight three ways in which Marshall was an evolutionary thinker. Firstly, similar to Adam Smith (1776), and anticipating the work of Allyn Young (1928) and Paul Roemer (1986), Marshall recognized that "*increasing returns* is an essentially evolutionary phenomenon." (Georgescu-Roegen, 1971, p. 321, my italics) Secondly, Marshall's view of the price mechanism went beyond static Paretian equilibration since he emphasized that the market process should be "valued not only for its attributes in allocating resources but for its attributes in inducing *changes in the knowledge and*

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[22] The category of "entrepreneurial actions," which owes its origin to the neo-Austrian work of Israel Kirzner (1973, 1997), is too restrictive and misleading a term to describe all the "invisible hand" processes. Complex (type 2) adaptation should also include, aside from entrepreneurial actions, various kinds of random mutations and accidental discoveries, such as technological and scientific advances, changing cultural habits, irrational "animal spirits," acting on blind biases, communitarian experiments in living, system shocks, etc.

organisation on which the allocation of resources depends." (Hart, 2013, p. ix, my italics) These latter types of changes fall under "out-of-equilibrium" or "complex" adaptation. Thirdly, Marshall believed that "the tendency to variation [in business practices] is a chief source of progress," (Marshall, 1890, p. 207), which view anticipated Schumpeter's (1934, 1942, 1947) and Nelson & Winter's (1982) theories on the importance of entrepreneurial innovation. It also brings his theory close to the Darwinian triad of variation, selection, and diffusion. Overall, Marshall's model of economic action was half-equilibrating and half-evolutionary, which is only appropriate to a *fin-de-siècle* political economist:

> At the beginning of his undertaking, and at every successive stage, the alert business man *strives so to modify his arrangements* as to obtain better results with a given expenditure, or equal results with a less expenditure. In other words, he ceaselessly applies the principle of substitution, with the purpose of increasing his profits; and, in so doing, he seldom fails to increase the total efficiency of work, the total power over nature which man derives from organization and knowledge. (…) The tendency to variation is a chief cause of progress; and the abler are the undertakers in any trade the greater will this tendency be." (Marshall 1890, p. 207, my italics)

Marshallian economic adaptation therefore emerges out of the fitness constraints of a given ecological landscape as a result of self-interested strategizing on the part of self-interested "profit-maximizers." The process of marginal "substitution" is always moving towards, but never fully reaching, a market-clearing equilibrium. Shifts in production and management techniques are tailored to local circumstances according to the profit and loss mechanism which rewards (incentivizes) fit strategies and punishes (disincentivizes) unfit strategies. However, although Marshall incorporated elements of out-of-equilibrium and evolutionary thinking into his thinking, just like Adam Smith, his basic model remains grounded in the process of equilibration. Later varieties of evolutionary economics, such as the Schumpeterian and the Hayekian varieties, would accept something similar to the marginalist "principle of substitution" as an important factor in the actions of the "alert businessman"; but they would also argue that the creativity of the marketplace goes beyond the assumptions of Marshallian equilibration. At any rate, Marshall's insight that "tendency to variation is a chief cause of progress" is remarkably prescient of the evolutionary insight that innovation and problem solving in the marketplace depend upon the presence of what

is called "requisite diversity." (Hong & Page, 2004; Page, 2007, 2011) This is related to Auberon Herbert's (2013, p. 294) idea that "progress is the child of difference" and, of course, to Darwin's (1859) idea that the tendency to variation provides the fodder for evolution.

2.4.3.   John Stuart Mill on Liberty, Diversity, and Eccentricity

One of the most important insights of evolutionary political economy is that evolution is not limited to economic processes, *sensu stricto*. Indeed, some of the most important – and potentially welfare-enhancing – aspects of social evolution take place in the cultural, artistic, and moral domains. Such domains involve the production, consumption, and diffusion of immaterial aspects of human life and their necessary entanglement with the material side of the economy in the process of complex adaptation. Just like outdated and unfit technologies or business practices can doom or sicken an economy, so outdated and unfit cultural practices or moral values can doom or sicken the whole social order. The only cure for such a stagnant social order, characterized by a lack of innovation and a monocultural domination by outdated cultural habits, values, and practices, is to encourage healthy competition. Hence, evolutionary thinkers, especially in the tradition of liberalism, have sought to conceptualize the normative role that competitive innovation in cultural habits, values, and practices plays in the construction of a good society.

John Stuart Mill was not an especially evolutionary thinker in his *Principles of Economics* (1848), but in his famed treatise *On Liberty* (1859) he provided an influential evolutionary defence of *cultural*, *moral*, *and intellectual permissionless innovation*. His defence of individualism, eccentricity, and free speech rested on the alleged evolutionary benefits of *the free production, consumption, and diffusion of cultural, habitual, and spiritual diversity* as a force for social progress. Similar to Wilhelm von Humboldt's *Limits of State Action* (1852), which heavily influenced Mill's *On Liberty* (1859) emphasized the importance of *experimentation* and *diversification* in a liberal society, especially in the realm of ideas, but also in the realm of markets and technologies. Mill provided the eminently useful metaphor of "experiments in living" which entails a multitude of individuals pursuing "a great variety

of paths, each leading to something valuable." (Mill, 1859, pp. 136-144) This is an archetypical liberal justification of cultural permissionless innovation.

Mill's view of the "marketplace of ideas" as a dynamo for the production of variation, diversification, and competition can be seen to anticipate the evolutionary economic emphasis on those things as the much-needed raw material for social evolution. Richard A. Posner, however, in his afterword to On Liberty (Mill, 1859, pp. 199-200) has denied that there is any link between "Darwinian" selection and Mill's model of cultural selection: "[t]here is no sense that experiments in living produce adaptation to the social environment in the way that natural selection produces adaptation to the natural environment." However, Posner is mistaken. For example, when arguing for the importance of free speech elsewhere in the book, Mill explicitly argues that there are society-wide benefits for the production and consumption of diverse opinions and lifestyles. He saw "collision with error" as a selection mechanism towards a "livelier impression of truth" in an evolutionary manner:

> The peculiar evil of silencing the expression of an opinion is, that it is robbing the human race; (…) If the opinion is right, they are deprived of the opportunity of *exchanging error for truth*: if wrong, they lose, what is almost as great a benefit, the clearer perception and livelier impression of truth, produced by its *collision with error*. (Mill, 1859, p. 87, my italics)

Although Mill's model of cultural learning is not strictly Darwinian, it gets quite close. The silencing of expression – the suppression of free speech – entails, for Mill, a *reduction in social diversity*, which lowers the amount of *competition* in the society, which affects the capacity of the social order to exhibit *social intelligence*. This is what he means when he says that it "robs the human race" of truth-tracking opportunities. The production of a diversity of opinions (including untrue and crazy ones) constitutes the necessary "raw material" for the social production of truth. As raw, unfiltered opinions, ideas, and truth-claims are allowed to freely collide with each other in the cultural and moral domain, *the chisel of competitive forces* – according to the theory – tends towards the emergence of truth. In this sense, there is an evolutionary climb up the peaks of the (local) adaptive landscape, to the extent that "truth-tracking" can be modelled in terms of epistemic "fitness."

Beyond speech, and in equally quasi-Darwinian ways, Mill believed that society benefits from "eccentric" experiments in living: "exceptional individuals, instead of being deterred, should be encouraged in acting differently from the mass" to deter the negative effects of conformism and "the tyranny of opinion." (Mill, 1859, p. 131) This argument acts as a warning towards the stultifying effects of the lack of healthy diversification and experimentation in social norms: "That so few now dare to be eccentric, marks the chief danger of the time" because conformity, according to Mill, saps society of much of its "genius, mental vigour, and moral courage." (ibid.) Without the provision of institutionally guaranteed free play for eccentric, open-ended experimentation, there is no mechanism in place to *discover* and *select* superior opinions, habits, or ways of life.

For Mill, then, there is great social value in the free competition of ideas and in the free experimentation in lifestyles. And these two are interlinked. Mill's theory emphasizes that complex adaptation takes place in the world of ideas much as in the world of material things. The production of a wide diversity of ideas and lifestyles, when placed in a suitable arena where cultural learning can take place, produces a kind of "social selection" of ideas and lifestyles. Complex adaptation requires free market in the production of competing ideas, norms and lifestyles, as much as free market in the production of goods and services. The freedom to engage in experiments in living, both economically and culturally, allows us to learn from the diverse knowledge, opinions, and tastes of others. In Adam Tebble's words, Mill was concerned "that we enjoy the liberty not just to express but to *act* upon our knowledge." (Tebble, 2017, p. 242) The relationship between Mill's views on cultural innovation and his views on economics are complicated and changed over time, but he saw economic freedom as, at least, *one* important pillar of total societal freedom.

Mill's contribution is to highlight the value of the cultural production of diverse ideas, social norms, and lifestyles as much as the production of diverse goods and services. The resulting system encourages permissionless innovation in both the *production* and the *consumption* of cultural units of selection. Ideas and habits, just like business strategies and types of cheese, should be submitted to quasi-Darwinian selection pressures in order to bring out the best of human beings.

2.5. Contemporary Schools of Evolutionary Economics

Let me now turn to contemporary schools of evolutionary economics. There are several approaches and methodologies within the field. I will focus on three important schools of evolutionary economics – the Santa Fe Institute, the Neo-Schumpeterians, and the Neo-Hayekians – that *complement* each other, and arguably *need* each other, for an accurate picture of economic evolution. Together these various schools, with their slightly divergent methodologies, can help to explain ways in which "economies are composed of large numbers of distributed, decentralized, interacting processes of production, exchange, communication and coordination, which evolve over time and are themselves created and operated by purposive, boundedly rational individuals." (Axtell, 2016, p. 41) Their shared insights help me model the framework of permissionless innovation.

2.5.1.   The Santa Fe Institute School

2.5.1.1.   General Systems Theory: 1940s-1970s

The contemporary study of complex adaptive systems is exemplified by the interdisciplinary work of the Santa Fe Institute. (Arthur, 1994, 2006, 2014, 2015; Arthur, Durlauf, & Lane (Eds.), 1997; Holland, 1992, 1995; Kauffman, 1990, 1991, 1993, 2016, 2019) The central insight of the Santa Fe Institute school is that out-of-equilibrium, evolutionary processes are ubiquitous in nature and society. These ideas were influenced by General Systems Theory, which originated in the middle of the 20th century. (Weaver, 1948; Boulding, 1956; Von Bertalanffy, 1968; R.B. Fuller & Applewhite, 1975) General Systems Theory was an attempt to create a new interdisciplinary framework of science that was inspired by parallel developments in different disciplines, including cybernetics, decision theory, game theory, evolutionary biology, systems engineering, information science, etc. (Von Bertalanffy, 1968, p. 183) In particular, *cybernetics* attempted to solve the problem of control over complexity trough the development of a new sciences of system engineering and management. (Wiener, 1948; Beer, 1959, 1995; Bateson, 1987) Interestingly, cybernetics has been used by

some as a "scientific" justification for socialist central planning, as in the Chilean *Project Cybersyn* (1971-1973). (Beer, 1995; Medina, 2006; Espejo, 2014) Indeed, some critics have condemned cybernetics as an irredeemably dangerous pursuit of social *power* and *control*: "Perhaps disorganization, noise, and uncontrollability are not the greatest disasters to befall us. Perhaps our calamities are built largely from our efforts at superorganization, silence, and control." (Galison, 1994, p. 266) However, I reject the charge that cybernetics is irredeemably dangerous or hubristic. Instead, to reiterate, a liberal interpretation of cybernetic governance is possible which jettisons central planning in favour of decentralized, "polycentric" competition under ecostructural governance. (Polanyi, 2002; Hayek, 2002; Boykin, 2010; Colander & Kupers, 2014; Bowles, Kirman, & Sethi, 2017)

The original General Systems Theory attempted to mode *all* kinds of systems, including "simple," "homeostatic," and "equilibrating" systems, but also "explosive," "dynamic," "cybernetic," and "open" systems. (Boulding, 1956, pp. 202-203) The latter would today be called *complex adaptive systems*. (Arthur, 2016) In his classic paper "Science and Complexity" (1948), Warren Weaver argued that science "must learn to deal with (…) problems of organized complexity." (Weaver, 1948, p. 6) He argued that natural science from the 17th to the 19th century was mostly concerned between "problems of simplicity," such as the movement of a billiard ball, where the scientist "can rigidly maintain constant all but two variables." (*ibid*., p. 2) Next, scientists developed models of "disorganized complexity," such as the statistical laws of thermodynamics or the probabilistic laws of population science, where "the number of variables is very large (…) but in spite of this helter-skelter, or unknown, behavior of all the individual variables, the system as a whole possesses certain orderly and analyzable average properties." (*ibid*., p. 3) Such complexity is characterized by emergent statistical regularity. The analytical models of "simplicity" and "disorganized complexity" are useful for a wide variety of scientific problems. (Indeed, they underline the equilibrium models and statistical methods in neoclassical economics, which are good at explaining such things as price formation and market clearing.) But Weaver argued that there is also a third level of complexity, one that cannot be reliably analysed using the laws of statistical mechanics. This is the level of "*organized*" complexity. (*ibid*., p. 5) On this level one finds what today what would be called complex adaptive systems, which are describable as "organic wholes, with their parts in close interrelation." (*ibid*., p. 5) Their

aggregate level behaviour, unlike in phenomena describable through statistical methods, does that reliably stabilize into Walrasian equilibrium conditions. The study of complex systems brings in some humility into scientific modelling by "[d]eflating excessive philosophical claims for overly simple system" (Boulding, 1956, p. 208).

2.5.1.2. The Santa Fe Institute: 1984 onwards

The Santa Fe Institute in New Mexico was founded in 1984 by a group of interdisciplinary scientists, including the theoretical physicist Murray Gell-Mann and the physical chemist George Cowan. Since its inception, it has engaged in the study of "complex adaptive systems" (CAS) in all areas of science. (German, n.d.) As John H. Holland explains, complex adaptive systems "change and reorganize their component parts to adapt themselves to the problems posed by their surroundings. This is the main reason the systems are difficult to understand and control." (Holland, 1992, p. 18). What does this mean? Let me start by defining (and reiterating) some central terms in this literature:

a) *Adaptable component parts*: The CAS is self-organizing in the sense that its component parts are independent of each other and free to modify their behaviour (i.e. adapt) according to environmental pressures.

b) *Environmental pressure*s: The self-organizing behaviour of the system is constrained by environmental pressures which act as stressors, incentives and selectors on the behaviour of the component parts.

c) *Adaptive efficiency:* Adaptive efficiency is the capacity of the system, or its component parts, to respond to new challenges in a rapid, creative, and cost-effective manner.

d) *Epistemic Constraints*: The complexity of the system imposes limitations on what can be known about its present and future states. This is what Holland means when he says that complex adaptive systems are "difficult to understand." (Holland, 1992, p. 18) Knowledge is dispersed across the whole system.

e) *Technocratic Constraint*s: Technocratic constraints are the result of epistemic constraints applied to governance. This is what Holland means when he says that complex adaptive systems are "difficult (…) to control." (Holland, 1992 p. 18) Control, too, has to be dispersed across the whole system.

The Santa Fe approach hopes that a rigorous analysis of economic complexity would allow a better modelling, or at least rough understanding, of many otherwise inscrutable phenomena across the natural and social sciences. The other schools of evolutionary political economy share some similarities with the Santa Fe approach, but their approaches supplement it by providing more detailed models of how markets and entrepreneurs innovate (with or without permission) in disequilibrium conditions. Let me start by discussing the Neo-Schumpeterians, before turning to the Neo-Hayekians.

2.5.2. Schumpeter and the Neo-Schumpeterians

2.5.2.1. Joseph Schumpeter: The Gales of Creative Destruction

Joseph Schumpeter is one of the "founding fathers" of contemporary evolutionary economics. Much of the contemporary work in evolutionary economics, especially that of Nelson & Winter (1982, 2002), is heavily indebted to Schumpeter. Kenneth E. Boulding, the evolutionary economist and one of the founders of General Systems Theory, was Schumpeter's student. (Boulding, 1959, 1991) Schumpeter's influence also extends much beyond the subdiscipline of evolutionary economics, proper, into the broader recent literature on growth theory, innovation theory, and theory of the firm. (Fagerberg, 2003) Schumpeter's work on "creative destruction" highlights three key insights of evolutionary economics: the institutional importance of *complex adaptation*, the Darwinian process of *variation and selection*, and the policy method of *permissionless innovation*.

Schumpeter (1942, p. 82) introduced the concept of "creative destruction" to account for the capacity of a market economy to evolve: "The essential point to grasp is that in dealing with capitalism we are dealing with an evolutionary process." With a striking biological analogy, Schumpeter spoke of "industrial mutation" as a synonym for creative destruction.

The marketplace selects for winners and losers within the constraints of the rules of the game. The market process produces diverse industrial mutations ("variation") and weeds out unsuccessful mutations while selecting for successful ones ("selection"). This is why capitalism can produce evolutionary shifts in industrial organization. Entrepreneurial actions, social innovations, and scientific discoveries operate as the producers of evolutionary varieties. The driver of innovation is the "heroic" entrepreneur who performs permissionless innovation, not merely in terms of price competition, but in terms of qualitative leaps (innovations) in business practices and technology. The fittest of them are then selected for by the discipline of the market. The selective process of the marketplace mimics the process of natural selection operational in Darwinian nature. The differential survival of "fit" solutions (e.g., the automobile as a mode of transportation) is premeditated on the differential destruction of "unfit" solutions (e.g., the horse as a mode of transportation).

Schumpeter's work also highlights the criticism of equilibrium models that is common to all the major schools of evolutionary economics. He wanted to distinguish between equilibrium innovation and out-of-equilibrium innovation. In his *Theory of Economic Development* (1934), Schumpeter set out to produce an endogenous theory of innovation and growth in a market society. He saw that economic change "does not merely rely on external factors propelling the economic system from one equilibrium to another," but there is "a source of energy within the economic system which would of itself disrupt any equilibrium that might be attained." (Schumpeter, 1934, p. 19) In his article "The Creative Response in Economic History," Schumpeter (1947) distinguishes between two kinds of adaptive responses that relate to the equilibrium/disequilibrium distinction: "Whenever an economy or a sector of an economy adapts itself to a change in its data in the way that traditional theory describes (...), we may speak of the development as *adaptive response*. And whenever the economy or an industry or some firms in an industry do something else, something that is outside of the range of existing practice, we may speak of *creative response*." (Schumpeter, 1947, p. 150, my italics; Antonelli, 2016) In order to develop a fully coherent picture of the role that markets play in generating innovations and transformations, it is vital to distinguish between the type of adaptation that is suitable to equilibrium conditions and the type of response that is suitable to out-of-equilibrium conditions. Schumpeter's "adaptive

response" corresponds to efficiency within equilibrium conditions (my "type 1" adaptation), and "creative response" corresponds to efficiency within out-of-equilibrium conditions (my "type 2" adaptation). Although Schumpeter's distinguish between "adaptive" and "creative" responses is useful, I opt to use the same concept *adaptation* for both types of responses. The crucial difference between the two types is that between *reactive, equilibrium adjustments*, on the one hand, and *creative, out-of-equilibrium adjustments*, on the other hand. The marketplace can and must encompass both Type-1 and Type-2 processes.

2.5.2.2.   Nelson & Winter and the Neo-Schumpeterians

Since Schumpeter's work has been so influential, it is sometimes hard to isolate "Schumpeterians" as a separate category from the broader field of evolutionary economics. This is also true, to a lesser extent, with the Santa Fe and the Austrian schools. This reflects not just Schumpeter's influence but also the healthy amount of crosspollination that exists between the schools. In the next chapter, I will provide a more comprehensive account of the *institutional design implications* of the Neo-Schumpeterian school (and of the Neo-Hayekian school), so let me here focus on the theoretical underpinnings of their work.

The Neo-Schumpeterians (Metcalfe, 1994, 2001; Foster & Metcalfe, 2001; Foster 2005, 2006; Metcalfe, Foster, & Ramlogan, 2006; Hanusch & Pyka, 2007; Magnusson, 2009 [Ed.]) have developed Schumpeter's ideas about innovation further. The most important Neo-Schumpeterian theorists are Nelson & Winter (1982, 2002). They start from the quasi-Darwinian starting point that business selection is analogous to the principle of natural selection, according to which "fitness" in the business landscape signifies the ability of businesses to survive the competition. As Nelson & Winter (1982, p. 4) put it, "the economic analogue of natural selection operates as the market determines which firms are profitable and which are unprofitable, and tends to winnow out the latter." The unit of selection in the business is the *routine* subject to Darwinian descent with modification. Businesses have to take the scarcity of resources (including of knowledge) into account in order to survive, and this gives rise to an environmentally necessitated selection of routines. The selection of fit "routines" goes much beyond the determination of successful and unsuccessful businesses:

all agents, from consumers to producers, are constrained, incentivized, and thereby guided by the various price signals and other incentives. Agents are led to take advantage of the market opportunities available to them and the end result is the differential survival of routines, continuously modified across generations.

The decentralized discipline of evolving market institutions, in rough analogy to the Darwinian process of natural selection, shapes the ecological "fitness landscape" through the experimental production and non-random selection of varieties (businesses, products, energy sources, cultural innovations, consumer products, etc.). This allows people to exercise their bounded (ecological) rationality, as adaptive information processing systems, to pursue their diverse goals and projects with a higher ability of success. As Armen Alchian (1950, p. 211), put it, agents in the economy exhibit "[a]daptive, imitative and trial-and-error behavior." They are ecological agents subject to "ecological rationality." (V. Smith, 2003; Todd & Gigerenzer, 2012) Metcalfe, Foster, & Ramlogan (2006) have introduced the notion of "adaptive growth" to describe the capacity of innovative and out-of-equilibrium market societies to produce evolutionary welfare gains: "economic agents are not passive recipients of messages emanating from the environment, [but] imaginative and creative interpreters of messages flowing from an environment which itself is a product of human design. This creativity is deeply intertwined with the processes of investment and innovation." Such "adaptive or restless capitalism" produces growth processes which are "incompatible with *any* competitive equilibrium." (Metcalfe, Foster, & Ramlogan, 2006, p. 29) Market processes, and human beings, need to be understood more creatively, not (merely) as responders to given signals but as producers of *new* signals and strategies, which give rise to ever *further* signals, etc…

In its emphasis on the production of *market variety* (entrepreneurial innovations) and *market selection* (the profit-and-loss mechanism that determines "fitness"), the Neo-Schumpeterian school provides an important model for how permissionless innovation operates. Its unique contribution is the understanding of the "creative destructive" process of capitalism as a chaotic process that 1) strives on permanent uncertainty and 2) leads to an unpredictable distribution of winners and losers. Both of these aspects of the market process will be relevant when I turn to the welfare state governance debate. Let me now

turn to the Neo-Hayekian school, which shares some interesting similarities with the Neo-Schumpeterian school[23] and the Santa Fe school.

2.5.3. The Neo-Hayekian School: Price Signals, Market Competition, and Entrepreneurial Discovery

As in the case of the Neo-Schumpeterians, I shall provide a more comprehensive account of the *institutional design implications* of the Neo-Hayekian school in the next chapter, so let me here focus on the theoretical, economic underpinnings of their work.

Friedrich Hayek belonged to, and was influenced by, the Austrian school of economics. (Menger, 1871, 1883, 1892; Böhm-Bawerk, 1930; Mises, 1949) In addition, Hayek's views on complex adaptation and social evolution were influenced by, e.g., Adam Smith (1776), Adam Ferguson (2001), Bernard Mandeville (1714), Michael Polanyi (1962) and Karl Popper (1966).[24] All of them suggested that social sciences should be concerned with evolutionary adaptation and "the spontaneous growth of orderly social structures." (Hayek, 1967a, p. 129) Hayek's work has been interpreted, by himself and others, to be in the tradition of complexity theory. (Hayek, 1967b, 1982; Lewis, 2012) The contemporary Hayekian political theorist John Tomasi (2012, p. 10) aptly summarizes the Neo-Hayekian position: "Social order – the character and orientation of human commitments, expectations and desires – is constantly recreating itself from within. Patterns of distribution within the social world are not a reflection of anyone's intention or design, but emerge as the unplanned and ever-changing product of choices individuals make in pursuit of their goals and ends." These individual goals are not immutably fixed either, since "from the perspective of Hayekian cognitive theory, rationality is reframed as a process in which the individual maintains an ongoing capacity to learn and adapt." (Butos & McQuade, 2015, p. 620) The emergent social order of the Hayekian market economy is thus characterized by emergent permissionless innovation, constituted by the interaction of millions of adaptive agents, which reflects the ever-changing and free "choices individuals make in pursuit of their goals and ends."

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[23] Schumpeter himself started out in the Austrian school and retained some of its influences.
[24] See O'Hear (2006) for the link between Hayek and Popper.

(Tomasi, 2012, p. 10) The process is not constitutive of an equilibrium, at least a stable and static one, but an out-of-equilibrium process that is constantly breaking out of the "given" facts of the economy. As the Neo-Hayekian Israel Kirzner put it, "Every individual act constitutes, necessarily, an act of discovery. In acting, the individual is not simply (as in neoclassical theory) spelling out the implications of the preference rankings given at the outset; he is, at the moment of action, already establishing those preference rankings (with all their implications), in the face of the radical uncertainty he confronts." (Kirzner, 1997, p. 33)[25] This process makes sure, as far as is humanly possible (taking into account our limited knowledge and limited benevolence), that natural and human resources are allocated (without a central planner) towards subjectively valued ends. But at the same time, the process encourages experimentation and the production of variety, subject to the constraints of the market system. This leads to an ecosystem of *permissionless innovation* in business practices, lifestyles, and other emergent solutions. As Mark Pennington (2010, p. 42) writes: "In a complex environment, where the limits of human cognition are tightly drawn, processes that facilitate variation and competitive selection are held to increase the chance of discovering better solutions to human problems relative to institutions that reduce the scope for producer and consumer 'exit.'" To sum up, according to the Austrian perspective, the marketplace provides the framework of discovery and complex adaptation. The "discipline" of the market, as a partially *equilibrating* but also partially *disequilibrating* process of complex adaptation, performs the mutual disciplining of everybody by everybody: "We are accustomed to calling the order brought about by competition an equilibrium – a none-too-felicitous expression, since a true equilibrium presupposes that the relevant facts have already been discovered and that the process of competition has thus come to an end." (Hayek, 2002, p. 15)

Like the General Systems Theory framework, the Austrian school concerns itself with the communicative, semiotic, and information-processing aspects of economic behaviour. (Bowles, Kirman, & Sethi, 2017) This analysis underpins F.A. Hayek's analysis of price signals as "a system of telecommunications" (Hayek 1945, p. 527) that successfully modifies human actions across long distances, without a central planner, through the spontaneous order of

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[25] For radical uncertainty in Austrian economics, cf. Kirzner 1973, Kirzner (ed.) 1986; Shackle 1970, 1973; Lachmann 1994; Buchanan & Vanberg 2002; and O'Driscoll & Rizzo, 2015.

the marketplace. This constitutes the Austrian epistemic or evolutionary argument for markets. As Steve Horwitz (1992) writes, money "provides us with a means of communication that enables us to make our, admittedly fragmentary and uncertain, knowledge of our preferences and abilities available in a form that is socially accessible. In the absence of monetary exchange, we would lack a means of communication necessary – but not sufficient – for our ability to form creative, complex and coordinated social orders." (Horwitz, 1992, p. 212; see also Potts, 2001) This Austrian emphasis on *creative complexity* highlights the fact that markets produce both *coordination* (of given resources) and *innovation* (of completely new resources). In other words, they involve both *equilibrium* and *out-of-equilibrium* processes of adaptation. This is the basis for the epistemic case for markets over planning as a guiding regulatory paradigm. (Shackle, 1970, 1973)

The price system provides an institutional structure capable of sustaining and enlarging the informational capacities of the market economy as a complex adaptive system: "Money plays a significant role in aiding not only the communication of hard-to-articulate knowledge, but also the emergence of complex cognitive resources that enlarge and sustain coordination." (Paniagua, 2018, p. 115) The Austrian-Hayekian perspective sees money as not only an efficient means of *allocating* human cognitive capacities into socially beneficial uses; but a way of *enlarging* human cognitive capacities. This enlargement of cognitive capacities strengthens the cybernetic possibilities of bottom-up distributed intelligence. This strengthening, in turn, leads to an empowerment of the permissionless innovation as a tool of generating spontaneous order, since individuals are better able to take advantage of the various nodes of the otherwise inaccessible pieces of local and temporary knowledge scattered across the distributed intelligence of the system. Price-signalled communication via the marketplace facilitates what might be called *epistemic networks*: the transmission of local, dispersed knowledge in an evolving ecosystem of interpersonal and long-distance communication. And this transmission is far from passive: the epistemic networks are constantly self-monitoring and feeding back upon themselves in positive and negative feedback loops. This complex adaptive process changes the incentives, knowledge, expectations, and behaviour of all the economic agents. With the use of money, "[s]ocieties unintentionally attain a new and wealth-enhancing form of social freedom and enhancement of our epistemic abilities beyond the possibilities we had prior to the use of

money as system of social relations. *Money therefore sustains a unique epistemological ecosystem* through relating and combining our knowledge in non-linear manners, producing epistemological totalities unattainable outside the use of money." (Paniagua, 2018, p. 116, my italics) An important part of this monetary economy is the system of financial credit, interest, and banking, which mediates long-term industrial planning and economic evolution. (Böhm-Bawerk, 1930) Markets and money facilitate the birth of complex economic networks that nurture the economy as a *complex adaptive (and "cybernetic") system*, which shares similarities with evolutionary systems in biology. (Shermer, 2018)

The Austrian school, especially in its neo-Hayekian developments, complement the other schools of evolutionary economics by its institutional focus on the cybernetic role of markets in the transmission, production, and consumption of knowledge. To be sure, it has a somewhat narrow focus on the price system, money, and property rights. This is the source of its special (and vital) insights, but it can also lead to a misleadingly narrow view of complex adaptation. It therefore ought to be complemented with the sophisticated analysis of information processing and complex adaptation present in the contemporary CAS literature (see **2.5.1.** above), and the contemporary sociological literature on the cybernetic, collaborative-competitive "global village" and "network society." (McLuhan, 1962, 1964; Bloom, 2000, 2010; Sunstein, 2006; Castells, 2010)

The Neo-Hayekian perspective views political economy as the science of understanding and (re)designing the rules that facilitate spontaneous social evolution and "the creative powers of a free civilization." (Hayek, 1960, pp. 73-90) Although Austrian economists tend to see their descriptive theory as "value-free," it offers guidelines for normative theory. The focus on the epistemic constraints of governance is a key feature of the neo-Hayekian criticism of top-down governance. (Hayek, 1945, 1988, 2002; Lavoie, 1985a, 1985b; Pennington, 2010; Tebble, 2015) I shall pursue the implications of this conclusion in the next chapter. Before that, however, let me briefly discuss *New Institutional Economics*.

2.5.4. New Institutional Economics (NIE)

Before concluding, let me briefly discuss the so-called New Institutional School (NIE), associated primarily with Douglass C. North and Barry Weingast. (North, 1993, 1994, 2005; Weingast, 2010; North, Wallis, & Weingast, 2009) North discusses "adaptive efficiency" as a key ingredient of evolution: "adaptive efficiency (…) entails a set of institutions that readily adapt to the shocks, disturbances, and ubiquitous uncertainty that characterize every society over time." (North, 2005, p. 78) It can be used to study "the differential performance of different parts of the world both over time and cross-sectionally." (North, 2005, p. 70) It can be used to explain the wealth-creating capacity of "open access" societies, but also their rarity and difficulty of surviving over time. (Weingast, 2010) Another illustrative example is Jacobi, Weingast, & Mittal's (2014, p. 2) analysis of the United States constitution as a "self-stabilizing" constitution: "embedded within its text are conditions or its own survival." According to their analysis, successful institutions, including but not limited constitutions, have "adaptation conditions", i.e., "mechanisms that allow them to adapt over time to changing conditions." (Jacobi, Mittal, & Weingast, 2014, p. 6)

The neo-Hayekian and neo-Schumpeterian theories of complex adaptation partially agree with, and partially differ from, NIE. One difference is that NIE, as the name implies, focuses on the level of *institutions* rather than of *individual agents*. The applicability of the concept of "adaptive efficiency" in the NIE framework is limited to describing the differential capacity of institutions to survive over time. The term is useful in describing nation states and constitutions. It is less useful in describing individual agents *qua* consumers, producers, entrepreneurs, or welfare recipients. Despite this narrower applicability, this is very similar to Hayekian adaptation (which can be applied to the level of individuals, organizations, and even whole societies). In fact, North, Wallis & Weingast (2009, p. 133) trace the origin of the idea to Hayek's *The Constitution of Liberty* (1960). Relevant to my analysis, NIE *can* be used to compare the adaptive efficiency of different kinds of welfare state and UBI models.

2.6. Conclusion: Towards "Innovation-in-Disequilibrium"

In this chapter, I have provided an overview of evolutionary economics. In the next chapter (chapter 3), I shall explicate the implications of such evolutionary thinking for institutional design and public policy.

As I have shown, evolutionary economics has a long and rich history. The Neo-Hayekians, the Neo-Schumpterians, and the Santa Fe scholars are standing on the shoulders of giants like Adam Smith while taking the theories even further. Despite the diversity of the field, it is possible to draw some general lessons from the mainline of evolutionary political economy: 1) **Out-of-equilibrium,** evolutionary processes are an important factor in the economy. 2) **Complex adaptation** is achieved through the process of decentralized, bottom-up experimentation subject to competitive selection pressures. 3) **Permissionless innovation** is made possible when agents to have the *freedom*, and the *right*, to engage in deviant, bottom-up innovations without having to ask for anybody's permission.

In short, to anticipate my analysis in the next chapter, the key policy insight to draw from evolutionary economics is that, by and large, decentralized decision-making institutions such as "markets win over command and control, not because of their efficiency at resource allocation in equilibrium, but because of their effectiveness at innovation in disequilibrium." (Beinhocker, 2006, p. 294) To sum up, "*effectiveness at innovation in disequilibrium*" = "*adaptive efficiency*." Indeed, free markets are only *one* (albeit one of the most potent) of multiple overlapping domains of bottom-up innovation. The civil society, science, the arts, cultural norms, and even morality in some respects take advantage of experimental learning and permissionless innovation. Furthermore, as I shall show later, such bottom-up competitive arenas should not only be tolerated, but actively supported and tweaked, by robust welfare state rules and regulations aimed at facilitating innovation in disequilibrium.

1) **"Optimizing in equilibrium" = Type 1 Adaptation** (Neoclassical adaptation)
2) **"Innovation in disequilibrium" = Type 2 Adaptation** (Complex adaptation)

In the next chapter, I shall show how this new focus on "innovation in disequilibrium" informs institutional design. Any government operating within an ecosystem of evolutionary pressures is constrained in its institutional design. The government should aim for "the creation of a framework for creative exploration at all levels of problem solving." (Buchanan & Vanberg, 2002, p. 126) With the right institutional framework in place, the complex

adaptive system of the market economy, although it cannot guarantee "optimality" or "perfect competition" in the neoclassical sense, can be harnessed, even under radical uncertainty, to produce and select for welfare-increasing evolutionary innovations. This justifies, in my view, a liberal evolutionary regime of widespread citizen freedom.

Chapter 3: The Complexity Approach to Institutional Design: Evolutionary Liberalism and Permissionless Innovation

3.1. Introduction

3.1.1. Developing A Complexity Approach to Institutional Design

An appeal to "the complexity framework" alone is not enough to settle most disputes about what the government should and should not do. However, I believe that it can be used to reach a *coherent and actionable institutional approach* for thinking about the policy challenges brought about by the normative implications of complexity. This can be done by focusing on *the model of permissionless innovation* that arises from the three schools of evolutionary economics. This model belongs to the tradition of *evolutionary liberalism,* which focuses on the need to facilitate individual freedom under the rule of law. The permissionless innovation model can be used to device more concrete policy recommendations with the help of auxiliary assumptions, models, and empirical tests. At the end of this discussion, I will have offered the tools to tackle, in the next chapter, the issue of a complexity-sensitive welfare state model centred around UBI and widespread permissionless innovation.

Thus far, I have explored the origins and contemporary state of evolutionary economics by dividing it, roughly, into three main competing schools. The method of dividing up evolutionary economics into the three big schools, and some of their historical antecedents,

has allowed me to highlight the relative heterogeneity of the field. For the sake of analytical clarity, I have emphasized the differences between the schools and the boundaries that separate them from each other. At the same time, I have highlighted some of the similarities between them, especially in their focus on disequilibrium conditions, radical uncertainty, the use of biological metaphors, the theory of complex adaptation, and the emphasis on bottom-up models of emergence. In this chapter, I will seek to show how these shared analytical concepts, and the policy implications that derive from then, can plausible be called the "common core" of the three schools of evolutionary economics. Focusing on these similarities will allow me to synthesize a coherent public policy approach that hopefully does justice to the convergent insights of the three schools without obliterating their differences.[26] In this interpretation, the complexity approach to public policy consists of the interplay between two interrelated ideas, *complex adaptation* and *permissionless innovation*.

The purpose in narrowing down into a coherent policy framework is to provide complexity-aware *comparative institutional standards* that can be used to measure the relative merits of various institutional proposals and the validity of the epistemic and technocratic assumptions behind them. The reduction of the heterogeneity and diversity of the institutional implications of evolutionary economics is a methodological simplification that inevitably obscures some of the nuances of the discipline. However, this move allows me to bring the debate "up to speed" with some contemporary developments in evolutionary economics where the synthetic common core of the different schools is more and more emphasized. (Beinhocker 2006; Beinhocker & Hanauer 2014; Colander & Kupers 2014; Hodgson 2019) Crucially, it will motivate the narrowing down of my analysis into two analytical concepts, *complex adaptation* and *permissionless innovation*. Setting these up as the proposed normative standard, the comparative notion of *adaptive efficiency* (or adaptive *capacity,* or *evolvability*) captures the relevant robustness standard for public policy; it can be used to measure, at least in theory, the comparative institutional capacity of different public policy measures to facilitate/hinder complex adaptation and permissionless innovation.

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[26] Although in this chapter I shall attempt to foreground the common conceptual core that unites the three schools, in a later chapter I shall return to some of those "suppressed" aspects of the insights of the three schools.

My analysis in this chapter does not pretend to much originality, since it mostly synthesizes the views of other thinkers, albeit hopefully in an insightful way. Nor do I pretend that my summation of the complexity approach to public policy is the *only* possible one. I have no illusion that it will be accepted wholesale by every evolutionary economist who is interested in comparative institutional design. However, I believe I have sufficient evidence to show that my normative model of permissionless innovation is 1) *compatible with*, and *fairly representative[27] of,* the three main schools of evolutionary economics; and 2) *in broad agreement with* many of the most prominent developments in recent complexity and evolutionary literature, including the institutional analyses of Metcalfe (1994), Witt (2003), Metcalfe, Foster, & Ramlogan (2006), Mark Pennington (2010, 2015, 2021), van den Bergh & Kallis (2013), and Geoffrey Hodgson (2018, 2019); 3) and *in strong agreement* with the "ecostructural" institutional design approaches of Eric Beinhocker (2006, 2011), David Colander (2003, 2010, 2012), Colander & Kupers (2014), and Beinhocker & Hanauer (2014). All these approaches emphasize the importance of developing sustainable and inclusive institutional rules that a) facilitate experimental, trial-and-error learning as means of increased institutional adaptive efficiency but also b) safeguard against the many emergent risks and uncertainties of innovation-in-disequilibrium. To summarize, the central normative desideratum of this framework is the institutional promotion of *complex adaptation* and *permissionless innovation* as tools of *adaptive efficiency* towards the ultimate end of *increased social welfare*. A key reason to institutionally promote increased adaptive efficiency is that increases the likelihood of the emergence of better innovations. The rate of evolution is not fixed, but dependent on the fertility of a given path. The problem-solving capacity of the society is capable of exponential leaps. Ideally, there occurs a kind of "bootstrapping" of future innovations on past innovations, similar to biology, where it is called the "evolution of evolvability." (Dawkins, 2013; Pigliucci, 2018) Such a ratchet effect can lead to exponential growth in the social intelligence of a complex adaptive system. Evolvability thus provides one benchmark for economic "progress." (Cochrane & Maclaurin, 2012) This is closely related to Beinhocker & Hanauer's (2012) reconceptualization of economic growth as "a measure of the rate at which new solutions to human problems

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[27] By "fairly representative" I mean to imply that the two concepts capture something essential about the insights of the three schools. It also expresses the hope that even a reader who is more or less unsympathetic to my particular interpretation of the literature will acknowledge the fairness of using the concepts to describe (at least aspects of) the three schools and their historical antecedents in classical political economy.

become available." Evolvability, in mathematical terms, is the *second derivative* – the change in the rate of change – of the problem-solving capacities of the system. The normative desirability of the evolvability of social intelligence is self-evident; not only do we want things to get better, but we want things to get better quicker and quicker. This way, even if we make mistakes, we become better at spotting and correcting them.

It should be noted that there is no absolute commitment to "the market" or "the government" as the always preferred mechanism for solving various adaptive problems. In theory, there are multiple realizations of adaptively efficient institutional structures compatible with complex adaptation under permanent uncertainty. The argument for the markets over command-and-control economy, or for UBI over alternative welfare policies, must come from a comparative institutional analysis. The concrete institutional implications of this framework are subject to reasonable debate. As a result of such disagreements, the different schools of evolutionary economics showcase different degrees of faith in different institutional arrangements in solving complexity and evolutionary challenges. Even if the precise implications for public policy are contested, the lessons of evolutionary economics lean towards bottom-up experimentalism and self-organization. The theory of complex adaptation and permissionless innovation therefore suggests itself as a reasonable and fruitful application of evolutionary economics into the public policy debate.

Ultimately, in the next couple of chapters, this approach will allow me to narrow down my focus and application into my evolutionary liberal case of UBI. But before we can reach UBI, we need to tackle the key institutional questions: *What should be the role of governments in the complex adaptive framework? And what should be the role of markets and other bottom-up organizations?*

3.1.2. A Brief Outline of the Chapter

The structure of this chapter is as follows. First, I shall outline what I consider to be the main public policy implications of the theory of complex adaptation and permissionless innovation. Then, I shall show how the three schools discussed previously – the Santa Fe, the Neo-Schumpeterian, and the Neo-Hayekian – talk about the normative implications of

competition and innovation. Then, I show how several contemporary evolutionary economists, especially David Colander, Roland Kupers, Eric Beinhocker, and Geoffrey Hodgson, have creatively applied these normative ideals from the three schools into a synthetic complexity approach to institutional design. I shall take up and follow up on these ideas in my subsequent analysis by showing how a liberal UBI model fits into such a framework.

Finally, I shall summarize my position and provide an outline of how this theory will be applied to the UBI debate in the next chapter. I will relate my theory to the broader tradition of *evolutionary liberalism*. The complex adaptive argument for UBI will be shown to depend on the hypothesis that (a robustly designed) UBI, compared to the second-best and third-best alternatives, is capable of facilitating complex adaptation and permissionless innovation and thereby responding, with relative adaptive efficiency, to the disequilibrium challenges posed by the complex market economy. That said, this hypothesis is shown to depend on numerous dubious empirical assumptions which might make UBI fail to meet the empirical test – at least under certain institutional configurations.

3.2. The Complexity Approach to Institutional Design

3.2.1. The Neo-Hayekian "Gold Standard" of Institutional Design

The Neo-Austrian (or Neo-Hayekian) school is arguably the best place to start thinking about the normative implications of complexity theory.[28] Despite healthy internal diversity, it provides a rather coherent, consistent, well-developed, and comprehensive approach to institutional design and public policy. This does not mean that the mere presence of internal coherence, consistency, or comprehensiveness make Austrian theories *right* or *plausible* (although I think that the Neo-Hayekian school is right about more things than it is wrong

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[28] The Santa Fe School, which would otherwise be the logical place to start, is a very pluralistic and heterogeneous school, so it would be misleading to claim that the thinkers in that school converge on anything close to a "Gold Standard" of institutional design.

about). But it provides a coherent "Gold Standard" of complexity-aware institutional design and public policy, which can be critically analysed and applied, in conjunction with the insights of the Neo-Schumpeterian and the Santa Fe schools, into a coherent policy framework.

In my analysis, rather than focusing on the early Austrians, I will focus on the so-called "Neo-Austrian" or "Neo-Hayekian" school and some of its most prominent representatives. In particular, I shall focus on two figures, Don Lavoie (1985a, 1985b) and Mark Pennington (2010, 2015), as representative exemplars of many of the key insights of this school. [29] They provide a coherent contemporary synthesis of Austrian school normative policy lessons from a primarily, although not exclusively, Hayekian perspective. Before that, however, let me briefly summarize Hayek's own insights into these questions. It is worthwhile to remember the context of Hayek's thinking. He was writing when the Soviet Union was at the height of its powers and much of the Western world was in the grips of central planning of one kind or another. Michael Polanyi described this situation well he wrote that "contemporary thought is pervaded by the fallacy of central planning, particularly as regards industrial production" (Polanyi, 2002, p. 122). Responding to such tendencies, Hayek (1944) warned that the centralization of government control over the free economy, whether in the name of industrial production, protecting the weak, or combating fascism, was a "road to serfdom." It might be tempting to argue that such concerns, although appropriate to the times, are less relevant today. But such conclusions are premature. Although the lure of comprehensive economic planning has been partially attenuated by historical developments (especially after the collapse of the Soviet Union), contemporary politicians (and voters) still often treat the society as a big machinery that can be socially engineered from the top down. In their "fatal conceit," (Hayek, 1990) they have failed to incorporate the Hayekian "knowledge problem," which Hayek himself summarized as follows:

> "The peculiar character of the problem of a rational economic order is determined precisely by the fact that the knowledge of the circumstances of which we must make use never exists in concentrated or integrated form, but solely as the dispersed bits of incomplete and frequently contradictory knowledge which all the separate

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[29] See also: Sowell (1980); Parker & Stacey (1994); O'Driscoll & Rizzo (2015); Tebble (2015, 2017).

individuals possess. The economic problem of society is thus not merely a problem of how to allocate "given" resources - if "given" is taken to mean given to a single mind which deliberately solves the problem set by these "data" It is rather a problem of how to secure the best use of resources known to any of the members of society, for ends whose relative importance only these individuals know. Or, to put it briefly, it is a problem of the utilization of knowledge not given to anyone in its totality." (Hayek, 1945, pp. 519-520)

In order to facilitate the effective utilization of such knowledge, which Polanyi (2002, 2005) has called "personal" or "tacit" knowledge, Hayek argued that market economy should be understood as a *spontaneous order* that functions best under a limited government which protects individual freedom and the rule of law. The crucial task becomes that of the facilitation of ongoing *evolutionary discovery* processes in markets, civil society, and the culture more broadly. (Hayek, 2002) Within those bounds, it may provide some other functions, such as limited public services and a guaranteed minimum income scheme. The appropriate metaphor of good governance, for Hayek, as for many evolutionary liberals before him (Spencer, 1851; Sumner, 1992) was that of the *ecological gardener*. The gardening metaphor is key to understanding liberal "ecostructural" governance. Hayek argued that the process of governance in the face of the knowledge problem "should perhaps better be described by the term "cultivation", than by the familiar "control" – cultivation in the sense in which the farmer or gardener cultivates his plants, where he knows and can control only some of the determining circumstances, and in which *the wise legislator or statesman will probably attempt to cultivate rather than control the forces of the society*." (Hayek, 1955, p. 225, my italics) This insight is a key takeaway of the Hayekian (and broader evolutionary liberal) framework of normative institutional design.

Let me now turn to the more contemporary applications of Hayekian insights in the works of Don Lavoie and Mark Pennington. In 1985, Don Lavoie (whom I already discussed in the introduction) wrote two books that together were pivotal in the birth of the Neo-Hayekian paradigm. On the one hand, *Rivalry and Central Planning* (Lavoie 1985a) provided a summary and reinterpretation of the earlier "socialist calculation debate" regarding the overall economic value of central planning vs. market adaptation. It reiterated the classical Austrian/Hayekian rationale for the general normative superiority of market-based solutions

over government-based solutions from a comparative institutional perspective. On the other hand, *National Economic Planning: What Is Left?* (Lavoie 1985b) provided a more forward-looking analysis of the future of institutional design and public policy that still remains relevant today. The central normative claim of Lavoie's updated version of Hayekian liberalism is that "the social function performed by a particular complex of legal and market institutions makes them indispensable tools for the solution of certain unavoidable economic problems involved in the day-to-day production and allocation of scarce resources. If we were unable to solve such problems, we would face the utter ruin of our economy. Individuals will lack the knowledge necessary to solve these economic problems unless such a complex of economic and legal institutions is permitted to exist." (Lavoie 1985b, p. 4) Note how Lavoie's argument is still solidly rooted in the socialist calculation debate and the argument against central planning rather than being targeted against market friendly "Third Way" politics. Nonetheless, he emphasizes that his argument for markets extends beyond Soviet-style socialism to the extent that "any economic system, such as noncomprehensive planning, which seeks to interfere substantively with the way many of these institutions work would be at least running the risk of tampering with the very basis of our survival." (*ibid*., p. 5) Of course, then the question becomes, *what* counts as "substantively interfering" in a survival-threatening manner? Differing interpretations of this existential worry explain the later divergences in opinion in the Neo-Austrian camp as to the danger posed by even modest and minor government interventions. At one extreme, you have strict followers of Lavoie's logic, who count most welfare state interventions as forms of substantial interference into the very lifeblood of the free economy. (Tebble, 2009) At the other extreme, you have relatively welfare-friendly people like Matt Zwolinski (2014, 2019) and Michael Munger (2011, 2018) who think that "Yes, There Are Hayekian Welfare States (At Least in Theory)." (Bergh, 2015, 2019), Indeed, maybe there even are, or could be, "Austrian Social Democrats." (Meadowcroft, 2019) However, I think that the label of "social democracy" would not fit the kind of limited welfare state (Lehto, 2015) that most Hayekians would tolerate.

Mark Pennington's *Robust Political Economy* (2010) provides a more recent interpretation and development of the Neo-Hayekian tradition. The book focuses on debating and combating several contemporary challenges to liberalism, such as communitarianism,

egalitarianism, and environmentalism. I will leave these debates on one side and focus on the book's interpretation of the Neo-Hayekian principles as they pertain to complexity theory, evolutionary theory, and the welfare state / UBI debate. The book provides a vital restatement of "the classical liberal use of evolutionary principles and their normative significance." (p. 41) It therefore belongs firmly in the tradition of evolutionary liberalism: "Far from implying uncritical support for the status quo, classical liberalism invokes evolutionary principles as a critical vantage point from which to challenge the robustness of existing institutions and practices." (p. 42) Pennington summarizes this view as follows: "In a complex environment, where the limits of human cognition are tightly drawn, processes that facilitate variation and competitive selection are held to increase the chance of discovering better solutions to human problems relative to institutions that reduce the scope for producer and consumer 'exit.'" (p. 42) Sustainable progress is most reliably achieved through "incremental improvement via signalling mechanisms and evolutionary selection" rather than central planning. (p. 165) Pennington concludes his analysis by arguing that "given limited rationality and the need to constrain the behaviour of those motivated by self-interest, a framework that allows for *decentralised experimentation* and which holds people accountable for their experiments in living is more likely to promote socio-economic progress than one that centralises power in a coercive authority." (264, my italics) As I have argued, this focus on *decentralized experimentation* as a tool for social progress and prosperity is the single most unifying thread between the normative implications of the Neo-Hayekian, Neo-Schumpeterian, and Santa Fe schools. It provides the evolutionary and complexity-aware tenor of the subsequent analysis. That said, although I shall later present the *permissionless innovation* model as the best approximation of decentralized experimentation, the complexity framework can lead to multiple plausible interpretations that may contradict some of the aspects of my proposed model without contradicting its basic tenor. [30]

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[30] The issue of methodological pluralism is exemplified by an interesting debate between Bruce Caldwell and Geoffrey Hodgson about whether Hayek understated the unique insights of Charles Darwin. (Caldwell, 2001, 2004; Hodgson, 2004b; Hodgson & Knudsen, 2010) Although Caldwell (2001, 2004) raises good points about Hayek's diverse influences, it seems to me that Hodgson is essentially correct regarding "Hayek's underestimation of the role of Darwin and the scale of the Darwinian revolution." (Hodgson, 2004b, p. 298) While doing disservice to Darwin, Hayek has also brought the unique contributions of Ferguson, Smith, Mandeville, and others in this pre-Darwinian social philosophical tradition into sharper focus. This has helped

Finally, let me briefly summarize the implications of the Neo-Hayekian comparative institutional normative prescription of *decentralized experimentation* for the welfare state debate. As I shall argue in this thesis, Lavoie's potent objections notwithstanding, this framework is minimally compatible with, and perhaps recommends, something like a UBI. Similar conclusions have been reached by, e.g., Matt Zwolinski (2013, 2014, 2015, 2019) and Michael Munger (2011, 2018). Classical liberal and libertarian arguments for basic income have been recently collected by, e.g., Fleischer & Hemel (2017) & Fleischer & Lehto (2019). As illustrative of the revived Austrian interest in UBI, consider the collection of essays, *Basic Income and Austrian Economics* (Nell [Ed.], 2013), which contains papers such as Theodore Burczak's (2013, p. 61) Hayekian justification for a basic Income, according to which UBI "minimizes labor market coercion, expanding the freedom of potential workers (…) [and, since] a basic income is distributed without regard to the characteristics of the individual recipients, it also escapes Hayek's criticisms of theories of distributive justice." The pro-UBI interpretation of Hayek, of course, remains controversial, largely due to Hayek's strident critique against "The Mirage of Social Justice" in Volume 2 of *Law, Legislation, and, and Liberty* (Hayek, 1982). (I will discuss this in **Chapter 4** below.) This has led some libertarians, like Adam Tebble (2009, p. 601), to argue, *on Hayekian grounds*, against Hayek's own defence of a guaranteed minimum income in favour of "the option of retracting the safety net concession and replacing it with" private, decentralized alternatives. For Tebble, "the state should on epistemological grounds devolve the discovery and implementation of appropriate responses to poverty and economic inequality to individuals and voluntary associations of them." He adds: "That Hayek never looked into this possibility in any systematic way is surprising" precisely because the principle of decentralized experimentation seems to warrant it. (Tebble, 2009, p. 601) And there is no doubt that Hayekian classical liberalism seems compatible with such an approach. The only question is whether the UBI approach is *also* compatible with it; and if so, which one of the two models is more attractive. Pennington (2010, p. 153), too, has argued that Hayekian classical liberalism "questions a 'universal' system of poverty relief in favour of a welfare 'mosaic' combining variations of mutual aid and private charity alongside a framework which secures a general rise in prosperity." This sentiment is shared by many contemporary Hayekian-

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to diversify the methodological foundations of evolutionary political economy. The present ecostructural framework draws on both "Darwinian" and "Smithian" models of permissionless innovation.

inspired libertarians, even the ones who are sympathetic to UBI and would tolerate a minimal state safety net to that "welfare mosaic," such as Stephen Davies (2019, p. 21), who laments the fact that "the classical liberal model, of a minimal state safety net plus extensive voluntary action and mutual aid, is seldom raised" in the contemporary welfare state discussion. Overall, it is clear that perhaps the majority of Hayekians are sceptical of *most* forms of systematic redistribution, including *most* forms of UBI. (Tebble, 2009; Boettke & Martin, 2012; Rallo, 2019) This will not stop me from making my contrarian case, in the subsequent analysis, that a different reading of Hayekian principles is possible. Far from seeing Hayek's defence for a quasi-UBI as "a concession wholly incompatible with his broader perspective," (Tebble, 2019, p. 602), I think that Hayek probably *did not go far enough* in embracing an unconditional UBI. Such a conclusion seems warranted on Hayekian grounds alone, but the case is arguably strengthened further if we take in some of the complementary insights of the Neo-Schumpeterian and the Santa Fe schools.

As the preceding analysis shows, the "gold standard" of the Neo-Hayekian approach to institutional design converges on the normative desirability of *decentralized experimentation*. This can be cashed out in terms of strong private property rights, limited government, and various bottom-up market and civic institutions. This is the core of evolutionary liberalism. Hayek (1945, p. 524) summarized the link between the positive theory of adaptation and the normative theory of liberalism thus: "If we can agree that the economic problem of society is mainly one of rapid adaptation to changes in the particular circumstances of time and place, it would seem to follow that the ultimate decisions must be left to the people who are familiar with these circumstances, who know directly of the relevant changes and of the resources immediately available to meet them." However, as the contested nature of the welfare state and UBI debate within the neo-Hayekian movement suggests, there is no comparable "gold standard" for the kind of welfare state arrangement that Hayekians "should" advocate or oppose. My thesis will hopefully contribute to this debate by offering one comprehensive and plausible model for a Neo-Hayekian welfare state, without thereby claiming that I have finally provided the "definite" or "true" interpretation of Hayek.

Next, let me now turn to the Neo-Schumpeterian school of evolutionary political economy, which provides another – partially overlapping – "Gold Standard" for complexity-aware

institutional design and public policy. I will largely limit myself on Nelson & Winter's (1982) version of this school since much of subsequent Neo-Schumpeterian scholarship bleeds into the synthetic debate that combines the insights of multiple schools. Indeed, unlike the Neo-Austrian school, the Neo-Schumpeterian school lacks certain cohesion and uniformity – which is not necessarily a bad thing. However, Nelson & Winter (1982) nonetheless offer a plausible "gold standard" for thinking normatively about institutions from the point of view of innovation, competition, and "creative destruction." In this regard, it provides an alternative justification for widespread decentralized experimentation.

3.2.2. The Neo-Schumpeterian "Gold Standard" of Institutional Design

Whereas the Neo-Hayekian perspective focuses on the role of competition and the price system in facilitating mutual adjustments according to the cybernetic logic of complex adaptation, the Neo-Schumpeterian perspective (Nelson & Winter, 1982, 2002; Dosi & Nelson, 2010) complements this perspective by focusing on the creative destructive role of *innovations* and their disruptive socioeconomic effects. Once we realize that "the economic world is in continuing flux (…) [a] normative theory consistent with an evolutionary approach to positive theory almost certainly will be complex and messy." (Nelson & Winter, 1982, p. 356) Both private and public actors live under radical uncertainty. Unlike some forms of statistical decision-theory which attempt to model or tame uncertainty in terms of policy optimization, (Brock, Durlauf, & West, 2003) Nelson & Winter argue, as a result of such complexity, messiness, and uncertainty, that "the concept of a social optimum disappears. Occupying a central place are the notions that *society ought to be engaging in experimentation* and that the information and feedback from that experimentation are of central concern in guiding the evolution of the economic system." (Nelson & Winter, 1982, p. 402, my italics) This analysis substitutes "the 'search and selection' metaphor for the maximization and equilibrium metaphor." (p. 227) The Schumpeterian "search and selection" process corresponds, in its essentials, both to the Hayekian idea of "competition as discovery procedure" (Hayek, 2002) and to Darwinian natural selection. In this regard, the Neo-Hayekian and the Neo-Schumpeterian perspectives converge in many ways. The major

question is, which institutional arrangements, or sets of institutions, are most compatible with a high level of "search and selection," i.e., evolutionary exploration? Should we prioritize markets, governments, or other types of institutions?

The *first* normative conclusion of the Neo-Schumpeterian framework, which also converges on the Neo-Hayekian perspective, is that markets need to be prioritized over command-and-control structures. The reason is that, under certain assumptions, "the virtues of the [market] system [include] an ability to generate a variety of innovations, to screen and select from these, and to assure that in the long run most of the gains would accrue to consumers." (p. 361) Government structures, as a result, should focus on protecting, facilitating, and regulating free markets. However, the Neo-Schumpeterian perspective also highlights a *second* normative conclusion: the government should devise ways of institutionally dealing with the destructive side of the creative destructive process in a way that is fair and feasible. In this regard, the Neo-Schumpeterian perspective perhaps diverges in some ways from the Austrian perspective in its normative concerns, even though Hayek (2002, p. 10), too, was keenly aware that "competition is important only because and insofar as its outcomes are unpredictable and on the whole different from those that anyone would have been able to consciously strive for; and that its salutary effects must manifest themselves by frustrating certain intentions and disappointing certain expectations." Or, as the Neo-Schumpeterian scholars Foster & Metcalfe (2001, p. 5) have argued, one of the policy-relevant consequences of the radical uncertainty of socioeconomic evolution is "the loss of any robust foundations (…). Restless systems have about them a sense of unease, of hopes dashed, of capital and skills devalued and expectations falsified for better or worse. Life is not comfortable, however wealthy one might be. There is creation and there is destruction in both the economic and social domains." The question is, what (if anything) to do about those disappointed expectations and frustrated intentions? According to Nelson & Winter (1982, p. 369), this entails devising a welfare scheme which is explicitly responsive to "rapid economic change" in a way that combines routine income support to poor people while maintaining sufficient incentives for dynamic and innovative economic performance:

> The 'gales of creative destruction' blow down the incomes not only of capitalists and
> managers but also of workers whose skills have become obsolete and of people who

were unlucky to live in places where industry has become obsolete. On the one hand, this implies that compensation and rehabilitation ought to be viewed as routine aspects of social policy in a world of rapid economic change. But on the other hand, efficient economic performance in a dynamic world puts a high premium on job and locational mobility. (…) The policy dilemma becomes: How 'secure' can income (or command over standard of living) become before people become disinterested in learning new skills or picking up old stakes? (Nelson & Winter, 1982, p. 369)

This provides a good starting point for thinking about the desirability and feasibility of welfare schemes, including UBI schemes, in the Neo-Schumpeterian innovation perspective. The *third* normative conclusion of the Neo-Schumpeterian perspective is that the government should facilitate innovation. Most importantly, this includes the upkeep of the rules and institutions of permissionless innovation – what Phelps (2013) calls "grassroots innovation." Innovation is done not only be heroic entrepreneurs, as in Schumpeter's (1942) classic narrative, but also by ordinary people in various organizations and in all aspects of life. At the same time, many Neo-Schumpeterians are open to policy interventions that go beyond the upkeep of the "hands-off" Austrian framework. This discussion has developed into the burgeoning and heterogeneous *National System of Innovation* literature. (List, 1841; Johnson, 1982; Nelson [Ed.], 1993; Freeman, 1995; Lundvall [Ed.], 2010; Miettinen, 2013; Schmoch, Rammer, & Legler, 2006; Mazzucato, 2013; Lewis, 2020a) This literature contains widely different interpretations of how the government can best foster innovation in the economy. One general insight is that humility in the face of radical uncertainty requires that institutional prescriptions and policy interventions relating to the facilitation of evolutionary innovation must be kept within reasonable bounds, approached with appropriate caution, and subjected to piecemeal institutional experimentation and learning. There is no shortcut to nirvana, since,

in the future as in the past, policy interventions relating to R&D will be numerous, diverse, and situation-specific. As in the past, general principles and propositions about the appropriate roles and relative merits of governmental and private activity will neither describe the experience accurately nor provide much normative guidance. (…) To recommend reasonable policy for a particular case, it is necessary

to assess the existing institutional framework in detail, to make tentative judgments about an uncertain future, to draw on the fund of experience with related problems, and – above all – to recognize that new information will be coming in as the future unfolds. (Nelson & Winter, 1982, p. 412)

The experimental method gives us some guidelines as to which kinds of institutional structures may be best equipped to dealing with radical uncertainty, facilitating bottom-up experimentation and innovation. Market-based structures and other polycentric structures in a free and open society have an edge over command-and-control structures in providing feedback mechanisms for learning from past mistakes and successes. At the same time, government arrangements that focus on providing and protecting the rules of the game for the market order, and otherwise facilitating the spontaneous interactions and innovative experiments of a free society, have an edge over alternative government arrangements in making such evolutionary learning sustainable. However, beyond such general prescriptions, the institutional design of an innovative society should be subjected to pluralistic experimentation and diversification on the margins. Different countries may wish to solve the problem of how to best compensate for, soften, and mitigate, the negative effects of creative destruction for the losers of competition in different ways. Some countries may wish to experiment with UBI, as I shall suggest makes sense, while other countries may wish to provide a different set of institutional responses appropriate to its circumstances. At any rate, countries need to find means of softening the blows of capitalism for the "people who have been hurt, through no fault of their own, in the course of economic progress." (Nelson & Winter, 1982, p. 369)

Having looked at the Neo-Hayekian and the Neo-Schumpeterian schools, it becomes evident that they share many insights. I believe that a robust evolutionary approach to institutional design and public policy should combine the key insights of both these schools with some of the additional complexity insights of the Santa Fe school. If we take the lessons of all these schools on board, there is room for disagreement about the relative merits of this-or-that institutional reform, policy intervention, or piece of legislation. In the next section, let me offer a discussion of some of the most important recent advances in the complexity approach to institutional design that have sought to creatively combine and synthesize the insights of the Neo-Hayekians, the Neo-Schumpeterians, and the Santa Fe school. Out of this

literature arises a useful model of thinking about the possibilities of evolutionary governance.

3.2.3. Towards an Evolutionary Synthesis: Colander, Kupers, & Beinhocker

In recent years, a number of contemporary evolutionary (political) economists have entered into the public policy and institutional design debate by combining, often quite freely, insights from the different schools of evolutionary economics. They have reached some overlapping conclusions which I shall use to justify my model of *permissionless innovation*, which is a classical liberal interpretation of some of the shared key insights of the Neo-Hayekian, Neo-Schumpeterian, and Santa Fe schools. Aside to from Geoffrey Hodgson (2018, 2019), whom I have already discussed in previous sections, this section will highlight Colander & Kupers (2012) and Eric Beinhocker (2006, 2011; Beinhocker & Hanauer 2014) as perhaps the most interesting and well-argued among the recent authors who have attempted to open up avenues for complexity approach to institutional design and public policy based on the shared insights of the three of the schools of evolutionary political economy.

In their 2014 book *Complexity and the Art of Public Policy: Solving Society's Problems from the Bottom-Up*, Colander & Kupers argue that "accepting a complexity vision of the economy changes the way one thinks of economic policy (…) in a fundamental way." It especially requires a rethinking, or reframing, of the question of "how government interacts with the market." (Colander & Kupers, 2014, p. 156) The crucial task for the government is "to create an ecostructure conducive to allow people the institutional space to self-organize in new ways to solve social problems" (p. 276), so that, "given the right environment and encouragement by people through government, individuals could solve social problems from the bottom up with far less direct government involvement than we currently have." (*ibid*.) Here, the government's role is mixed, i.e., part-active and part-passive, or part-interventionist and part-*laissez-faire*, unevenly held together in the "Goldilocks zone" of ecostructural governance: "Government's role here is to create an ecostructure of freedom

that encourages the exploration of that new institutional space, and by doing so enlarging the solution space to make way for innovation. In the complexity frame, a well-functioning market is a consequence of previous and successful government metapolicy." (p. 25) Colander & Kupers call this "bottom-up activist laissez-faire policy," which sees a vital role for government, "not as planner or controller, but as a natural partner with existing institutions in a search for useful parameters of action." The function of legal structures is to support and facilitate "the creative powers of individuals" and their "capacity to solve their own problems." (p. 31) Normatively, making the link between creativity and freedom recommends a *rule-bound evolutionary liberal order* wherein "all creative energies must be left as free as possible, yet protected within a careful framework of structural rules." (p. 37) In addition, this view "recognizes that there may well be [evolutionary] lock-ins, emergent collective effects, or market failures that need to be wilfully overcome via collective action." (p. 217) Although this framework gives guidance on the level of *general* maxims and principles, the *concrete* details of institutional design in the direction of effective ecostructural governance remain underdetermined, and they are subject to context-specific, creative interpretation through the art of policy making:

> "The complexity frame helps us understand the structure of the policy problem. But, in its current state of development, it doesn't help us design the specifics of individual policies very well. That must be done with judgment and deep institutional knowledge." (Colander & Kupers, 2014, p. 30)

Let me now turn to Beinhocker's book *Origin of Wealth* (2006) which argues that competitive markets lend themselves out as a useful "evolutionary search mechanism" that encourages entrepreneurs to undertake a "deductive-tinkering process of differentiation," which leads to diversity, experimentation, and innovation. (Beinhocker, 2006, p. 294) In short, "wealth creation is the product of a simple, but profoundly powerful, three-step formula – differentiate, select, and amplify – the formula of evolution." (Beinhocker, 2006, p. 11) So, the normative starting point for the governance must be the facilitation of the (Darwinian) processes of *differentiation* (variation), *selection*, and *amplification* (replication). This is a policy variant of "generalized Darwinism." (Dawkins, 1976; Hodgson & Knudsen, 2010; Pelikan, 2011; Beinhocker, 2011) The Darwinian process provides the best (approximate) model of decentralized, bottom-up experimentation. It explains how

socioeconomic evolution, just like biological evolution, arises largely through the interplay between the three interlinking principles of *variation*, *selection*, and *replication*. (Darwin, 1859; D.T. Campbell, 1960, 1974; Dawkins, 1976; Cziko, 1995, 1998, 2000) This process achieves miraculous results "without miracles." (Cziko, 1998) Generalized Darwinism, according to D.T. Campbell (1974, p. 413), supports an "evolutionary epistemology" that is "compatible with man's status as a product of biological and social evolution,"[31] and it also argues that "evolution—even in its biological aspects—is a knowledge process, and that the natural-selection paradigm for such knowledge increments can be generalized to other epistemic activities, such as learning, thought, and science." Crucially, this evolutionary procedure can also be described as a *problem-solving procedure*: "Evolution is an algorithm; it is an all-purpose formula for innovation, a formula that, through its special brand of trial and error, creates new designs and solves difficult problems." (Beinhocker, 2006, p. 12)

Under this evolutionary, cybernetic, information-processing, problem-solving process, decentralized experiments from the bottom-up provide the raw material for evolutionary "speciation," while the competitive incentives of the marketplace operate on this raw material by selecting for "fit" solutions while jettisoning "unfit" solutions:

> Human creativity develops a variety of ways to solve [social] problems, but some inevitably work better than others, and we need a process for sorting the wheat from the chaff. We also need a process for making good solutions widely available. Capitalism is the mechanism by which these processes occur. It provides incentives for millions of problem-solving experiments to occur every day, provides competition to select the best solutions, and provides incentives and mechanisms for scaling up and making the best solutions available. (Beinhocker & Hanauer, 2014, p. 6)

To solve problems, agent "need to try things, tinker and experiment, get feedback from the environment, and try again." (Beinhocker, 2011, p. 410) This requires both the *capacity* and

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[31] In this context, it is worthwhile to contemplate that even B.F. Skinner, the controversial father of behaviourism (Skinner, 1971) and a Utopian social planner, (Skinner, 1948) modelled his theory of "selection by consequences" (Skinner, 1981, 1984) on the evolutionary model of Darwinian natural selection. Space forbids me from pursuing these connections further in my analysis. At any rate, Skinner's "black box" mental model, despite some superficial similarities, seems incompatible with the Campbell-Cziko model. Anti-cognitivist behaviourism, while compatible with, is not required by Darwinian selection theory.

the *right* to do those things. Such capacities and rights can be guaranteed under the appropriate institutional rules. So, the government has an important role to play as the designer and tweaker of the rules of the evolutionary game. Otherwise, it should take a mostly hands-off approach in the spontaneous generation of free experimental variation, subject to the "natural selection" of fit strategies. But it needs to guard against adaptive inefficiency. The failure to adapt, whether on the level of the individual, a firm, or the whole society, "can have tragic consequences for individual lives and local communities." (Beinhocker, 2006, p. 356) So, it is important to focus, across all these levels, on building "adaptive capacity" (Beinhocker, 2011, p. 413) or what I prefer to call, with Douglass North, "adaptive efficiency." (North, 2005, p. 78) The development of "adaptive markets" (Lo, 2017) requires processes of decentralized experimentation which identifies social problems and goes about solving them in innovative ways without a central planner or designer.

Nonetheless, there is an active government role for ecostructural governance. The ecostructural rules do not need to embody unbridled *laissez-faire*, as they may do in some forms of liberal neutrality. They can, and sometimes should, contain and embody a consciously designed fitness function. Beinhocker writes: "Evolution is a blind process, and the evolutionary algorithm will respond to whatever fitness function it is given." So, "[w]e may not be able to predict or control [complex] systems, but we can shape them through our actions." (Beinhocker, 2006, p. 453) He goes on: "Through the ways in which we spend our money, whom we choose to work for, our votes, and our voices, *we can create a fitness function* that requires our businesses, governments, and scientific institutions to take a longer-term view and to address the needs of global society in a broader and more sustainable way. If we create such a fitness function, then those institutions and our economy will by necessity adapt and respond to that call." (Beinhocker, 2006, p. 454, my italics) Several questions follow from this: Who designs the fitness function and for what purpose? How can the society prevent the design of the fitness function from falling victim to technocratic hubris? Does the optimal fitness function emerge "spontaneously" through cultural, legal, and political evolution, or should it be rationally planned and implemented? I will return to such questions later. For now, let me concur with Beinhocker's (2006, p. 450) argument that *markets*, *science*, and *democracy* provide some of the best available institutional means of facilitating complex adaptive evolution and (re)shaping its fitness

function into socially desirable and sustainable directions. That said, finding the appropriate balance between different institutions requires a lot more fine-grained analysis.

To conclude this section, I have shown that both Colander & Kupers (2014) and Eric Beinhocker (2006, 2011), end up recommending rather similar (although not identical) normative recommendations that can be captured by the concepts of *decentralized experimentation* and *permissionless innovation*. I will not claim that my interpretation of the model of permissionless innovation is in all respects identical to their approaches, let alone the only possible interpretation of them. I only wish to claim that my approach is *informed by*, and highly *congruent with*, their shared central insights (as refracted through the lens of evolutionary liberalism). The connecting tissue, of course, is that all these authors (myself included) have inherited the DNA of the Santa Fe, Neo-Schumpeterian and the Neo-Hayekian schools of political economy. There is, therefore, a shared evolutionary lineage of evolutionary thinking. Although the inheritance of scientific theories is not strictly Darwinian, each new version of each theory can be seen as a mutation, or a descendant with modifications, of antecedent versions. The history of evolutionary political economy is thus a self-reflexive example of evolution-in-action! Evolutionary theory is perhaps the only model capable of modelling (if not predicting) its own emergence as well as spawning continuous competing offspring whose adaptive fitness remains to be seen.

3.2.4. Summary: The Complexity Approach to Public Policy

Despite syncretic convergence, there is room for a variety of approaches within the complexity paradigm, even if we only focus on the three schools outlined above. However, I believe that their main institutional implications can be briefly summed up as *the institutional facilitation of complex adaptation and permissionless innovation through appropriate "ecostructural" rules*. This can take many forms, but it entails the creation and sustenance of a bottom-up innovations.

In short, policy entrepreneurs should aim to…

1) *Facilitate complex adaptation*
   … by designing for…

2) *Appropriate institutional ("ecostructural") rules*

    …within which…

3) *Agents can self-organize from the bottom-up*

    …and thereby…

4) *Produce permissionless innovation.*

Such insights are rather typical of the contemporary policy recommendations of evolutionary economists, since they aim to 1) construct a synthetic policy framework out of the shared insights of the various schools of evolutionary economics, 2) despite their disagreement in the particular details of institutional design, converge on the recognition of the importance of bottom-up evolutionary experimentation and learning; 3) and their general policy recommendations can be roughly captured by the concepts of decentralized experimentation and permissionless innovation, which are broad enough to encompass many solutions. I will not claim that my interpretation of the theory of complex adaptation and permissionless innovation is *identical* to the complexity approaches discussed in this chapter, particularly those of Hodgson (2019), Colander & Kupers (2014), and Beinhocker (2006); only that it is highly *congruent with*, and *suggested by*, the central insights of them all, as well as with several other approaches in contemporary literature.

This emphasis on *institutional rules* makes the theory broadly institutionalist. This institutionalist interpretation of the insights of the Neo-Hayekian, Neo-Schumpeterian, and Santa Fe schools is also in line with the broader classical liberal school of evolutionary political economy that traces its origins to people like Bernard Mandeville (1714), Adam Ferguson (1767), Adam Smith (1776), and David Hume (1777). Within this tradition of *evolutionary liberalism*, complex adaptation is seen a *social discovery procedure* that takes advantage of the bottom-up experiments and network learning between millions of individuals, families, and businesses. Agents are seen to interact under constantly changing environmental circumstances (radical uncertainty) in ways that produce innovations, thus giving birth to complex adaptations and, ultimately, social learning. The precise and concrete policy implications of this framework are subject to reasonable disagreement, as long as the *primary* focus is on laying down the institutional, legal, and social strappings of widespread, bottom-up innovation.

So, the normative implications of the complexity approach to institutional design can be briefly summed up as *the facilitation of complex adaptation and permissionless innovation under the appropriate institutional rules*. This works towards the creation of a responsive and agile institutional ecostructure. However, it is necessary to specify one's assumptions and criteria further when applying this model into the comparative analysis of real-world policies. There is no agreed-upon mathematical test to determine the degree of complex adaptation and permissionless innovation in a given system. The analyst has to rely on various proxy measures and subjective interpretation of the data. The lack of mathematical precision means that the least misleading method of studying complex normative institutions questions is *qualitative analysis*. However, this can be supplemented by illustrative computational and mathematical models, such as agent-based models (ABM), which are frequently employed in the evolutionary economics literature. These can be used 1) to test one's working assumptions about the consequences of complex adaptation and permissionless innovation in simulated scenarios; and 2) to illustrate such processes by way of example. However, computational models are notoriously fallible as comparative evaluative tools of real-world phenomena. Their usefulness in empirical testing is often limited because they rely on assumptions that might not hold in the real world. Even the most sophisticated and realistic computational models have their diagnostic and predictive limits due to the computational complexity and uncertainty of the real-world economy. As Colander and Kupers (2014, pp. 173-174) write, complexity-aware public policy should be based on "an awareness of the limitations of our knowledge" and "educated common sense" rather than on an excessive reliance on pseudo-experts who make unwarranted claims about their ability to know and control the economy. After all, "an important implication of the complexity vision is to beware of experts." This must include a wariness of experts who claim to be able to understand, handle, and forecast complexity. The proper methodological attitude towards complexity is one of humility, caution, and scientific fallibilism. Fallibilistic critiques of expert rule, in this tradition, include Karl Popper's *The Open Society and its Enemies* (1966), F. A. Hayek's *The Fatal Conceit* (1999), William Easterly's *The Tyranny of Experts* (2013), and Roger Koppl's *The Expert Failure* (2018). This literature supports the general epistemic insights of the complexity approach.

So, the complexity view of governance marks a departure from many of the existing principles of institutional design by challenging some of the epistemic and technocratic presumptions of top-down, welfare state governance. Taking the complexity framework seriously forces policy makers to rethink what – if anything – the welfare state is good *for* as well as what is it good *at*. They must inquire whether the state can be reformed towards a more adaptively efficient and innovation-friendly direction. The crucial challenge for complexity-aware political economy (one that is compatible with various "left-wing" and "right-wing" variants) is to design an institutional framework, a system of governance, that aims to maximize permissionless innovation *via* a robust set of sustainable, well-designed rules which are susceptible to internal feedback and, when need be, periodic readjustment.

Therefore, in the next chapter, I shall turn to a discussion of the *institutional rules* of permissionless innovation, which allows me to propose a "rule of law" model of welfare state governance where complex adaptation is facilitated through a regime of abstract and general rules that protect and facilitate widespread freedom and experimentalism. Within that system, following the liberal welfare state models of people like Milton Friedman and J.M. Buchanan, the tax-and-transfer state (the welfare state) is constitutionally bound to a rule-bound order. I shall therefore argue that what Richard Epstein (1998, 2014) has memorably called the system of "simple rules for a complex world," which gives justification for constitutional liberalism, is compatible with (rule-bound) redistribution. Within this order, a general and nondiscriminatory system of redistribution, UBI, may operate as part of the broader "polycentric" system that encourages dispersed, decentralized experimentation, with the expectation that the *freedom to innovate without permission, supported by a system of general rules of redistribution that guarantee access to minimal resources,* will be of service to the poor, as well as to the rest of the society.

3.3. Evolutionary liberalism: Freedom, Diversity, and the Ecostructure

Finally, in order to summarize my discussion so far, and to prepare the ground for next chapter's discussion of the evolutionary liberal UBI model, let me sketch the liberal

permissionless innovation framework, which is my attempt at providing a set of institutional rules that facilitate complex adaptation through rewriting the "rules of the game" so that every agent has the default right to innovate. The goal of such a framework is to facilitate bottom-up innovations and empower agent capacities in new ways that satisfy the unique cybernetic requirements of a complex, rapidly evolving Open Society. It treats the socioeconomic order as a self-organizing "spontaneous" or "polycentric" order that generates quasi-Darwinian and quasi-Lamarckian processes of variation, selection, and transmission that produce agent-level adaptation and system-level social intelligence. Such a framework is a continuation of the Neo-Hayekian, Neo-Schumpeterian, and Santa Fe school themes discussed above, combined with some other insights from contemporary evolutionary political economy and the tradition of evolutionary liberalism.

There are many reasons why and how policy makers might want to facilitate complex adaptation and therefore increase the adaptive efficiency of economic agents to changing circumstances. These may include concerns about the maximal satisfaction of human preferences, the desire to raise the general living standards of the poor, and various other reasons. The theory itself says nothing about the innate desirability of bringing complex adaptation about ethically or politically. It is not the task of the social scientist to tell people what they should do, but only to elucidate the operative constraints that socioeconomic laws (and forces) place on the successful realization of chosen ends. In fact, there is no *innate* reason why complex adaptation should be desired even if there are many *instrumental* reasons for doing so. Discovering such reasons (for and against) is the proper task for ethics, politics, and philosophy. Evolutionary processes need to be woven into the social fabric among other competing processes. Since my analysis is primarily normative, I shall proceed to argue for the "permissionless innovation" framework as a plausible ethical and political interpretation of the socioeconomic mechanisms of complex adaptation. It is offered as an updated, modified version of the long tradition of what can be called *evolutionary liberalism*.

Hayek provided the key metaphor of the cultivation of the garden. (Hayek, 1955, p. 225) This provides the central normative focus of liberal evolutionary governance. In its most libertarian, laissez-faire interpretation, this metaphor leads to the desire to minimize government interference altogether. At the same time, the gardener (the state) is not

merely a passive observer but an active co-participant in the process of evolutionary development. There is an *art* of government that echoes the *art* of gardening. Consider, for example, the illuminative discussion by William Graham Sumner (1992, pp. 228-229):

> "The best illustration of the perfect application of laissez-faire is a garden in which art has done its utmost to aid nature in that course of development which fits the interests and purposes of man. (…) The gardener who wants a good garden and not a miserable imitation of a menagerie guards himself well against forming any ideals at all, and still more against putting any coercion on nature. He begins with a submission of himself to the investigation of nature. He abstains most carefully from meddling with her until he has *observed her lines of independent action*, because he knows that if he interferes sooner he will spoil the *clearness and distinctness of the information which she will give him*. (…) His attitude therefore is one of obedience, of // coordination, of following, and his chief folly would be conceit and 'regulation.' When he has a fund of information about the laws of nature, however, he (…) selects, not what is better for the plant, but what suits his purposes. Then his whole task consists in furnishing to nature what she needs to help her and in removing all the obstacles which would hinder her in concentrating her forces on the things which men like to the exclusion of the things they do not like."

In fact, Sumner (1992, p. 230) explicitly anticipated Hayek's knowledge problem when he argued that many complex evolutionary problems in the social order are so complicated that "no human intelligence can possibly comprehend and adjust them, least of all by a piece of legislation which must be inelastic and arbitrary (…). Therefore, whenever there is a mania for interference, the doctrine of non-interference is the highest wisdom." The evolutionary, complexity-aware, laissez-faire perspective "means that, whatever may be unsatisfactory in the world, we know we would rather take our chances of managing for ourselves than to submit our interests to the manipulation of social doctors." (Sumner, 1992, pp. 230-231) However, in my interpretation of evolutionary liberalism, despite my great appreciation to the insights of Sumner and some of the other libertarians, the correct political economic question is *not* "laissez-faire" vs. "manipulation of social doctors." There is an alternative approach to institutional design and public policy, the so-called "ecostructural" or "rule of law" approach, which seeks to *influence* (as opposed to *control*)

the evolutionary process through institutional interventions while actively setting legal barriers against the "manipulation of social doctors." However, since I shall spend the next chapter discussing the nature of such ecostructural rules in the UBI debate, let me first explore what role *innovation* plays in this framework of evolutionary liberalism.

Liberalism is deeply wedded to social diversity, and *evolutionary* liberalism is wedded to social diversity as a tool of innovation. Auberon Herbert, a follower of Herbert Spencer, provided one of the clearest arguments in favour of diversity as an evolutionary value: "[We need to] recognize and respect the individuality both of ourselves and others, [and to] realize that the bettering of the world depends upon our individual actions and perceptions; that this bettering can only be done by ourselves, acting together in free combination; that it depends upon the efforts of countless individuals, as the raindrops make the streams, and the streams make the rivers, that it cannot be done for us by proxy, cannot be relegated, in our present indolent fashion, to systems of machinery, or handed over to an army of autocratic officials to do for us." (Herbert, 2013, p. 295) He goes on: "If progress is the child of difference, then it is for us to let our social and political systems favour difference to the fullest extent possible." (ibid., p. 294) Difference, here, means deviation from the statistical norm, but also, more importantly, continuous experimentation: "Progress depends upon a great number of small changes and adaptations and experiments constantly taking place." (ibid., p. 300) According to this normative interpretation of the social value of complex adaptation, the problem with all top-down social organization is that the "essential element of progress – experiment – is necessarily absent." (ibid., p. 298) After all, "[w]hen you have constructed a universal system, embracing the whole nation, you can't experiment." (ibid., p. 298) Taking to its limit, an institutional structure that wholly suppresses experimentation and innovation is "slowly but inevitably moving towards its own destruction – a destruction that must finally involve much pain and confusion and disorder, because change and adaptation have been so long resisted." (ibid., p. 294) The key challenge, then, for social philosophy, is to discover robust principles of political economy that allow societies and individuals to facilitate experimentation, innovation, diversification, and widespread freedom.

The promise of evolutionary liberalism is that the *right to innovate*, broadly granted to all, will make ordinary people complex adaptive agents, i.e., avatars of progress. Whether it can

live up to its promises remains to be seen, but there are good theoretical and empirical reasons to suspect that the enrichment of the complex adaptive capacities of agents, their capacities to act as evolutionary agents, can be used to accelerate change and transform human lives in surprising way. The ultimate goal is the progressive amelioration of the social condition: as people "are raised to a higher capacity, the progress made will advance will bolder, swifter strides, invading in turn every highway and byway of life." (p. 296) Admittedly, classical liberals like Herbert Spencer and Auberon Herbert sometimes overreached in their enthusiasm for progress. This is most evident in their failure to discuss the limits of evolution as a method of social amelioration. They failed to properly acknowledge that the social costs of progress (failed experiments) are often significant and unfair distributed. Lacking the tools of contemporary complexity theory, the 19th century evolutionary liberals tended to focus on welfare-enhancing evolutionary leaps (*positive* Black Swan events) but they undertheorized the potential for catastrophic harm in evolutionary systems (*negative* Black Swan events). (Taleb, 2007) Nonetheless, their model of accelerated evolutionary development is not utopian fantasy. Already in the 19th century, and even more so in the 21st, accelerated evolution is omnipresent in the rapid economic, technological, and cultural innovation leaps (or paradigm shifts) that societies have gone through the past few centuries. To the extent that evolutionary liberals had diagnosed, in however rudimentary a form, some key laws of evolutionary development, and shown that evolvability is (partially) within our control, their writings still resonate with contemporary concerns. If evolutionary liberals are right, then socioeconomic "progress" is not only *possible* and (partially) *within our control*, but also *desirable*. This imposes a duty on us to advance progress. To the extent that progress consists in the amelioration of the conditions of the general population, most people have a selfish interest in advancing progress. And to the extent that the rules of the evolutionary game are designed to be sensitive to the interests of *all* people, including the poorest and most disadvantaged members of the society, whereas all social classes have *some* stake in accelerating evolutionary development, the poorest members have arguably the *biggest* stake in it. After all, since the poor and the disadvantaged (let us assume) currently suffer from the worst problems (or the most problems) they also have the most to gain from a process that, *ex hypothesi*, increases the capacity of the social order to solve problems through the generation of

innovations and their diffusion among the poor. This insight was already faintly present in Adam Smith's observation of the benefits of progress:

> "It is in the progressive state, while the society is advancing to the further acquisition, rather than when it has acquired its full complement of riches, that the condition of the labouring poor, of the great body of people, seems to be happiest and the most comfortable. It is hard in the stationary, and miserable in the declining state." (A. Smith, 1776, pp. 67-68)

Pointing out the social benefits of rapid socioeconomic evolution and arguing for its (modified and tweaked) continuation in the service of human progress does not mean that we cannot criticize the many negative (both intended and unintended) effects of "really existing" social progress. Already Smith was keenly aware that capitalist progress could lead to severe negative side-effects: "The man whose whole life is spent in performing a few simple operations (…) generally becomes as stupid and ignorant as it is possible for a human creature to become." (Smith, 1776, p. 603) Even less does it mean that we live in the best of all possible worlds. It only means that we *largely* live in a better world than our ancestors (Pinker, 2013, 2018) and that it is possible to live in an even much better world than we live today if we embrace the ecostructural principles of an open, liberal society. The rules of the open, liberal order are likely to make our societies more responsive to bottom-up mutations and innovations that can make our lives better in the future. Such rules are not written in stone for all ages, since they should be modified and tweaked to be *more responsive* to contemporary concerns (such as environmental and other crises) and *more inclusive* of the concerns of *all* people, including the concerns of the poorest, oppressed, and disadvantaged members of the society (such as through UBI and other public services). So, although the full merits and demerits of social evolution are open to debate, and the optimal rules for evolutionary governance are up for continuous reform, there are plausible reasons to assume that the continuation of social evolution is a necessary component of any robust ethical and political framework. Scholars may disagree about the precise constellation of ecostructural rules required to generate welfare-enhancing social innovations compatible with our ethical and cultural commitments, but they should shift the centre of their attention from static and allocative questions to dynamic and evolutionary ones.

The *weak version of this pro-evolutionary thesis* argues that permissionless innovation and evolutionary experimentation should be permitted and tolerated. Moving beyond it, *the strong version* states that evolution should not only be tolerated but *accelerated,* and several impediments from its path lifted. This strong version of the thesis, although it is the more demanding one of the two, seems to me to the more plausible. It is a logical consequence of taking evolution seriously as a tool of welfare. It allows us to integrate the controversial insights of complexity theory into our prior ethical and cultural commitments to advancing social welfare and solving our social problems in creative ways.

To sum up, progress as creative problem solving is inseparable from norm-deviations, experimental learning, and the *discovery of new, better ways of doing things*, i.e., *adaptive innovations*. As Herbert argues, if we want progress, "at some point we leave the path which [others] followed, and enter a new path of our own; in other words, we must have the temper and courage to differ from accepted standards of thought and perception and action. If we are to improve in any direction, we must not be bound up with each other in inseparable bundles, we must have the power in ourselves to find and to take the new path of our own." (Herbert, 2013, pp. 292-293) He goes on to say: "Is not every improvement of machinery and method, every gain made in science and art, every choosing of the truer road and turning away from the false road that we have hitherto trodden – does it not all arise from those differences of thought and perception which, so long as freedom exists, even its present imperfect forms, are from time to time born amongst us?" (Herbert, 2013, p. 293) Does not social progress, in other words, arise from a free society that tolerates and encourages (both deliberate and accidental) acts of *permissionless innovation*?

My model of ecostructural governance, as presented in the next chapter, provides one answer to the question of how, when, and under what conditions, such rare but important welfare-enhancing "differences" and "improvements" are born, selected for, cultivated, and diffused in the social order. So, the theory of permissionless innovation can be seen as a modern version of Spencer's and Auberon's liberal evolutionary insight that "progress is difference." It accepts that socioeconomic progress is achieved through the construction of an institutional framework that takes better advantage of human differences – deviations from the norm – as the "raw material" of social evolution. Following in the "invisible hand" tradition of Smithian, Humean, and Mandevillean liberalism, it emphasizes the social role

that a widespread "freedom-to-experiment" plays in not only *generating* innovations but also forcing them to *compete* against each other in ways that filter out bad innovations and filter in good innovations. This model can be used to turn the society into a collective cauldron of experimental learning that increases the institutional means of facilitating complex adaptation in a rapidly changing environment. In the next chapter, I provide a rule-of-law centric model of welfare state governance that implements these principles.

Chapter 4: The Ecostructural Model of UBI: Rule of Law and the Polycentric Order

4.1. Introduction

In this chapter, I shall extend the evolutionary liberal model of permissionless innovation into the institutional design of a welfare state. At the core of this model is a set of abstract and general rules embodied in the "ecostructure" – which I interpret through the principles of the classical liberal *rule of law* – that determines the scope of agent freedom, rights, and duties. (Dicey, 1885; Polanyi, 2002; Hayek, 2012; Colander & Kupers, 2014) One of the most important rights that this framework guarantees to all people, including the poor, according to the evolutionary liberal view, is *the right to deviate, innovate, and experiment*. This right is best understood as a libertarian right to be free from external interference. Securing this right opens up the institutional space for permissionless innovation. The central task of institutional design, according to this view, is "to create an institutional structure that encourages creative energies and allows production to flourish." (Colander & Kupers, 2014, p. 37) Under this rights structure, "all creative energies must be left as free as possible, yet protected within a careful framework of [eco]structural rules." (Colander & Kupers, 2014, p. 37) Let me recall what I stated in the previous chapter: the complexity approach to institutional design suggests that policy entrepreneurs should aim to…

1) *Facilitate complex adaptation*

… by designing for…

2) *Appropriate institutional ("ecostructural") rules*

…within which…

3) *Agents can self-organize from the bottom-up*

…and thereby…

4) *Produce permissionless innovation.*

Secondly, to entrench the liberal *right to innovate* into the heart of the welfare state, the government should institute the *right to basic income* in order to make sure that the capacity to innovate extends to the poor members of the society as well. The combination of these two rights guarantees access to real freedom, or to an exit option, from the tyranny of established practices and norms. The right to innovate is a Dworkinian "right as a trump" against competing values, interests, and moral considerations. (Dworkin, 1984) Both the right to innovate and the right to basic income are not just Dworkinian trumps, but also Hohfeldian claim rights that generate correlative duties in other citizens. (Hohfeld, 1923) From the point of view of the rule of law, the right to basic income applies the principles of generality and nondiscrimination into the heart of the rule-bound fiscal constitution of the tax-and-transfer (welfare) state. I call this ecostructural rule combination of *the right to innovate* and *the right to basic income* the *Permissionless Innovation Universal Basic Income* (PIUBI) scheme. I will limit myself to exploring the only tax-and-transfer models that, as I am aware of, come close to approximating the normative demands of the rule of law perspective, namely, those of *Universal Basic Income (UBI)* and its sister models, *Negative Income Tax (NIT)* and the *Demogrant*. As I have summarized it in a recent paper:

> "One of the main advantages of the classical liberal UBI model is that it does *not* depend upon competence or benevolence in the government—which are often in short supply—but upon pre-established rules that are shaped by the normative principles of simplicity, generality, transparency, predictability, and nondiscrimination. The pre-established rules of UBI buttress the classical liberal *rule of law* framework that improves the ability of grant recipients to spend their money as they wish and to spontaneously coordinate their actions in the face of radical uncertainty *without* the discretionary intervention of [political] authorities. In this

way, UBI combines the distribution of fungible resources with the delegation of independent decision-making powers to millions of […] individuals and communities. Compared to discretionary tax-and-transfer schemes, the rules of UBI therefore appear more compatible with the *polycentric* discovery of novel solutions from the bottom-up. (…) The classical liberal UBI model therefore provides a viable and promising alternative to the inevitable push-and-pull politics involved in the discretionary tax-and-transfer state." (Lehto, 2021, pp. 123-124)

The PIUBI model, since it operates on a level of high abstraction, is generally aligned with, and capable of reconciliation, with a broad range of classical liberal, social liberal, republican, and libertarian models of basic income. This includes the influential liberal models of UBI as a tool of "real freedom" as proposed by Van Parijs (1995), UBI as a tool of "freedom as the power to say no" as proposed by Karl Widerquist (2013), and UBI as a tool of "republican freedom" as proposed by Philip Pettit (2007). Nonetheless, I shall propose that, among all the various liberal UBI models, the most plausible contenders for affixing the ecostructural rules of general and nondiscriminatory redistribution belong to the family of *classical liberal* and *libertarian UBI models*, especially F.A. Hayek (1960, 1982), Milton Friedman (1962), and James Buchanan (1997). The reason for this is that my work proposes that the *right to basic income* should be strongly tied to the *right to innovate*, and the latter requires a strong commitment to economic and social freedom. The regulatory state and the tax-and-transfer state are co-determinants of the permissionless innovation ecostructure, and system-level social intelligence arises out of their interaction. Thus, it is insufficient to treat UBI and the regulatory apparatus in isolation. UBI as a tool of *freedom-to-innovate-and-experiment* requires a commitment to comprehensive liberalism that treats the welfare state as a system for delivering opportunities for, but also generating obstacles for, liberal innovation.

However, unlike some of the more stringent versions of libertarian UBI model, such as Charles Murray's ambitious proposal for "a plan to replace the welfare state" (2016), I do not think that UBI should replace *all* the other functions of the welfare state. That remains a viable long-term option that is worth taking seriously, but from the evolutionary liberal perspective it is impossible to draw any strict line between how much welfare state intervention is "too much" or "too little." Indeed, although the evolutionary liberal UBI

model proposed in this chapter draws inspiration from the libertarian end of the scholarly debate in its recommendation of a "constitutional" or an "ecostructural" approach to welfare state governance that *substitutes* for, and not merely *complements*, large parts of the welfare state, it leaves the range of additional and supplementary welfare state interventions underdetermined in the margins. Indeed, it is preferable to think of the ecostructural UBI model as a generic "seed" for an open-ended family tree of ever-evolving, real-world applications. My model only suggests some necessary principles for building a bottom-up oriented welfare state infrastructure that is maximally capable of creatively solving social problems and flexibly adapting to new circumstances. The ecostructural rule structure, just like any innovation, is capable of mutating, adapting, learning, and developing into multiple manifestations.

That said, the PIUBI model challenges existing theories and models in the contemporary UBI discourse, including not just social democratic and socialist UBI models (as you would expect of a liberal theory), but all UBI models that see it as naturally aligned with an expansive, high-regulation welfare state. I argue that UBI, as a tool of freedom and experimentation, although the precise contours of its scope cannot be drawn *ex ante*, depends upon a certain rule-bound self-limitation of the welfare state and a strong commitment to liberal neutrality. This corresponds to a scepticism towards regulatory structures that, in addition to providing some legitimate public goods and public services, engages in coercive decision-making in the service of some vision of a good life or (nonessential) harm reduction. In best approximation, such a framework resembles the kind of "Open Society" that evolutionary liberals like David Hume (1777), Adam Smith (1759, 1776), J.S. Mill (1859), Karl Popper (1966, 1972, 2002), Michael Polanyi (1962, 2002), F.A. Hayek (1960, 1982), and Gaus (2016a, 2016b, 2018a, 2018b, 2021) have envisioned. Within this framework, people are guaranteed the unconditional and universal right to be free from coercion, as well as the unconditional and universal right to have access to a sufficient and sustainable level of unconditional resources that provide the material preconditions for autonomous existence.

As Colander & Kupers (2014, p. 36) have argued, governing complexity requires letting go of the mentality that the government's task is to solve the problems of the people for them rather than letting them solve their own problems: "The problem with having the government solve coordination problems is that it often does so in ways that undermine the

creative energies of individuals. Instead of seeing people as having the ability to solve problems on their own, established institutions such as governments may try to solve the problems for them and in the process often create barriers to creativity." Policy makers, well-intentioned and benevolent as they may otherwise be, are easily "blinded by the illusion of control" (Meadows, 2009, p. 169). It is therefore always important to guard against what Hayek (1990) called the "fatal conceit" of assuming that a complex economy can be controlled from the top down. Most forms of what James C. Scott has called "seeing like a state" (Scott, 1998) involve efforts to impose some planned order on a complex and chaotic world. And yet even the most well-organized Hobbesian-Weberian state, with the most incentive compliant population and intelligent leadership imaginable, lacks the Archimedean point from which to exercise effective top-down control over the entire complex adaptive system. (Lehto, 2021, p. 125) This means that governing complexity must always be accompanied with appropriate technocratic humility. Such humility, however, is not a call for political apathy or a conservative defence of the status quo. There are many things that agents can do to improve their surroundings. This includes engaging in political entrepreneurship in order to catalyse new institutional innovations. It only means that *permanent ecostructural rules* – the rules that facilitate bottom-up adaptation and innovation – must form the perennial background condition for effective governance in a complex and changing world. In the words of Donella Meadows (2009, p. 169): "Systems can't be controlled. But they can be designed and redesigned." Using Tinbergen's terminology (1952), the proper "instrument" of evolutionary system design is *ecostructural rule reform*, whose proper "target" is *increased adaptive efficiency*.[32] As I have written elsewhere, this means that "[t]he normative focus of complexity-aware governance should move towards redesigning *the rules of the game* rather than intervening to advance or thwart specific outcomes produced *within those rules*." (Lehto, 2021, p. 125) This recommends a regime of rule of law that gives lexical primacy to private property, the core protective functions of the state, and, finally, a rule-bound basic income. Indeed,

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[32] Of course, more fundamentally still, increased *adaptive efficiency*, or *problem-solving capacity*, in the consequentialist calculus, is merely instrumental towards the achievement of increased *welfare*, *happiness*, *flourishing*, etc. Incidentally, setting "welfare" and "happiness" as direct policy targets, for familiar Hayekian reasons, would probably be epistemically overdemanding and thus counterproductive.

Once we humble ourselves in the face of complexity, the *primary* (or *default*) means, although not the *only* means, of helping particular people in particular circumstances, paradoxically enough, may be to help everybody equally through a *general, nondiscriminatory tax-and-transfer program*. Contemporary [politics] arguably suffers from an overreliance on discretionary methods, including discretionary cash transfer methods. Targeted interventions, although often desirable, should be made *supplementary* to a general, rule-bound tax-and-transfer program. (Lehto, 2021, p. 123)

4.2. The Rule of Law and the Polycentric Order

My central argument is that helping the poor and pursuing social welfare are often better achieved, not through *obedience to discretionary authorities* but through *obedience to the (ecostructural) rule of law*. This argument can be summed up in the maxim: "When in doubt – although the temptation presents itself – do not deviate from the rule of law." (Lehto, 2021, p. 133) The rule of law framework plays a vital role in the facilitation of the spontaneous order of the marketplace and the mutual adjustment of plans and expectations in the process of complex adaptation. This makes the rule of law a necessary although not a sufficient foundation for the governance of complexity. It may be variously *supplemented* to little harm, but *suspending* or *abolishing* it, except in exceptional circumstances, would result in incalculable social losses. According to Aristotle's influential formulation in *Politics*, "it is more trustworthy to have the law rule than any one of the citizens. By this same argument, even if it is better to have certain people rule, they should be selected as guardians of and assistants to the laws." (Aristotle, 1998, pp. 96-97). The rule of law implies that the rulers are the "guardians" and "assistants" of the laws and not the other way around. This idea was succinctly expressed by some of the founders of the United States who saw that the Rule of Law makes possible "a government of laws, not of men," as expressed in Article XXX of the 1780 Constitution of Massachusetts. (Adams, Adams, & Bowdoin, 1780, unpaged) Even though this view reached its pinnacle in modernity, it can be traced to the liberal egalitarian constitution of Periclean Athens. (Andrews, 2004)

The rule of law acts as a check on arbitrary, tyrannical, and coercive governments. In this general sense, rule of law is compatible with various legal-political regimes as long as these are not based on the arbitrary exercise of discretionary power, respect the separation of powers, and satisfy a few other normative criteria, such as generality, predictability, publicity, and non-retroactivity. (L. Fuller, 1969; Raz, 1979; Tamahana, 2004; Murphy, 2005) In its strong interpretation in contemporary liberalism, however, the rule of law specifies more robust constellations of individual rights and freedoms. The contemporary tradition of "rule of law" liberalism has its origins in Locke's defence of "life, liberty, and property." (Locke, 1689) Some have even criticized the rule of law as a liberal "myth." (Hasnas, 2006) But it has had powerful real-world consequences. Lockean rule-of-law liberalism opposes itself to "absolute, arbitrary, unlimited, and unlimitable Power." (Locke, 1689, I, §9) Despite its opposition to the coercive exercise of arbitrary power, Lockean liberalism is not anarchistic since it sees *limited* government power as necessary for the protection of life, liberty, and property. According to Locke, "where there is no law there is no freedom." (Locke, 1689, II, §57) This relies on the distinction between *arbitrary rules*, on the one hand, and *general rules*, on the other hand. But it was David Hume, a century later, who most clearly articulated the relation between Lockean general rules and public welfare: "Public utility requires that property should be regulated by *general inflexible rules*; and though such rules are adopted as best serve the same end of public utility, it is impossible for them to prevent all particular hardships, or make beneficial consequences result from every individual case." (Hume, 1777, §257, my italics) John Gray (2012, p. 124) explains the Human argument for the social benefits of strict rule adherence as follows: "[W]e protect our interests and promote our welfare as best as we can, not by treating the rules of justice as at any moment defeasible by reference to private or public welfare, but precisely by treating them as almost invulnerable to such overthrow or abridgement." Hayek (1960) picked up on this Humean tradition to explain how the coercive, arbitrary, and discriminatory exercise of government power can be "reduced to a minimum and made as innocuous as possible by restraining it through known general rules." (Hayek, 1960, p. 72) According to this Humean-Hayekian branch of "rule of law" liberalism, "the possibility of men living together in peace and to their mutual advantage without having to agree on common concrete aims, and bound only by abstract rules of conduct, was perhaps the greatest discovery mankind ever made." (Hayek, 1982, p. 294; Hamowy, 1971, 1978; Rizzo, 2020, 2021) This framework of

liberalism, both according to its defendants and critics, requires a "strong state" (Bonefeld, 2012, 2015) that protects individual freedom, private property rights, and the competitive market society under the rule of law. The Anglo-Saxon liberal tradition of legal theory, post-Hayek, has focused on the institutional interaction between "evolved" Common Law institutions (Dicey, 1885; Hayek, 1960; Hasnas, 2004) and more "planned" legal and constitutional rules. (Buchanan & Tullock, 1962; Epstein, 1998, 2014) The German rule of law (*Rechtstaat*) tradition, in turn, gave birth to the "Ordoliberal" tradition which shaped the legal foundations of European neoliberalism. (Böhm, 1933, 1937; Eucken, 1949, 1992; Röpke, 1960, 1963; Müller-Armack, 1976, 1978)[33]

Even though some critics of the "strong state" of market liberalism have criticized it as a mere arm of Marxist class struggle and worker exploitation (Harvey, 2005) – a charge which I will not attempt to refute here – other critics (Mirowski, 2002, 2007; Mirowski & Plehwe [Eds.], 2009; Slobodian, 2018) have acknowledged its intimate relationship to the dreams of cybernetics. Indeed, the liberal state can be seen as a "computational" device that is, or tries to be, self-aware of the limits of its own computational powers. The main reason why the liberal rule of law framework is supportive of evolutionary learning and increased social intelligence is that it facilitates a complex set of dynamic social relations and processes that Michael Polanyi has described as "spontaneously ordered" or "polycentric." (Polanyi, 1962, 2002) A "polycentric task" is any task "that can be socially managed only by a system of mutual adjustments" that are regularized under some set of abstract rules. (Polanyi, 2002, p. 184) A "polycentric order" is one in which "persons mutually adjust their full-time activities over a prolonged period, resulting in a complex and yet highly adaptable co-ordination of these actions." (Polanyi, 2002, p. 115) On the institutional level, this requires the widespread delegation of freedom and autonomy to dispersed individuals through "the rule of law and the liberty of the citizen under the law." (Polanyi, 2002, p. 197) The polycentric "order is achieved among human beings by allowing them to interact with each other on their own initiative – subject only to laws which uniformly apply to all of them." (Polanyi, 2002, p. 159) To Polanyi, similar to Dicey (1885) Hayek (1982), the rule of law is important because it secures the general and abstract rules that determine the scope of

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[33] For contemporary developments and discussions of Ordoliberalism, cf. Streitt (1992); Goldschmidt (2004); Goldschmidt & Wohlge (2008); Goldschmidt & Hesse (2012); Gregg (2010); Kolev (2010, 2015); Nientiedt (2020); Feld, Köhler, & Nientiedt (2021).

agent freedom: "Generally speaking, the mutual adjustments required for the establishment of a competitive economic order must be initiated by *individual agents empowered to dispose of resources and products, subject to general rules*," the most important of which include the "system of civil law which establishes rights of (marketable) property and enforces contracts." (Polanyi, 2002, p. 186, my italics) In solving complex tasks, the self-co-ordinating system of the spontaneous order embodies an "immense quantitative superiority" over a top-down "corporate order" due to "an almost indefinite increase in the rate at which relations are readjusted per member." (ibid. p. 118) More recent polycentricity literature has focused on demonstrating how, in the presence of the right conditions, local communities, even poor ones, have often been able to devise bottom-up strategies for dealing with various emergent problems. (Ostrom, 2005; Aligica & Tarko, 2012; Haeffele & Storr, 2020; Rayamajhee, Bohara, & Storr, 2020) Social capital, social trust, and robust practices of local self-governance, when present, lower the transactions costs of "Coasean" bargaining (Coase, 1937, 1960) and other forms of social cooperation.

Given the presence of complex tasks that require polycentric intelligence, there is no conceivable alternative to such a framework: "the operations of a system of spontaneous order in society, such as the competitive order of a market, cannot be replaced by the establishment of a deliberate ordering agency." (Polanyi, 2002, p. 112) However, "this must not be taken as an attempt to overlook or excuse the shortcomings. It merely implies that, in general, we must either put up with these deficiencies or forgo the operation of the system altogether." (ibid., p. 112) Polanyi's final note here sounds a bit more defeatist than his own analysis warrants. Indeed, as evolutionary liberals have always emphasized, there are many ways in which governments can guide, tweak, and support the polycentric order without destroying it. It only means that "[a]n authority charged with replacing by deliberate direction the functions of a large self-adjusting system, would be placed in the position of a man charged with controlling single-handed a machine requiring for its operation the simultaneous working of thousands of levers. Its legal powers would avail it nothing. By insisting on them, it could only paralyse a system which it failed to govern." (p. 119)

This is reminiscent of Adam Smith's (1759, p. 275) famous passage in the *Theory of Moral Sentiments* warning against the conceited "man of system" who "is often so enamoured

with the supposed beauty of his own ideal plan of government" that he "seems to imagine that he can arrange the different members of a great society with as much ease as the hand arranges the different pieces upon a chess-board. He does not consider that (…) in the great chess-board of human society, every single piece has a principle of motion of its own, altogether different from that which the legislature might chuse [sic] to impress upon it." This passage is amenable to multiple readings, but it highlights Smith's recognition that the "principle of motion" contained in the mind and body of each agent can be made to harmonize with various social interests (whatever those interests may be) *only* if individuals are given some latitude to be autonomous and self-propelling – in other words, only if they are made free, and then incentivized to act for the common good, under the rule of law. Smith's vision of the system of natural liberty, where each agent, in the language of the *Wealth of Nations*, "is left perfectly free to pursue his own interest his own way" (A. Smith, 1776, p. 533) is quite close to Polanyi's vision of the system of the polycentric order as "a large self-co-ordinating system in which each decision of one unit re-adjusts its relations to a great number of other units." (Polanyi, 2002, p. 118) Effective Smithian "[c]omplexity policy does not involve control by government; it involves affecting the economy's evolution by changing the ecostructure to better allow people to solve their problems." (Colander & Kupers, 2014, p. 165) The rule of law is the name of that ecostructure. In this framework, "constitutional design can facilitate and take advantage of spontaneous order" in markets and civil society although "cultural evolution, which is a type of spontaneous order, ultimately determines the constraints on public power." (Boykin, 2010, p. 19)

Next, allow me to define the parameters of the liberal rule of law approach to the welfare state that combines the *willingness* to undertake the conscious design of the parameters of constitutional governance with *humility* in the face of spontaneous cultural and economic evolution. The primary task of the rule of law framework is to secure the autonomous agency of cooperating, competing, and self-organizing citizens *viz-a-viz* each other and the coercive powers of government. Agents (people) require the protection of *a permanent framework of rights under the rule of law* in order to be able to effectively function in the role of decentralized decision-makers. This includes the governmental delegation and protection of agency powers, capacities, liabilities, and rights. The most important part of this, of course, is the protection of the autonomous sphere of individual freedom. This

includes the negative freedom understood as the freedom from coercive interference. When applied to resource holdings, this yields the regime of *private property*. But this sphere of individual freedom (or private property) can be best understood as being modifiable (enhanceable) by various optional enhancements. The rule of law can be applied in different ways, and agency capacities (including resource holdings) can be modified in different ways, as long as the outcome is a polycentric order where substantially free individuals can engage in decentralized decision-making**.** Powers of human agency in the spontaneous order can be added to or subtracted from with the help of various legal claims and rights beyond the right of private property and the right to governmental protection against internal and external threats. The more extensive sets of claims and rights may include (or equally may exclude), e.g., the right to public education, the right to healthcare, and, crucially for the present analysis, the right to a basic income. Such rights, as long as they do not destroy the possibility for the spontaneity of mutual adjustments, are compatible with the rule of law and the (polycentric) spontaneous order.

To illustrate, in his *Constitution of Liberty* (1960), Hayek's list of tolerable or desirable government actions includes (at least) the following: 1) the acquisition of reliable knowledge; 2) the provision of the monetary system; 3) the setting of standards of weights and measurements; 4) gathering information from surveying, land registration, statistics, etc.; 5) financing (and perhaps organizing) some kind of education; 6) sanitary and health services; 7) the construction and maintenance of roads; 8) municipal amenities; 9) various public works; 10) secret military preparations; 11) the advancement of knowledge; and 12) the guarantee of an equal minimum income. (Hayek, 1960, pp. 340, 374-376, 381, 406; see also Lehto, 2015, pp. 64-71) He also wrote that "the aims of the welfare state can be realized without detriment to individual liberty, though not necessarily by the methods which seem the most obvious and are therefore most popular." (Hayek, 1960, p. 375) Indeed, his view on the legitimate functions of government is not too far from, and properly belongs in the liberal tradition of, Adam Smith, Michael Polanyi, and Geoffrey Hodgson. All of them recognized the supremacy of the rule of law but also tolerated public services.

The set of government programs that are compatible with the rule of law is potentially infinite but the set of government programs that truly *enhance* the spontaneous order (as opposed to merely *not destroy* it) is smaller – a point emphasized by Hayek (1960, 1982) and

also Ordoliberals like Eucken (1992) and Liefmann-Keil (1961). It is impossible, here, to list the infinite number of possible government rules and programs, or to evaluate their desirability in a vacuum. I doubt there are many universal lessons to draw since the effectiveness of many government rules and programs is necessarily context-sensitive and subject to path dependence. The best set of government programs for each country will have to be considered with regard to their merits and demerits in each case. Although there is a reasonable case to be made for further government actions beyond the libertarian minimal state and the UBI guarantee, e.g., in the area of the provision of essential public services, health care, and public education, I will limit my case primarily to UBI. The first and obvious reason for this limitation is not to take on more than I can chew. The second and more important reason, however, is that it seems to me – as it did to Hayek, Friedman, Buchanan, Hodgson, and many others – that the case for UBI is *prima facie* stronger on pure "rule of law" and "permissionless innovation" grounds than the case for most other government programs. This means that it deserves special scrutiny.

4.3. The Right to UBI and the Right to Private Property

Basic income has been tied to "real freedom for all" (Van Parijs, 1995), "capitalism and freedom" (Friedman, 1962), "freedom as the power to say no" (Widerquist, 2013), freedom as "non-domination," (Pettit, 2007) and many other conceptions of freedom. All of these theories of freedom, despite their differences, involve an institutional structure of rights (somewhat different in each case) that gives people robust access to the legal and social preconditions of freedom. What does institutionalized freedom, in the UBI context, mean? What consequences does it have? Among other things, it must mean the freedom to experiment with new things, to deviate from the expectations and demands of other people, and otherwise innovate, in a myriad of ways, without having to ask anybody for permission. Freedom, in other words, is intimately tied to "permissionless innovation" – the right to innovate without having to ask anybody for permission. This right is guaranteed only when the regime of *private property* is legally protected and broadly dispersed.

The PIUBI model is a *propertarian* model, since *the right to innovate* and *the right to basic income* depend upon an underlying regime of private property rights, which guarantee the protection and sovereignty of the private sphere of individuals. The model can, of course, be combined with various forms of *collective property* and *commons management*, (e.g., Ostrom, 1990, 2005) but *private property* should be given priority – not because private property is "just" or "sacred," but because it acts as a *platform for innovation*. Private property secures a domain within which, and on the basis of which, an agent can deviate from established norms, i.e., to innovate and experiment. This requires agreement of the rules that regulate the ownership, transfer, transformation, and consumption of physical resources (i.e., what Georgists call "land").[34] In its emphasis on "life, liberty, and property," my PIUBI model belongs to the classical liberal tradition of property rights (Locke, 1689; Hume, 1777; Hayek, 1960). Within this broad tradition, the PIUBI model is agnostic between, and compatible with, (some forms of) right-libertarian (Rothbard, 1982), left-libertarian (George, 1887, 1885; Steiner, 1994, 2016; Van Parijs, 1995), neoliberal (G. Brennan & Buchanan, 1985; Friedman, 1962), Ordo liberal (Eucken, 1949, 1992; Röpke, 1960, 1963), and social liberal (Rawls, 1971, 1999; Dworkin, 1981, 1984) models of private property rights. The existence of robust private property rights "enables each member of a society to shape the content of his protected sphere and all members to recognize what belongs to their sphere and what does not." (Hayek, 1960, p. 207) In the words of Hillel Steiner (1995, pp. 94-95), private property rights "imply all other persons' duties of non-

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[34] My proposed theory of property and redistribution, in line with the classical liberal tradition, is therefore primarily a *physicalist* or *resource-based* one. The legitimate status of so-called "intellectual property" (IP) remains a tricky issue to be solved outside the present discussion, and I remain agnostic on the issue. In the following discussion, I shall neither seek to attack the current IP regime nor preclude the possibility that it should be fundamentally reformed. At any rate, given the importance of IP rights for the digital economy (Lanier, 2013), It is vital to get the rules of IP right. After all, what people can achieve with their physical property, i.e., what kind of permissionless innovation is possible, is affected by what kind of IP regime is in place in the economy. Recent scholarship (Slobodian, 2020) has reminded us how contentious IP rights – including both copyright and patents – have been to liberals like Hayek and Machlup. IP rights have theoretical appeal but also negative side-effects. From the evolutionary perspective, societies need to find an improved legislative balance between, on the one hand, the tendency of IP rights to incentivize innovation through the monetization of new ideas, and, on the other hand, the tendency of IP rights to slow down derivative, user-driven innovation. Complexity theory further warns that an overly monopolistic IP protection regime can lead to a winner-take-all economy. (Merton, 1988) Perhaps the main worry from the evolutionary perspective is that an excessively thick regime of patents and copyrights makes permissionless innovation with other people's ideas and creations – which is a core driver of progress – either impossible or prohibitively costly. This might justify limiting the scope of IP rights or even abolishing them. (Ridley, 2015, 2020) Basic income, like IP, provides one solution to the problem of how to finance artists, creators, and scientists. In this sense, IP rights and UBI can be seen as *institutional substitutes* more than *institutional complements*. A combination of open markets and basic income might thus make strong IP rights superfluous or, at any rate, less appealing.

interference with the right-holder's use of certain physical things for certain limited or unlimited periods of time." In the case of PIUBI rights, the "certain physical things" include one's basic income endowment and all the other sources of wealth and income that one legitimately has access to.

So, UBI is *not* to be treated as the property of governments but the *private property of citizens* for which people have a claim against each other and against their own government. UBI is *not* something that governments "give" to the people; it is neither a "public policy" nor an act of "charity." It is cornerstone of the rules of the game for the cooperative social order. It secures a set of resource claim-rights (and corresponding duties) of individuals vis-à-vis the state and each other. In the language of the liberal egalitarian theorist Jeremy Waldron (1986, 1988, 1991), one could say that the rules of UBI bring into being, through a constitutional *fiat*, a universal "right to private property." Such a basic income is "an income of one's own." (De Wispelaere, 2015) This also provides a non-Marxist solution to G.A. Cohen's (1995, 2011) Marxist critique of free market capitalism as the generator of poverty as a source of social unfreedom. UBI abolishes poverty through guaranteed access to fungible resources, which guarantees the "real freedom" that may be required to "justify capitalism" (Van Parijs, 1995). And it also partially fits into John Rawls's (1971, 1988, 1999) and James Meade's (1964) framework of "property owning democracy" as a requirement of justice. The PIUBI framework also protects the welfare rights of the disabled (Cureton, 2008) and the neurodiverse (Ortega, 2009; Baker, 2011; Kapp, Gillespie-Lynch, et al., 2013; Silberman, 2015) better than the Rawlsian scheme, and better than those needs-based arrangements in which the eligibility criteria of "acceptable" disability and neurodiversity are constantly policed. The *right to basic income* ensures a guaranteed basic resource endowment to which sovereign individuals have an unconditional right (against *eligibility* conditionalities), and *the right to innovate* ensures that they are free to do with this resource endowment as they please (against *regulatory* conditionalities). This arrangement guarantees the formal and substantial right to private property to all citizens.

With this unique combination of negative freedom and basic income, therefore, agents are empowered to engage in decentralized experimentation – permissionless innovation – and the basic function of welfare state is transformed from an interventionist enforcer of moral, behavioural, and cultural standards, habits, and values, into a neutral guardian, or

"gardener," of the Open Society. The ecostructural approach to welfare state governance does *not* employ liberal neutrality in order to assert that all moral, behavioural, or cultural standards are equally good. No, it employs liberal neutrality for the very *opposite* reason, because it believes that socioeconomic progress is desirable but only possible under certain institutional trappings that capture the unequal outcomes – including the degrees of goodness or badness – produced by different choices, experiments, mutations, and innovations. It argues that the coercive enforcement of existing standards, habits, and values, although sometimes justified, hinders the discovery of new ones, while the steady pursuit of permissionless innovation in the Open Society, albeit messy, is the best available means of *refining* and *evolving* our moral, behavioural, and cultural standards. Indeed, liberal neutrality is best seen as a platform for an emergent evolutionary *sorting mechanism*, *filtering device,* or *fitness function* that embodies (system level) *nondiscrimination* with regard to the law only to embody sharper (agent level) *discrimination* on the level of innovations. When people are free to innovate, they are also free to discriminate between innovations with the result that some innovations get amplified while others get eliminated. Freedom is selection. Liberalism is a competitive, Darwinian regime. So, liberal neutrality is anything but neutral with regards to outcomes; it enforces *egalitarian neutrality* on the level of the rules only in order to facilitate the *unequal* and *differential* selection and diffusion of innovations in the society. It ensures that even minor differences of usefulness, merit, productivity, utility, attractiveness, and the like, are allowed to result in major differences in outcome (depending on choices made and experiments undertaken) which amplifies the evolutionary dynamism of the society. In this sense, the biggest merit of UBI as a tool of "real freedom" is not its capacity to facilitate personal happiness or self-expression but its capacity to facilitate selective social pruning. The result of people exercising their freedom is a transformation of the social order.

Let me be very clear what I mean. I think that *the right to innovate with basic income should extend to almost everything that does not violate other people's rights or generate catastrophic system level effects*. So, I think the evolutionary perspective highly recommends that poor people should be allowed to experiment with unconventional lifestyles, bizarre cults, dangerous drugs, unapproved therapies, dangerous working conditions, living in a monastery, living in a brothel, playing videogames all day, surfing all

day, working 24 hours a day, committing offensive or controversial speech, purchasing gene editing and other human enhancement technologies (more on those in **Chapter 6**), etc.

In this sense, my proposal is strongly aligned with, and simply a restatement, of the libertarian principle that one should be free to do whatever one wants short of violating other people's rights. It is a restatement of Spencer's (1851) "law of equal freedom." The normative justification for this quasi-libertarian regime does not rest on natural rights, fairness, justice, or equity, but on the expected beneficial consequences of evolutionary social learning. Whether such a society can still be considered a "welfare state" is, I suppose, debatable, but *if* the goal of the welfare state is to increase the long-term prospects of human flourishing, *and* to do in a way that is inclusive of the interests of the poor, then the liberal PIUBI model easily qualifies. After all, if it turns out, as I claim, that the best way to help poor people is to allow them to innovate and experiment, then the welfare state better be organized around the experimental method. Under my proposed scheme, the government primarily concerns itself with the management of the evolutionary liberal rule of law framework; and it does so for the sake of solving the problems of the poor.

Next, let me examine three examples of permanent, rule bound, classical liberal UBI schemes as plausible contenders of tax-and-transfer models that could be incorporated into the ecostructural framework: 1) Friedrich A. Hayek's case for *Universal Basic Income*; 2) Milton Friedman's case for a *Negative Income Tax*; and 3) James M. Buchanan's case for a *Demogrant*. In this section, I shall focus on *classical liberal* UBI models because they, especially Hayek, are strongly connected to *evolutionary theorizing* and *complexity theory*, and they have theorized the *constitutional* and *rule of law* aspects of UBI. Nonetheless, there is much room for further exploring the evolutionary consequences of Rawlsian, Van Parijsian, Widerquistian, and other non-classical liberal UBI models. Space forbids me from attempting the task here but doing so will be a worthwhile task in the future.

4.4. Three Classical Liberal Models of Ecostructural UBI: Hayek, Friedman, & Buchanan

4.4.1. Hayek's "Guaranteed Minimum Income" model

Hayek expressed a rather consistent support for a guaranteed minimum income in all his major writings. (Hayek, 1944, 1960, 1982, 1990, 1994) He saw basic income as a means of providing security against risks common to all that is compatible with complexity, innovation, freedom, and the rule of law. I will limit my discussion to what he writes about the subject in two of his major works, *The Constitution of Liberty* (1960) and *Law, Legislation, and Liberty* (1982), in order to show how his discussion illuminates the relationship between ecostructural governance, the rule of law, and UBI.

First, a note about his infamous opposition to "social justice" (Hayek, 1982, pp. 226-266). His use of the phrase "social justice" is a needlessly confusing and not very helpful. Indeed, his notable defence of basic income appears right in the middle of his general attack on social justice, where he argues that basic income, unlike other types of redistribution, is compatible with the rule of law (Hayek, 1982, p. 249, my italics):

> "There is no reason why in a free society government should not assure to all protection against severe deprivation in the form of an assured minimum income, or a floor below which nobody need to descend. (…) *The problems with which we are here concerned arise only when the remuneration for services rendered is determined by authority, and the impersonal mechanism of the market which guides the direction of individual efforts is thus suspended*."

It is clear from this that Hayek thought that "an assured minimum income," unlike targeted and discretionary redistributive schemes, would *not* suspend "the impersonal mechanism of the market" or lead to the "determination by authority" of competing welfare outcomes. Indeed, he explicitly singled basic income out as the *only* redistributive mechanism (although *not* the only welfare state intervention) immune to his criticisms.

In the *Constitution of Liberty* (1960), Hayek turns to "the important issue of security, of protection against risks common to all, where government can often either reduce these risks or assist people to provide against them." (Hayek, 1960, p. 376) Here, he draws an important distinction between "limited security" (or "an equal minimum income for all") and "absolute security" (or "a particular income that a person is thought to deserve"):

> Here, however, an important distinction has to be drawn between two conceptions of security: *a limited security which can be achieved for all* and which is, therefore,

no privilege, and absolute security, which in a free society cannot be achieved for all. The first of these is security against severe physical privation, *the assurance of a given minimum of sustenance for all*; and the second is the assurance of a given standard of life, which is determined by comparing the standard enjoyed by a person or a group with that of others. The distinction, then, is that between *the security of an equal minimum income for all* and the security of a particular income that a person is thought to deserve." (Hayek, 1960, p. 376, my italics)

Let me now turn to his other magnum opus, *Law, Legislation, and Liberty* (1982), where Hayek makes two further arguments for a guaranteed minimum income that reformulate some of his earlier arguments. I shall show that one of his new arguments is *pragmatic* (the Compatibility Argument); the other one is more *imperative* (the Necessity Argument).

1) Hayek's *pragmatic* case states that a guaranteed minimum income, at the very least, is *compatible* with individual freedom and the Rule of Law. It might therefore be safely implemented without impeding the functioning of the market society. I have already quoted a portion of this passage above, but let me now present the full passage:

> "There is no reason why in a free society government should not assure to all protection against severe deprivation in the form of an assured minimum income, or a floor below which nobody need to descend. To enter into such an insurance against extreme misfortune may well be in the interest of all; or it may be felt to be a clear moral duty of all to assist, within the organized community, those who cannot help themselves. So long as such a uniform minimum income is provided outside the market to all those who, for any reason, are unable to earn in the market an adequate maintenance, this need not lead to a restriction of freedom, or conflict with the Rule of Law." (1982, p. 249)

2) Hayek's *imperative* case for a guaranteed minimum income, however, draws stronger conclusions from his analysis of the "Great Society," which is roughly a synonym for what Popper (1966) called the "Open Society." What Hayek means by the Great Society is a complex and evolving society where 1) individuals are largely free to pursue their own diverse projects in diverse ways, where 2) governance is based on abstract and general rules that apply to all individuals equally (the Rule of Law), and where 3) human beings are

interconnected and interdependent upon networks of strangers. This is the perspective that, I believe, provides the clearest evolutionary liberal justification for UBI. It states that a guaranteed minimum income might even be a *requirement* of good governance if we understand the market economy as a complex adaptive system:

> "The assurance of a certain minimum income for everyone, or a sort of floor below which nobody need fall even when he is unable to provide for himself, appears not only to be a wholly legitimate protection against a risk common to all, but a necessary part of the Great Society in which the individual no longer has specific claims on the members of the particular small group into which he was born." (1982, p. 395)

Comparing these passages, it is clear that Hayek makes *two* different arguments, here. On the one hand, Hayek sees a pragmatic case for a guaranteed minimum income which emphasizes the fact that the assured minimum income is compatible with the spontaneous order of the marketplace; it need not render it dysfunctional. On the other hand, he argues for something more than that, namely, that a guaranteed minimum income may be "a necessary part of the Great Society." I interpret this to mean that the assured minimum income might, in fact, be a necessary institutional safeguard of the sort of market society where individual freedom on the spontaneous order of the marketplace is reconciled by with the public demand for social security. The two pro-UBI arguments – the Compatibility Argument and the Necessity Argument – coexist in Hayek's various works, and they suggest varying degrees of consistent but underdeveloped support for, or at least tolerance of, a robust UBI-like system.

Indeed, Hayek (1982, p. 143) explicitly tied his support for the guaranteed minimum income scheme to the rule of law framework and the principles of equality and nondiscrimination (i.e., equal treatment under the law):

> "The basic conception of classical liberalism, which alone can make decent and impartial government possible, is that government must regard all people as equal, however unequal they may in fact be, and that in whatever manner the government restrains (or assists) the action of one, so it must, under the same abstract rules, restraint (or assist) the actions of all others. Nobody has special claims on

government because he is either rich or poor, beyond the assurance of protection against all violence from anybody and the assurance of a certain flat minimum income if things go wholly wrong."

So, it seems like Hayek provided a coherent and forceful argument in favour of something like UBI. However, this is complicated by the fact that there is ongoing debate around whether Hayek would have supported a fully *universal* and *unconditional* scheme despite his long-standing and unwavering support for *some form* of basic income. (Hayek, 1944, 1960, 1982) Frustratingly, his discussion of basic income is brief, abstract, and lacking in detail. In all his works, he shied away from discussing the concrete details of his scheme or how it relates to other social insurance models and basic income models. Indeed, it seems that his own preference, expressed sporadically, was for a *conditional* minimum income scheme that would explicitly exclude certain categories, such as lazy individuals and "hermitages." (Hayek, 1990, p. 153) Some commentators have sought to argue that Hayekian principles are incompatible with UBI: "Hayek could never have defended a universal basic income in a manner consistent with his critique of social justice." (Rallo, 2019, p. 348) Instead, Rallo (2019, p. 357) claims that Hayek *did* support, and subsequent Hayekians *should* support, "means-tested benefits schemes [in which] only those persons unable to provide for themselves within a free-market order would receive an income transfer from the government subject to the condition that they devote active efforts to once again coordinate with other economic agents inside the division of labor."

Regardless, others have argued that Hayek's own principles are better served by the abolition of means testing and conditionalities (Zwolinski, 2015, 2019). This seems more plausible than Rallo's (2019, p. 348) claim that "a network of means-tested benefits" are aligned with Hayekian principles of the rule of law. On the contrary, Hayekians should worry, and experience confirms, that means-tested benefits are a bureaucratic nightmare. The attempt to monitor eligibility through a welfare bureaucracy, and to exclude "undeserving" people, as Hayek suggests, is a recipe for an administrative disaster caused by the "fatal conceit" that makes politicians think that they can design a fair or efficient pattern of resource allocation (Hayek, 1990). At any rate, Hayek's own preference is somewhat irrelevant. What matters is what a (Neo-)Hayekian model of basic income should look like *today*. Hayek's case for a guaranteed minimum income, regardless of his own scattered

thoughts on how it would look like in practice, can be applied to justify a full-blown UBI scheme. In my estimation, a UBI-friendly interpretation of Hayek is the most plausible one, since it best fits with his normative assumptions about the principles and rules that should guide the Open Society. I posit that a robust UBI scheme, modelled on evolutionary, ecostructural lines, is *compatible with* Hayek's major philosophical aspirations; and may, in fact, be *required* by them.

4.4.2. Milton Friedman's "Negative Income Tax" model

The Negative Income Tax (NIT) is one of the most popular UBI models in the literature. Unlike Hayek's vague proposal for the guaranteed minimum income, NIT is a fully specified and carefully modelled scheme that leaves little to the imagination. Under the NIT scheme, taxes and benefits are combined into a single sliding scale where people either pay net taxes or receive net benefits depending on their income bracket, so that poor people end up paying "less than zero" income tax and thus receiving "negative taxes" (benefits). Its proponents have included numerous prominent economists across the political spectrum. (Lerner, 1944; Stigler, 1946; Friedman, 1962; Tobin, 1966; Tobin, Pechman, & Mieszkowski, 1967; Killingsworth, 1976; Samuelson & Hopkins, 1977; Mankiw, 2016) Some scholars do not consider NIT a proper form of UBI at all. (Van Parijs & Vanderborght, 2017) Nonetheless, despite some institutional differences between them, the schemes can be made mathematically identical (Mankiw, 2016) and functionally near-identical. The economic debate around NIT and guaranteed minimum income heavily influenced the first wave of basic income experiments in the United States and Canada between 1968 and 1980 (Solow, 1986; Widerquist, 2005). It also led to the introduction of the Earned Income Tax Credit (EITC) program under Richard Nixon, which shares some similarities with NIT, but falls short of unconditionality, universality, generality and many of the other key principles of UBI. (Moffitt, 2003; Hungerford & Thiess, 2013)

The NIT was famously popularized in Milton Friedman's *Capitalism and Freedom* (1962), but it was earlier proposed Abba Lerner in *Economics of Control* (1944), and the first mention of the idea in Friedman's *oeuvre*, under the name of "social dividend," is actually found in

Friedman's review of Lerner's book. (Friedman, 1947, p. 411) The first systematic treatment of NIT was provided by George Stigler, Friedman's colleague at Chicago, in his 1946 article, "The Economics of Minimum Wage Legislation." Stigler's aim in the paper was to argue against minimum wage laws and to propose a uniform, family-centric NIT as a substitute to minimum wage legislation: "The popular objective of minimum wage legislation - the elimination of extreme poverty - is not seriously debatable. The important questions are rather (1) Does such legislation diminish poverty? (2) Are there efficient alternatives?" (Stigler, 1946, p. 358) He answers "no" to the former and "yes" to the latter. My aim, here, is *not* to evaluate Stigler's (empirical and theoretical) claims regarding the relative efficiency of UBI/NIT versus minimum wage laws in alleviating poverty. It seems to me that there are reasons to think that minimum wage laws and UBI are *substitutes*, so that the introduction of UBI/NIT seriously weakens the case for any minimum wage laws. Indeed, minimum wage laws restrict the ability of markets to innovate with labour contracts, which means that they are in conflict with the right to innovate; and since their best justification is protecting the income of workers, it seems that UBI/NIT renders minimum wage laws superfluous. Nonetheless, I remain open to the possibility that some forms of minimum wage legislation are compatible with the ecostructural approach to UBI. Instead, I wish to examine Stigler's model of NIT as a tool of strengthening the rule-bound, market-friendly nature of the welfare state: "Society must determine, through its legislators, what minimum income (or addition to income) should be guaranteed to each family." (Stigler, 1946, p. 364) Although Stigler's model is family-centric, it can easily be modified to apply to all individuals. Indeed, Friedman's model is targeted at individuals, not families, which seems preferable to me, since an individualized benefit recognizes the diversity of all individuals by allowing all family members to have full autonomy and the right to innovate on their own accord. Stigler continues:

> "One principle is fundamental in the amelioration of poverty: those who are equally in need should be helped equally. (...) The principle of equity thus involves the granting of assistance to the poor with regard to their need (...) but without regard to their occupation. There is a possible choice between grants in kind and in money. The latter commends itself strongly: it gives full play to the enormous variety of tastes and it is administratively much simpler. (...) There is great attractiveness in the

proposal that we extend the personal income tax to the lowest income brackets with negative rates in these brackets. Such a scheme could achieve equality of treatment with what appears to be a (large) minimum of administrative machinery. If the negative rates are appropriately graduated, we may still retain some measure of incentive for a family to increase its income." (Stigler, 1946, pp. 364-365)

Let me now turn to Milton Friedman (1962, Chapter XII), who provides the most influential analysis and justification for NIT. He argues that, although "in many ways the most desirable" form of poverty relief, "private charity is insufficient (…) [in] the large impersonal communities that are increasingly coming to dominate our society." Therefore, this line of reasoning can be used to justify "governmental action to alleviate poverty; to set, as it were, a floor under the standard of life of every person in the community." (Friedman, 1962, p. 157) He then sets out the case for NIT in a passage that is worth quoting at length:

> "Two things seem clear. First, if the objective is to alleviate poverty, we should have a program directed at helping the poor. There is every reason to help the poor man who happens to be a farmer, not because he is a farmer but because he is poor. The program, that is, should be designed to help people as people not as members of particular occupational groups or age groups or wage-rate groups or labor organizations or industries. This is a defect of farm programs, general old-age benefits, minimum-wage laws, pro-union legislation, tariffs, licensing provisions of crafts or professions, and so on in seemingly endless profusion. Second, so far as possible the program should, while operating through the market, not distort the market or impede its functioning. This is a defect of price supports, minimum-wage laws, tariffs and the like." (Friedman, 1962, pp. 157-158)

Let us analyse this passage from the ecostructural point of view. Friedman's model shares many similarities with that of Stigler. Friedman emphasizes the *nondiscriminatory* and *general* nature of the model: it should be given to everybody, at equal amounts, regardless of their occupation, age, wage rate, or group affiliation. The model is *simple* and *transparent*, which means it is easy to administer and monitor. It supports the freedom of recipients to engage in market transactions. Furthermore, Friedman conceives of NIT as a *substitute* for a whole range of (allegedly) market-distorting policy mechanisms. Like Stigler, he specifically objects to minimum-wage laws, but he adds a whole range of other policy

interventions into the mix, which means that he conceives of the NIT as an ambitious replacement of many of the current policies: "if enacted as a substitute for the present rag bag of measures directed at the same end, the total administrative burden would surely be reduced." (Friedman, 1962, p. 158) If we look at things from the PIUBI point of view, the main question is whether such a high rate of substitution as Friedman recommends contributes to adaptive efficiency by clearing various bureaucratic hurdles out of the way of permissionless innovation, thereby increasing economic and social freedom.

Overall, it seems that Friedman's scheme is compatible with a high rate of permissionless innovation, since it offers a strong protection to the right to innovate. The PIUBI scheme should emulate Friedman's proposal in two ways: 1) prioritize fixed rules of the tax-and-transfer state over discretionary cash and in-kind transfers, and 2) prioritize a high rate of substitution between UBI and other programs in order to increase agent freedom and remove administrative obstacles out of the way of innovation. Nonetheless, ensuring that the government provides sufficient support for the capacity of people to innovate might, depending on the best available evidence, require incorporating some further welfare state measures. The model should be kept flexible and open-minded in order to properly incorporate the lessons of complexity-aware public policy, even if this means accepting a wider scope for public policy than Friedman was willing to do. At any rate, Friedman's central contribution to the UBI debate is to highlight the ways in which existing welfare state measures frequently do not achieve their intended goals. Indeed, shifting resources away from failing programs and regulations towards UBI is not only justified by "neoclassical" market efficiency (what I have called "type 1" adaptation) arguments, but also by adaptive efficiency (what I have called "type 2" adaptation) arguments. I have argued that a highly discretionary welfare state leads to the erosion of the rule of law, which leads to the erosion of the polycentric order, which leads to the erosion of evolvability (social learning capacity), which, finally, leads to the incapacity of the system to generate innovative ways to help people – including, especially, poor people. Therefore, Friedman's proposal is more right than wrong in its prescriptions, although his basic model can – and probably should – be complemented by auxiliary programs.

From the point of view of the ecostructural approach to welfare state governance, it is notable that Friedman's case for NIT is tied to his broader, classical liberal argument that the

main job of the government is to act as an "umpire" that upholds the rules of the economic game: "just as a good game requires acceptance by the players both of the rules and of the umpire to interpret and enforce them, so a good society requires that its members agree on the general conditions that will govern relations among them, on some means of arbitrating different interpretations of these conditions, and on some device for enforcing compliance with the generally accepted rule." (Friedman, 1962, p. 29) It is no wonder, then, that the same focus on rules prevails in his writings on all aspects of governance, from the rules of the monetary system (Monetarism) to the rules of the tax-and-transfer state (the NIT). In all of these areas, Friedman provided proposals that aimed to bind government action to the enforcement of "the general conditions that will govern relations between them." For example, his version of monetary theory, for which he became famous, relied on the rejection of *discretion* in favour of *monetary rules*: "By setting itself a steady course and keeping to it, the monetary authority could make a major contribution to promoting economic stability." (Friedman, 1968, p. 17)[35] Friedman's NIT model can also be seen as an analogous instance of the government "setting itself a steady course and keeping to it" with respect to the rules of the tax-and-transfer state. It is not coincidental that Friedman is not only one of the major theorists of rule-based decision-making in monetary policy (1968) but also one of the major theorists of rule-based decision-making in fiscal policy (1962). My purpose here is not to defend monetarism. Indeed, I am agnostic about whether the best macroeconomic theory is monetarism, Keynesianism, or something else entirely. The macroeconomic dimension of ecostructural governance will not be developed in my thesis. I only wish to highlight that the *rules vs. discretion* debate lies at the heart of Friedman's version of liberalism, and it also directly underlies his UBI/NIT model. He can thus be seen as a pioneer theorist of ecostructural welfare state governance. Although Friedman does not especially focus on the *evolutionary* dimension of economic agency, the abstract rules of the NIT model can be co-opted and retrofitted to serve various economic and non-economic goals, including the evolving goals of permissionless innovation.

I have treated NIT and UBI as identical, but is this justified? As Friedman himself has made clear, "basic or citizen's income is not an alternative to a negative income tax. It is simply another way to introduce a negative income tax if it is accompanied with a positive income

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[35] For the broader rules vs. discretion debate in monetary policy, see Salter (2017) and Furton & Salter (2017).

tax with no exemption." (Friedman & Suplicy, 2000, p. 10) This view is corroborated by the Harvard economist Greg Mankiw (2016), who has shown that, with regards to UBI and NIT, "[t]he two policies are equivalent. If you look at the net payment (taxes less transfer), everyone is exactly the same under the two plans. The difference is only a matter of framing." This is also the reason why I have chosen to treat UBI and NIT as alternative versions of the *same* model, despite the fact that *some* NIT models differ from *some* UBI models. The most important difference remains that, "in line with common fiscal practice, most negative income tax proposals and all negative income tax experiments take the household as the relevant unit for both positive and negative transfers." (Van Parijs & Vanderborght, 2017, p. 36) This is certainly true of Stigler's (1946, p. 364) and Tobin's (1966, p. 36) proposals, both of which adjust NIT payments to household size and composition. However, there is no reason why NIT *could not* be implemented on an individual basis, as I think it should. Furthermore, many "UBI" proposals and experiments have also deviated significantly from the ideal conditions of generality, nondiscrimination, simplicity, transparency, etc. This cannot be used to argue against UBI. In these conversations, it is always important to educate people that not all real-world models contain all the features of the "pure" UBI/NIT model. This does not mean that models that deviate from the "pure" UBI/NIT model should be automatically rejected, but it suggests that researchers should always take care to define their terms. Clarity is the only way to avoid miscommunication and mislabelling in public policy matters. Researchers need to explain very clearly that the "ideal" UBI/NIT model consists of a narrow but clearly defined list of design criteria that *all* need to be co-present and fully secured in order for a model to deserve to be called a "real" UBI/NIT. Similarly, a *Ferrari* that is red, beautiful, and made in Italy but lacks an engine and a steering wheel is not a "real" *Ferrari*. This kind of purism can be accused of idealism, but it is no more idealistic than insisting on a *Ferrari* when buying a *Ferrari*.

4.4.3. James Buchanan's "Demogrant" model

James Buchanan was the co-founder of public choice theory and the Virginia school of political economy. The central focus of his expansive work, similar to Rawls (1971), was paying attention to the construction, maintenance, and reform of the fundamental "rules of

the game" based on a contractarian model of collective choice. (Buchanan & Tullock, 1962; Buchanan, 1975; G. Brennan & Buchanan, 1985; Buchanan & Congleton, 1998) Buchanan's contractarian methodology provides a fruitful way to think about ecostructural rules. One obstacle is that he relies on the methodological assumptions of rational choice theory and game theory, which I have methodologically criticized in my analysis. Therefore, for Buchanan's work to be in sync with evolutionary considerations, one must ignore or jettison its "rationality" and "equilibrium" assumptions. I believe this can be done without hurting the core project. In fact, in his later years, Buchanan moved explicitly into the direction of complexity theory and "away-from-equilibrium" dynamic analysis that was directly inspired by Neo-Austrian and Neo-Schumpeterian literature. (Buchanan & Vanberg, 2001, 2002) Buchanan therefore explicitly came to challenge the "postulated fixity of preferences, endowments and technology" in neoclassical theory in favour of an evolutionary model that can accommodate for "creative choice." (Buchanan & Vanberg, 2002, p. 123)

However, from the beginning, Buchanan's work has been sensitive to issues of social complexity. For example, in *Reason for Rules*, (G. Brennan & Buchanan, 1985, pp. 3-4) the authors explored the cooperative interdependence of agents in a complex adaptive market economy, even if they did not *explicitly* appeal to the language of evolutionary theory: "the *rules* that coordinate the actions of individuals are important and are crucial to any understanding of the [social] interdependence process. The same individuals, with the same motivations and capacities, will interact to generate quite different aggregate outcomes under differing sets of rules, with quite different implications." Adding in the evolutionary perspective introduces the possibility of out-of-equilibrium outcomes and relaxes the implicit assumptions about fixed preferences, rational utility maximization, and equilibrium dynamics. Doing so makes the basic affinity between the ecostructural model and Buchanan's model apparent. Buchanan, much like Colander & Kupers and the Neo-Hayekians, insists on the importance of a "comparative institutional" perspective that focuses on the "rules of the game" and tests them for their ability to produce either "good" (cooperative, productive, and welfare-enhancing) or "bad" (predatory, destructive, and welfare-decreasing) outcomes under different behavioural assumptions. Pertinent to the present discussion, this comparative institutional perspective also led Buchanan to emphasise the importance of isolating the basic rules of the tax-and-transfer state from

everyday politics and special interest rent-seeking. This perspective is very helpful in thinking about the ecostructural, rule-of-law based approach(es) to UBI.

In a 2020 paper of mine, co-authored with John Meadowcroft, (Lehto & Meadowcroft, 2020) we provided the first comprehensive analysis of the historical origins, development, design features, and normative justifications of Buchanan's "Demogrant" model, which is basically a constitutional tax-and-transfer model that combines a UBI and a flat tax. (The following discussion is largely based on the arguments in our paper.) The combination of UBI and a flat tax is not an original invention in the UBI literature (cf. Atkinson, 1995; H.A. Simon, 2000). And there are, of course, other libertarian UBI models (Friedman, 1962, et al.). However, Buchanan's model has some unique features, motivations, and policy implications. Buchanan's primary purpose was to device a mechanism that could be used to limit the scope of rent seeking in the welfare state with the help of a constitutional application of the principles of generality and nondiscrimination to *both* the tax *and* the transfer sides of the fiscal state. He initially applied this analysis primarily to the tax side. (G. Brennan & Buchanan, 1980; for a more recent elaboration, see Delmotte, 2020) Eventually, Buchanan turned to the Demogrant, which he developed both in his solo works and in his co-authored works, from 1980s all the way up to his final papers in the 2000s. (G. Brennan & Buchanan, 1985; Buchanan, 1993, 1997, 2005; Buchanan & Congleton, 1998) Buchanan argued that democracy could promote the general welfare rather than special interests if (and only if) the tax-and-transfer scheme could be elevated to the constitutional realm and effectively removed from the agenda of day-to-day majoritarian politics: "Legislative majorities would be empowered to set (…) the size of the demogrant, but specific actions aimed at discriminating favourably or unfavourably (…) would be out of bounds" (Buchanan, 1997, pp. 171-172) Effectively, therefore, political debate about redistribution within the welfare state would henceforth centre around *the size of the demogrant* (and equally *the size of the flat tax*), rather than whether some particular new (discriminatory) transfer payments should be endowed, or some particular new (discriminatory) tax levied, on some particular individual, group, or class. Constitutionalization, for Buchanan, is needed, *not* to thwart democracy (since democratic decision-making, he would argue, is needed to legitimize the act of constitutionalization in the first place), but to better secure the

interests of the general public.[36] For Buchanan, all citizens have a shared interest in minimizing the temptation (incentives) for rent-seeking and maximizing the expected benefits of voluntary cooperation. This is achieved by making the rules of general and non-discriminatory UBI scheme "quasi-permanent:"

> [O]nce chosen and in place, the system will remain quasi-permanent and hence immune from period-to-period manipulation due to shifting majority coalitions. In this sense, constitutionalization implies that the transfer system, once chosen, is appropriately treated as 'off the table' for the interplay of ordinary majoritarian politics." (Buchanan & Congleton, 1998, p. 126)

Why is rent seeking to be avoided? According to Buchanan, rent seeking, although some amount of it may be compatible with the rule of law, can quickly devolve into political "anarchy," which undermines large-scale social cooperation if allowed to become a persistent feature of the social order. Instead of destructive political anarchy, Buchanan urges us to pursue productive "ordered anarchy," which is the capacity of a free society to organize itself productively under stable rules, centred around property rights: "once the limits of each person's rights are defined by agreement, economic interchange becomes almost the archetype of ordered anarchy. Individuals can deal with one another through wholly voluntary behavior without coercion or threat." (Buchanan, 1975, p. 23)

Although Buchanan's model of productive exchange is still rooted in rational choice theory, the model can be easily expanded from (narrow) "economic interchange" to (broad) "innovation exchange" that includes cultural, technological, habitual, and memetic exchange. Indeed, what Buchanan calls "voluntary behavior" under "ordered anarchy" is near-identical to what I call "permissionless innovation" (the capacity to pursue, under the law, voluntary quasi-anarchic innovations). The "ordered anarchy" is provided by the ecostructural rules, including the *right to innovate* and the *right to basic income.* To be sure, UBI was not a *necessary* part of a good contractarian order for Buchanan, only a plausible way to provide welfare without rent-seeking, *given* a prior commitment to redistribution.

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[36] Buchanan's preference for constitutional democracy, therefore, does *not* depend on the elitist idea, whatever its merits, that purely majoritarian democracy cannot work because most people have ill-informed or malicious views. (J. Brennan, 2016) Indeed, Buchanan takes widespread democratic power for granted. He thus also rejects the "Neo-Machiavellian" premise that society *necessarily* depends on the "circulation of elites." (Burnham, 1943) He sees a *democratic* way out of the problems that plague democracies.

Since rent-seeking reduces the scope for the rule of law, no welfare model that fails to develop robust limits to rent seeking can be truly complexity-aware, and so I will argue that Buchanan is correct in stating that one of the main advantages of a constitutionalized UBI over alternative proposals is precisely its ability to curb (or eliminate) rent-seeking. The ability to curb rent-seeking is important, since "the rules of the game that specify the relative payoffs to different entrepreneurial activities play a key role in determining whether entrepreneurship will be allocated in productive or unproductive directions." (Baumol, 1990) If the creative energies that are "wasted" in rent-seeking are freed up for socially productive activities, this could increase the problem-solving capacity of the social order. Such reasoning may indeed justify a "minimum welfare state" that operates under the rule of law. (Kliemt, 1993, 1995) However, the constitutionalized UBI scheme does not, by itself, prevent democratic coalitions from pushing the rate of welfare transfers beyond sustainable levels. Niclas Berggren (2000, p. 365) has therefore proposed that the generality rule might have to implemented in conjunction with a constitutional rule that limits the size of public expenditures to prevent a "fiscal explosion." This seems worth considering.

Buchanan's model shares with that of Friedman the desire to see UBI as a potential substitute for a large range of existing policy interventions, but "while Friedman wished to use the NIT to *bundle together* a whole host of existing benefits and taxes, he did not explicitly argue for a constitutional *prohibition of* additional benefits or taxes like Buchanan." (Lehto & Meadowcroft, 2020, p. 157) In this regard, Buchanan's constitutional UBI model is closer to Charles Murray's (2016) independently developed "constitutional amendment" to the tax-and-transfer state. Analogously to Buchanan's model, Murray's constitutional rule would prohibit all discriminatory transfers on top of UBI:

> "Henceforth, federal, state, and local governments shall make no law nor establish any program that transfers general tax revenues to some citizens and not to others, whether those transfers consist of money or in-kind benefits. All programs currently providing such benefits are to be terminated. The funds formerly allocated to them are to be used instead to provide every citizen with a Universal Basic Income beginning at age twenty-one and continuing until death." (Murray, 2016, p. 7)

Such a stringently libertarian model should be taken seriously as a radical institutional alternative to current welfare state structures. It has certain potential advantages, including

its strict (even slavish) adherence to the principles of *generality* and *nondiscrimination* that underlie the liberal "rule-of-law" approach to ecostructural governance. Nonetheless, it also has certain troubling aspects which make it less amenable to this task. Firstly, regardless of the many advantages of such a move, the prohibition of additional redistributive measures would reduce the ability of governments to adapt to new circumstances, to experiment with a variety of programs, and innovate in its policy solutions. This would likely introduce a level of rigidity into the system that may or may not be off-set by the expected increased agility of bottom-up agents as a result of the increased reliance on the free choice of individuals. So, while the right to innovate would indeed be combined with the right to basic income under Murray's scheme, this outcome might come at a cost to the adaptive efficiency of the rest of the welfare state. This is why a hybrid solution that tolerates a certain level of discretionary welfare state spending (within ecostructural bounds) seems more "evolvable" to me to the stringent libertarian model that rules them out altogether. Secondly, the sudden termination of existing benefits would likely be politically unfeasible and ethically undesirable to the extent that it leads to massive short-term welfare losses. A superior alternative, I think – and one that is more in align with the fallibilistic tenor of evolutionary liberalism – is to approach institutional design in a piecemeal, experimental, tentative fashion, in order to transition smoothly from one policy equilibrium to another. Admittedly, the stepwise strategy faces its own problems, including the risk that major structural reforms are almost never possible, so the "creatively destructive" method of sudden policy reform (or revolution) may still be a plausible way to implement UBI, and sometimes even the *only* way to overcome major path-dependent resistance. A "paradigm shift" may sometimes require dislodging a system from its suboptimal equilibrium; but knowing when this is justified and prudent requires much careful deliberation. At any rate, Murray has not devoted enough attention to such issues of implementation, so it is impossible to determine whether his model has any chance of working out. The less ambitious UBI models, such as those of Friedman and Hodgson, that replaces only *some* of the existing welfare state benefits (at least initially), have more pathways to building lasting political coalitions, winning electoral majorities, and achieving real-world success. As we (Meadowcroft & Lehto, 2020, p. 161) have argued elsewhere:

"The application of the principles of generality and non-discrimination to the tax *and* transfer sides of the system, together with the constitutionalization of those principles, would seem to avoid many of the potential problems of spiralling costs and exploitation of the productive by the lazy often ascribed to basic income policies (…). Nonetheless, it may be hard to bring together an effective political coalition to implement a lasting constitutional demogrant. In addition, we believe that the transaction costs associated with a significant reassignment of the tax burden (and a significant change to the institutional structure of the welfare state) undoubtedly require further analysis before any attempt was made to implement the demogrant."

For these reasons, I reject the stringently libertarian implementation of the constitutional UBI model as embraced by Buchanan and Murray, and embrace a more pluralistic, open-ended approach to ecostructural governance that is closer to the liberal UBI models of Hayek, Friedman, Polanyi, and Hodgson, although inspired by the spirit of Buchanan. However, if it were ever possible to (re)design society from the scratch, or approximate the conditions of constitutional unanimity, Buchanan's model serves as a plausible blueprint for a cooperative social order that safeguards the right to innovate and thereby contributes to the capacity of the welfare state to solve emerging social problems. And even in the absence of such idealized conditions, it is a plausible contender (although not necessarily the most desirable one) for an institutional "end state" of a "frictionless" UBI model that, in some historical circumstances, can be reached through piecemeal reform.

Overall, Buchanan's analysis of the constitutional constraints of welfare state governance is an important and somewhat neglected contribution to the UBI debate. Although the rational choice theory that underlies Buchanan's analysis is not a good fit for evolutionary governance directly, the Demogrant model can be modified and tweaked into a evolutionary liberal UBI model. It is one of the most carefully thought out, logically rigorous, and understudied examples of the application of the constitutional (or, more broadly, ecostructural) thinking into to the UBI debate. Indeed, the PIUBI model developed in this thesis, with its emphasis on abstract rules, is very sympathetic to the constitutional political economy and public choice perspective of Buchanan, which I see as an important corollary to the more well-known and well-studied UBI models of Hayek and Friedman.

4.5. The Rules and Meta-Rules of UBI

I have argued that UBI can be analysed as a bundle of abstract, general, inflexible rules on the classical liberal model of the rule of law. The rules of UBI can be divided into two classes: *operational* rules and *meta*-rules. Let me tackle them in turn. The key *operational* rules of UBI include: 1) **Generality**: the minimisation of discretionary leeway within the benefit system (the elimination of benefit exemptions); and, in some models, also within the tax system (the elimination of tax exemptions). 2) **Nondiscrimination**: When you raise or lower the UBI for one person, you have to raise or lower the UBI for every other person as well. 3) **Simplicity**: The fact that UBI relies on very few principles makes it easy to set up, run, and monitor for abuses; 4) **Automation capacity**: The possibility of setting up the UBI as a (semi-)autonomous program with minimal bureaucratic oversight and leeway.

What, then, are its *meta*-rules? The biggest challenge faced any rigid system of rules, including a rigid UBI system, is maladaptation in the face of new facts. Since rules are, by definition, *legacy institutions rooted in the past*, they may not always produce satisfactory outcomes in the present. This is especially true if the present situation is full of disruptive novelty. And although one of the underacknowledged advantages of the rule of law framework is its flexibility – its ability to facilitate individual freedom and polycentric social learning – there may be cases where the rigid rules of the system become a hindrance to crisis management in a critical situation. One plausible solution to this challenge is for the government to enact *binding meta-rules* that specify the legitimate procedures by which the government can modify the parameters of the tax-and-transfer state and the UBI system without suspending them altogether. The meta-rules may be implemented as *constitutional* rules or as lower-level institutional rules. The crucial condition is that they are widely accepted as binding on all the participants in the political game. The meta-rules serve two conflicting purposes: *conservation* and *reform*. On the one hand, the rules are designed to ensure that the system is *hard enough* to change to prevent its frivolous deterioration. On the other hand, the rules are designed to ensure that the system is *easy enough* to change when the situation calls for flexibility. Clearly these purposes often conflict and need reconciliation. From the point of view of institutional adaptation in the face of radical

uncertainty, striking an opportune balance between the conservation impulse and the reform impulse in the structure of the meta-rules is very important. Good meta-rules are a crucial determinant of a robust crisis management framework. Likewise, no UBI system is complete without some specification of the meta-rules that surround it. Indeed, the adaptive governance framework must itself adapt to novel circumstances.

Well, what are the meta-rules of the UBI system? They conserve the system while allowing for rule-bound reforms of the system. They contain a set of (higher-order) meta-rules that may turn out to be just as important as the (lower-order) operational rules of the UBI itself. They specify certain rule-bound procedures that make it possible to make reforms to the system under specified circumstances. The higher-level meta-rules increase the robustness of the rule of law framework in times of perceived crisis or public urgency, when the temptation to suspend the rule of law is high. They seek to overcome the false choice between a wholesale suspension of the rule of law framework and a blind deferral to old rules even when rule-following is maladaptive. Meta-rules enable the system, whether we are talking about the UBI system or some other system, to sustain its rule-obedient character across turbulent terrains while letting in some amount of desirable institutional flexibility. Here I will focus on the possible meta-rules of the UBI system.

Let us conceive of the permanent rule of law framework of the UBI system as a sequence of discrete decision-making steps. Each step corresponds to a moment of political choice where political entrepreneurs must determine whether the existing rules of the system are to be continued or discontinued. In consequentialist terms, each step involves a rule-bound interrogation of whether the (mal)adaptive consequences of *sticking to* various tax-and-transfer rules are outweighed by the (mal)adaptive consequences of *deviating* from them. At each step, if the advantages of sticking to the existing lower-order rules are deemed sufficiently high, there is no justification for deviating from them, and therefore no need to appeal to higher-order rules. In that case, the decision-making process is completed for the time being, until the society faces another moment of crisis that restarts the process from the beginning. (The institutions and rules have survived the shock relatively intact.) On the other hand, if the lower-order rules are deemed insufficient to solve the crisis – for example if the polity faces an unparalleled and unforeseen crisis – policy makers have recourse to the appeal to higher-order meta-rules that specify avenues for legitimate processes of rule-

modification. This constitutes a rule-bound reform procedure whose function is to increase the adaptive flexibility of the system of rules without abandoning the principle of rule-following altogether.

Obedience to the rule of law in redistribution is justified to the extent this is generally adaptive. However, there are exceptions to all general principles. Blind rule-following should not be used as an excuse for maladaptive rigidity and inflexibility. First, we should specify our rules and meta-rules to be flexible in times of crises. Secondly, if the meta-rules allow for automatic emergency adjustments, and if such adjustments suffice to achieve effective crisis management, we should rely on them first. This might include, say, providing an additional "emergency basic income" that is activated in a crisis. Thus, although the rules of UBI are designed to be flexible enough to survive many unforeseen contingencies, the meta-rules of the system may enable additional institutional flexibility (adaptive efficiency) in extraordinary times. To the extent that such rules and meta-rules enable an adaptive governance framework that fosters a level of social intelligence requisite for effective crisis management, it can be expected to obviate the need for discretionary crisis management authorities. Only where the institutional pay-off matrix has shifted further, beyond what the rule-bound order can accommodate, institutional rule-following may be suspended in favour of discretionary action. Rare examples where this might be justified include wars, financial crises, and pandemics. However, this should be seen as the last resort.

4.6. Conclusion

Overall, UBI functions as a non-targeted platform for autonomous, polycentric agency whereby people can use their guaranteed minimal income endowments to react to a critical situation in diverse, surprising, and creative ways. Securing such a scheme facilitates the widespread delegation of socioeconomic freedom and cash endowments to all agents – the entire citizenry – in a way that is compatible with, and productive of, the polycentric problem-solving capacities of the spontaneous order. Although UBI comes with its own incentive and knowledge problems that are worth exploring and mitigating with appropriate institutional safeguards, (Boettke & Martin, 2012; De Wispelarere, 2015, 2016) it holds

promise as a long-term problem-solving tool to the extent that it upholds the "rule of law" framework across the many turbulent transformations of the socioeconomic landscape. It does so *even* in "exceptional" or "critical" circumstances when one is most liable to see active legislative efforts by special interest groups, political ruling coalitions, and temporary "state of emergency" or "crisis" authorities to disbar or suspend the rule of law. The rules of the PIUBI scheme are designed to impose a *duty* to lawmakers to uphold the constitutional rules of the ecostructure and to increase the costs (penalties and disincentives) of making hasty reforms, while still providing rule-bound avenues for adaptive rule-reform.

My analysis has argued for the relative merits of *an increased reliance on a permanent tax-and-transfer scheme, built around rule of law, as the foundational bedrock of the welfare state.* In this framework, the rule of law, and not any discretionary authority, forms the supreme authority which delegates decision-making authority, not to any particular agent or collection of agents, but to all citizens equally. The permanent rule of law framework, including a UBI, allows people to survive and thrive across turbulent times with minimal suspensions of the ordinary, everyday rules of socioeconomic interaction. The comparative superiority of the rule-of-law strategy over the discretionary welfare strategy holds only under certain conditions and given a certain set of background assumptions. This conclusion must not be taken to imply that the comparative advantage that the rule of law framework has over alternatives is an *absolute* or *unassailable* one. Any adaptive governance framework, especially in times of crisis, must prudently combine the two strategies of 1) management by a permanent rule of law, on the one hand, and 2) management by discretionary authority, on the other hand. It seems plausible that a society that relies exclusively on one or the other would suffer a reduction in its capacity to respond to environmental challenges that pose serious system-level risks. Thus, even if the best possible system of permanent rules under the rule of law could be enacted – which is the aim of the PIUBI framework – it would be unwise to leave *no room* for the temporary suspension of the rule of law in exceptional, "emergency" circumstances. Likewise, even if the most enlightened philosopher king or "epistocrat" (J. Brennan, 2016) appeared on our doorstop, fully capable of exercising discretionary authority in line with the noble aspirations of Plato (2007), Abba Lerner (1944), and Stafford Beer (1995), it would still be unwise to leave *no room* for the permanent rule of law framework since, as Polanyi (1962,

2002) has argued, some problems are inherently polycentric in nature. Any efficient institution tasked to solved complex adaptive social problems, i.e., any efficient system of cybernetic governance, is a mixture of the two approaches, and not just any random mix. I have argued that there is room for pushing current welfare states *more* in the direction of governance by the rule of law. This includes implementing a constitutional or ecostructural UBI scheme on Hodgsonian/Friedmanite/Buchananite lines. Indeed, it seems that a failure to do so carries potential maladaptive consequences that are not generally recognized.

In the next chapter, I will explain in detail how people can use UBI to engage in permissionless innovation and what kind of positive and negative effects this may have. Such a radical proposal certainly comes with a lot of unknowns. But, as complexity theory teaches us, living with radical uncertainty is not only a source of unexpected catastrophes but also a source of potential positive breakthroughs. Whether the negatives or the positives win out remains to be seen.

Chapter 5: UBI as a Tool of Permissionless Innovation

5.1. Introduction

In this chapter, I will expand the ecostructural UBI model introduced in the previous chapter to explain how UBI can facilitate processes of permissionless innovation in various domains of life, and how this can generate processes of evolutionary learning that work to the benefit of the poor and the society at large. For the sake of brevity, I will occasionally shorten "permissionless innovation" as **PI**, and the UBI scheme that is constructed around permissionless innovation, as **PIUBI**.

I explain how access to UBI, especially bundled within the *right to innovate*, may allow poor people to benefit from various technological, economic, and sociological disruptions. And

beyond merely *benefiting* from these innovations, the development of the complex adaptive agency of poor people may allow them to better *contribute* to the landscape of innovation. The empowerment of the agency of poor people may contribute to the facilitation of socioeconomic evolution from the bottom up. The proper model for this is that of evolutionary "exploration" or "innovation," as found in Mill, Polanyi, and Hayek. I shall use this model to explain how poor people can engage in creative cultural learning. The hoped-for end result is a *Society of Explorers* where problems get solved.

Treating poor and disadvantaged people as experimental pioneers on the innovation landscape, akin to *mountain climbers* (Wright, 1932) or *seafaring explorers* (Polanyi, 1962), may sound unusual. But I claim that this metaphor is theoretically defensible and empirically a good fit to observable real-world processes. Also, the more social institutions are designed around such concepts, the more real-world conditions come to resemble the ideal model. The reverse is also true: in a world where poor people are primarily treated as helpless objects of government support or pitiable objects of paternalistic, top-down care, the actions of poor people, unsurprisingly, come to resemble the imagination of the social planners. The agency of poor people depends not only on the appropriate legal side constraints and moral incentives of their action but also on the amount and nature of the resources and capacities at their disposal. The ecostructural rules of the society, including UBI, may serve the function of helping people – including the poor and the disadvantaged - to engage in permissionless innovation. This is likely to have beneficial ripple effects to the whole economic system. The rules of liberty institutionalize the polycentric order of decentralized experimentation into a widespread practice: "Recognising the benefits of competitive processes is not to deny a role for institutional design. Rather, the central concern is to create a framework within which evolutionary processes can be harnessed to beneficial effect. Institutions should be judged on the scope they provide to explore new and potentially better solutions to problems and their capacity to facilitate the spread of successful adaptations. At issue is the extent to which institutions provide signals that identify inefficiencies and a selection mechanism that weeds out bad decisions." (Pennington, 2010, p. 43) Although the archetypical Hayekian selection mechanism is the marketplace – or rather precisely because of it – in this chapter, I want to focus on *cultural selection mechanisms*, without underplaying the importance of market mechanisms. I only

want to show that competitive selection pressures (and innovations) operate also on the level of habits, ideas, and values, and not only on the level of goods and services.

As "gardeners" of evolution, we should exercise deliberate control over our cultural habits and patterns, not by picking winners and losers, but by allowing them to evolve and change competitively in a free and open society, to know what can be improved, and how. Innovations in cultural practices are usually discouraged, even stigmatized, by most cultures. Cultural conservatism has been the preferred and widespread social norm in practically all cultures, and for very good reason. A culture that encouraged excessive norm erosion would not live to tell the tale. As Tolstoy's Anna Karenina reminds us, most deviations from the model of a good family result in a diverse range of failed families. Likewise, most deviations from the model of a good culture result in a diverse range of failed cultures. Most attempts to innovate in cultural habits and ideas have probably reduced the survival chances of those cultures. It is only very recently, perhaps in the last couple of hundreds of years, that a culture of innovation has indeed become possible, socially sustainable, and generally productive (as opposed to destructive) of human survival and flourishing. Widespread cultural experimentation (and the social norms that encourage tolerance towards it) are useless in a world that must survive in a relative equilibrium with its natural and social surroundings, and which lacks the social organization and technologies necessary to take advantage of the cultural learning mechanism that benefit from permissionless experimentation. But just like a set of lungs, which is useless in underwater creatures, become useful once the supporting structures for surviving on land – environmental oxygen, bodily traversal mechanisms, etc. – have evolved, cultural experimentation becomes useful once the supporting structures for generating sustainable social evolution have evolved. In the latter conditions, cultural experimentation produces net positive effects. This is the condition we find ourselves in.

In this chapter, I introduce a few key concepts that can make the operation of the polycentric order, and the process of decentralized experimental learning in it, more attuned to the concrete advancements in complexity theory and evolutionary theory. In particular, I believe that the process of permissionless innovation necessarily depends upon some combination of *Darwinian* and *Lamarckian* evolutionary selection, working on multiple levels and across multiple domains at once. This provides a formal model of rule-bound

innovation that harmonizes the shared insights of the Neo-Hayekian, Neo-Schumpeterian, and Santa Fe schools with the insights of the two contemporary accounts of cultural (or gene-culture) evolution, namely, *Generalized Darwinism* (Dawkins, 1976; Blackmore, 1999; Hodgson & Knudsen, 2010; Beinhocker, 2011) and the (quasi-Lamarckian) *imitative theory* of cultural evolution. (Lamarck, 1809; Richerson & Boyd, 2005; Boyd, Richerson, & Henrich, 2011; Muthukrishna & Henrich, 2016; Henrich, 2016, 2020; Creanza, Kolodny, & Feldman, 2017)

Indeed, despite differences in methodology, the two schools converge in arguing that cultural evolution is essentially a matter of the amplification of good ideas and the dampening of bad ideas: "a sensible theory of cultural evolution will have to explain why some beliefs and attitudes spread and persist while others disappear." (Richerson & Boyd, 2005, p. 6) Both schools use population dynamics, fitness landscape models, and similar tools of evolutionary analysis to illustrate their point, and I shall proceed on the assumption that their approaches are largely mutually complementary.[37] Whether cultural "innovations" should be best understood as self-contained Darwinian replicators, as Dawkins (1976) and Blackmore (1999) think, or as loose patterns of imitation and diffusion, as Richerson & Boyd (2005) think, is an interesting academic debate but one whose resolution would change nothing, or very little, of my underlying model of innovation. After all, whether we think of "Yellow Submarine" or "the Nokia cell phone" as *units of replication*, or as *patterns of imitation* (or *idea transfer*), we can, either way, describe them as competing against other innovations (other units of replication or patterns of imitation). The end result, in each case, is the selective pruning of (the population frequency of) certain innovations in the cultural space. So, Richerson & Boyd (2005, p. 6) may well be correct in saying that "[t]aking a population approach does not imply that cultural evolution is closely analogous to genetic evolution [or that] cultural information takes the form of memes, discrete, faithfully replicating, genelike bits of information." We can still treat population dynamics *as if* they are. So, when I talk about cultural innovations in this chapter, I will assume that there is probably some combination of Darwinian "memetic" selection and Lamarckian "imitative" learning going on that gives rise to the observed patterns of

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[37] I also proceed on the assumption that critics like Fracchia & Lewontin (1999) are incorrect in their claim that the very idea of "cultural evolution" is based on the misappropriation of a biological metaphor into a field where it does not belong.

variation, selection, and diffusion. For permissionless innovation to operate, all it requires is a fitness landscape that determines the relative fitness, and therefore the relative distribution, of a given innovation in a given population. In order to effectively model such processes, nothing hinges on the above debate.

In **section 5.2.** I discuss Mill's concept of eccentricity and its relationship to social progress; in **section 5.3**. I discuss G.B. Shaw's idea of "unreasonable men" as avatars of progress; In **section 5.4**. I develop the idea of poverty relief as a "society of explorers"; in **section 5.5**. I explain the conceptual difference between the "*cushion*" (or *exploitation*) function of UBI and the "*(innovation) platform*" (or *exploration*) function of UBI; in **section 5.6**. I revisit the Rawls-Parijs debate around "work ethic" and "social contribution"; and in **section 5.7.** I illustrate the difference between my UBI model and some other UBI models through an illustrative critique of Bregman's (2016) model of a "UBI" + a "15-hour workweek."

5.2. Individuality, Eccentricity, and Nonconformity

Let me begin by quoting further from Mill's famous defence of individualism:

> In this age the mere example of nonconformity, the mere refusal to bend the knee to custom, is itself a service. Precisely because the tyranny of opinion is such as to make eccentricity a reproach, it is desirable, in order to break through that tyranny, that people should be eccentric. Eccentricity has always abounded when and where strength of character has abounded; and the amount of eccentricity in a society has generally been proportional to the amount of genius, mental vigour, and moral courage which it contained. That so few now dare to be eccentric, marks the chief danger of the time. (Mill, 2003, p. 131)

Mill speaks of the "service" provided by "nonconformity" and "eccentricity" (which he treats as the same thing). What is this service? Elsewhere, he makes clear that the service is that of facilitating social progress: the strength of European nations, he claims, has been due to "their remarkable diversity of character and culture. Individuals, classes, nations, have been extremely unlike one another: they have struck out a great variety of paths, each leading to something valuable; and although at every period those who travelled in different paths

have been intolerant of one another (…), their attempts to thwart each other's development have rarely had any permanent success (…). Europe is, in my judgment, wholly indebted to this plurality of paths for its progressive and many-sided development." (Mill, 2003, p. 136) Before contemporary models of evolutionary "landscape" exploration (Wright, 1932; Page, 2007, 2011; Meadows, 2009), and before M. Polanyi's discussion of the spontaneous order as a "society of explorers" (Polanyi, 1962), Mill's discussion of the importance of the independent exploration of "a great variety of paths" by multitudinous agents offers the most concise description of the public benefits of the decentralized experimentation contained in the permissionless innovation framework. It also provides, I believe, a justification for widespread permissionless innovation as a tool of progress.

The increasing combinatorial possibilities of an advanced civilization offer new avenues for the creative utilization of social diversity. The evolutionary liberal perspective not only entails tolerating what might be called "random" eccentricity (the tendency of a large population to exhibit *spontaneous* diversity) but also "progressive" eccentricity (the tendency of a complex adaptive system to generate *increasing* diversity). This entails taking seriously the Hong-Page (2004, p. 16389) thesis of "functional diversity", according to which "diversity in perspective and heuristic space should be encouraged. We should do more than just exploit our existing diversity. We may want to encourage even greater functional diversity, given its advantages." This means that Mill's "plurality of paths" should be encouraged, not merely to generate isolated geniuses and eccentrics, but to encourage new combinatorial possibilities for public cooperation thanks to the functional role that social diversity plays in progress. The licence of eccentricity should be extended to the poor and the disadvantaged so that they, too, can contribute to bottom-up innovation.

5.3. Shaw's "unreasonable men" and Social Progress

The reasonable man adapts himself to the world: the unreasonable one persists in trying to adapt the world to himself. Therefore all progress depends on the unreasonable man. (George Bernard Shaw, 1903, unpaged)

I will take this quip by Shaw, which I read as a companion piece to Mill's defence of eccentric individualism, as a plausible *prima facie* justification for the evolutionary liberal view of cultural innovation. It also provides an indirect justification for the rules of the ecostructural UBI framework that take advantage of the "unreasonableness" of some men, i.e., their willingness to question the *status quo*, to engage in risky and often foolish experiments, and otherwise deviate (consciously or unconsciously) from standard routines, habits, and values.

Notice the contrast between *adapting oneself to the world* and *adapting the world to oneself*. In the first sense, adaptation is passive (behavioural or psychological) acquiescence to environmental circumstances. In the extreme, this cashes out in the Stoic idea that the best way to make intolerable circumstances tolerable is to change one's attitude towards them. In the second sense, adaptations involve more proactive actions. In the extreme, this cashes out in the Nietzschean or Romantic idea of changing the world through one's sheer will power. This is similar to Schumpeter's conceptual distinction between "adaptive" and "creative" response in the economy. So, the word "adaptation" in the context of innovation, creativity, and social change has two meanings: as I have called them, "type 1" adaptation and "type 2" (or complex) adaptation. The latter type is the domain of Shaw's "unreasonable men" who engage in Schumpeterian and Nietzschean creative and innovative actions. The evolutionary liberal framework takes this distinction as the foundation for the public justification of the ecostructural approach to welfare state governance. It argues that the state should not only tolerate but also encourage a certain level of creative unreasonableness in its citizenry. In other words, it should encourage permissionless innovation. And it can do so by securing the correct combination of property rules (centred around the Hayekian/Popperian *Open Society*) and tax-and-transfer rules (centred around *UBI*).

So, the evolutionary liberal framework, far from demanding passive acquiescence to superhuman forces of history, sees the people, including the poor and the disadvantaged, as active agents of evolutionary change. On the system level, it sees *widespread (permissionless) innovation as the highest form of (complex) adaptation*, which engenders true creativity and lasting environmental change. A lot of socioeconomic progress - if not *all* of it, as Shaw claims - depends on the generation, selection, marketization, and diffusion of

various socioeconomic novelties (innovations). Such innovations are usually first incubated in some private experimental realm, from where they burrow their way out into social networks, unevenly spreading to multiple locales, competing against various social resistances, and eventually reshaping (if they are lucky) the whole environmental "niche" in creative ways. Complex adaptive agents may indeed be "unreasonable men" (or women), and this can be good (or very bad) for society. Sometimes it takes going beyond merely (type 1) adaptive behaviour to achieve any major impact on the socioeconomic world. As Shaw pointed out, it also takes "persistence," which is an "unreasonable" attitude under most circumstances. Such an attitude becomes rather reasonable, however, if such persistence, what might be called *the entrepreneurial spirit,* or *the spirit of exploration*, can be turned into productive uses in a market society that is capable of rapid mutations and permissionless innovations. This, however, requires that the ecostructural rules of the game are appropriately designed, enforced, and reformed.

5.4. Exploration and Innovation: A Society of Polycentric Explorers

If we take the long-term view of human flourishing and happiness (Cowen & Parfit, 1992; Cowen, 2007, 2018), as I think we should, exploration is the thing that matters the most, since most good things are yet to be discovered.[38] Biological and cultural evolution, whose products we are, has not opted for perfection, optimality, or maximal happiness. Not even the greatest apologists of tradition, like Burke (2003), would claim perfection, but conservative evolutionists (including Hayek in his Burkean moments) tend to understate the magnitude of the errors generated by evolution. We inherit many of the problem-solving mechanisms of our ancestors, true, but we also inherit their many problems and, what is worse, their mechanisms for generating endless new problems. As a result, we remain very much enslaved to our past and present circumstances. In order to escape those circumstances, we need to facilitate evolution and influence its direction across multiple

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[38] This also relates to Derek Parfit's (1971, 1987) famous argument regarding the non-identity of a (continuous) self; but nothing in the present argument hinges on the psychological premises of that theory. We have reasons to care about future generations whether or not "their" lives are continuous with "ours."

levels and in multiple domains. No amount of resources invested in the exploitation of existing innovations can match the potential rewards of the discovery of new innovations. For example, it is obvious that inexpensive and safe cures for common disease like cancer and depression would have immense long-term social value. Great diseases are likely to literally plague humankind forever, while innovations that solve or mitigate such problems can be potentially exploited forever. The proverbial "cures for cancer" (or "cures for war" or "cures for hunger") can provide a near-infinite source of exploitable welfare-enhancement. But innovations cannot be exploited until they are discovered. In this sense, exploration carries almost infinite value, since the potential payoffs are so huge. Nor are the payoffs of exploration limited to organized science or any other expert or elite domain. Expert and elite domains can act as vanguards of innovation (or stagnation), but various other social domains can also take a leading (or helping) role in the social innovation process. Scientific exploration is only a small fraction of total social exploration, since "informal networks appear to be important routes for technology transfer [*and innovation transfer more broadly – Otto*], reflecting the fact that scientists and technologists, whether in university or industry, are members of a common community of practitioners." (Metcalfe, 1994, p. 940) Indeed, most innovations take place in decentralized social networks where expertise is dispersed and contested and where "excellence" (in standards of problem-solving and in methods of applying, interpreting, and communicating solutions) emerge as the result of competitive social learning. In such networks, poor, disadvantaged, and oppressed people take part in the discovery procedure as consumers, producers, entrepreneurs, and cultural explorers, and it is important to treat them as vital parts of the evolutionary process. Treating poor people as (merely) passive recipients of external help and external innovation (whether by governments or by businesses) is not only bad for them but also bad for the rest of the society since it deprives society of their evolvable human capital.

The argument for decentralizing the knowledge economy constitutes an evolutionary argument against welfare paternalism, including most forms of "nudging" (Sunstein & Thaler, 2008). Some *limited* nudging may be harmless or beneficial as long as the nudges in the "choice architecture" of poverty relief – "the context in which people make decisions" - are modest, self-limiting, robustly freedom-preserving, and based on solid and robustly corroborated science. (Sunstein & Thaler, 2008, p. 3) Nonetheless, the *default* position

should be that people are left free to innovate, since 1) there is a real danger that simple nudges lead to heavy-handed regulation and, from there, to an expansionary administrative state. "Who nudges the nudgers?" remains an important and largely unanswered question in the literature. Furthermore, 2) the choice architecture, if it represents imperfect knowledge (which is very likely), may distort the innovation landscape irreparably. (For complexity-aware critiques of nudging, see Devereaux, 2017; Rizzo & Whitman, 2020) With all the risks involved, it may be better to err on the side of not nudging people enough (or at all), even if it would be wrong to conclude that no amount of nudging may allow people to make better decisions.

The reason for favouring the freedom to innovate is not because people always make wise decisions, but precisely because they frequently do not. Society benefits from having access to an endogenously controlled, free, and open discovery procedure that continuously experiments with, tests out, communicates, and interprets knowledge about (old and new) problems and solutions. Similar anti-paternalism informs Roger Koppl's theory of *Expert Failure*: "Imposed knowledge cannot grow and change as freely or rapidly (…) as the divided knowledge emergent from an ecology of interacting, dispersed, and autonomous knowers. Imposed knowledge easily becomes dogma and thus deeply 'unscientific' if, at least, 'science' means open inquiry. Thus, apoplectic appeals to 'science' in defense of the administrative state are mistaken." (Koppl, 2018, p. 236) Open inquiry requires a multi-level, multi-domain process of knowledge production, consumption, transformation, and dissemination. This is incompatible with a coercive technocratic or administrative state. The nature of this process is best described as *polycentric*. Ranging from tightly organized and disciplined communities to loosely networked and heterogenous groupings of diverse individuals, social exploration is a large-scale, collective, society-wide project that spans science, culture, art, business, and politics. The whole (liberal) society, and not just the scientific community, can be treated as, and transformed into, what Michael Polanyi (1962, p. 19) calls the "Society of Explorers (that) strives towards an unknown future, which it believes to be accessible and worth achieving." He goes on:

> A free society may be seen to be bent in its entirety on exploring self-improvement - every kind of self-improvement. This suggests a generalisation of the principles governing the Republic of Science. It appears that a society bent on discovery must

advance by supporting independent initiatives, coordinating themselves mutually to each other. Such adjustment may include rivalries and opposing responses which, in society as a whole, will be far more frequent than they are within science. (Polanyi, 1962, p. 19)

Is it possible to transform the whole society into something like Polanyi's *Society of Explorers*? And furthermore, is it possible to treat "poverty relief" (in the sense of "solving the problems of the poor and the disadvantaged") in a similar manner? *In short, is there a Polanyian "Republic of Poverty Relief" similar to the "Republic of Science"?* I believe that there is. Solving the problems of the poor and the disadvantaged is best described, not as a simple task that can be achieved through top-down fiat, but as a complex adaptive task that envelops the individual and collective efforts of multiple people who "strive towards an unknown future, which they believe to be accessible and worth achieving." This vision, which is perfectly compatible with generous levels of government involvement, service provision, and redistribution, is encapsulated in the "garden" metaphor of bottom-up innovation that evolutionary liberals and complexity theorists have frequently employed. So, the polycentric "Republic of Poverty Relief" is a type of socio-ecological "garden" whose fruits are the emergent innovations (physical and social technologies) that solve the problems of the poor. Such a garden can be cultivated through the governmental provision of stable ecostructural rules (including the rules of UBI), combined with supplementary innovation-enhancing and innovation-shaping institutional reforms and policy interventions, such as the provision of public education, public infrastructure, environmental regulation, and various forms of Pigouvian taxation. At its core, it entails the polycentric organization of the markets and the civil society in the service of solving of the problems of the poor and the disadvantaged in innovative ways under the appropriate set of ecostructural rules, including the rules of UBI.

Within the polycentric Republic of Poverty Relief – which is a "society of explorers" in the service of the poor and the disadvantaged – the right to innovate without having to ask anybody for permission is granted to all agents in all domains of life as the default mode of social organization and the primary means of agent capacity building. In the marketplace, the result is that businesses are encouraged and permitted to reap a financial profit by investing a portion of their innovation efforts towards the production of goods and services

(physical technologies) that poor people want to buy, consume, modify, and tinker with. The state adopts a stance of unconditional neutrality towards the cooperative and competitive efforts of businesses, each using a different set of business strategies and routines to discover solutions that attract (or satisfy the interests of) resource-endowed, autonomously acting, innovating poor people. This generates Darwinian market selection pressures under which resources flow to those firms and business strategies (or routines) that better satisfy the problems of the poor, while resources flow away from those firms and business strategies (or routines) that fail to satisfy their problems. (Schumpeter, 1942; Alchian, 1950; Friedman, 1966; Nelson & Winter, 1982) At the same time, the economic world proper is only one of the many social domains that take part in the problem-solving process. Individuals and organizations in the Tocquevillian civil society are encouraged and permitted to generate moral, cultural, habitual, and spiritual innovations (social technologies) that poor people want to imitate or adopt. In the cultural realm, too, the state adopts a stance of unconditional neutrality towards moral, cultural, habitual, and spiritual innovations, and it does not interfere to "pick and choose" preferred moral, cultural, habitual or spiritual values (any more than it infers to "pick and choose" preferred business firms or strategies), beyond what is required to maintain sufficient social cohesion, safety, trust, and peace.

Cultural and habitual experimentation are just as important for social evolution as economic experimentation. Indeed, although determining the prioritization of values should be left up to the poor people themselves, cultural experimentation may be even *more* important than economic experimentation. After all, cultural innovation contains the capacity to generate moral and spiritual progress, which may be even more important than economic growth from the point of view of solving the perennial problems of the poor. It is possible, although I will not assert this as a fact, that human welfare may be best served by the pursuit of spiritual and moral Enlightenment instead of more material riches. To that end, the permissionless innovation framework advocates for, and seeks to institutionally cultivate, a vibrant cultural landscape consisting of a "greater freedom for human energies, and a richer diversity of circumstances and situations." (Humboldt, 1852, p. 11) Under this framework, it becomes imperative "that there should be different experiments of living; that free scope should be given to varieties of character, short of injury to others; and that the worth of different modes of life should be proved practically, when any one thinks fit to try them. It is

desirable, in short, that in things which do not primarily concern others, individuality should assert itself." (Mill, 2011, p. 122) The only caveat we need to make to Mill's eloquent case for cultural experimentation is that "individuality" does not preclude sociability. Experimentalism may sometimes better express itself in the form of *experimental collectives* composed of similarly minded people unified for the sake of a common project. As long as ecological diversity is maintained on the level of the ecosystem more broadly, and as long as the longing for collectivism does not turn into monocultural domination, collectivized experimentation – whether in small groups, big groups, families, or whole communities – is often desirable. Collective experiments generate experimental social networks that exhibit emergent properties that mere unique individuals – understood in the sense of "atomistic" individualism – cannot possess. So, collective experiments generate social data that is extremely valuable for social learning. Furthermore, cultural innovations are usually not *local*, but they zig-zag across the cultural landscape in ways that break down established group or individuality barriers, so that it may be better to conceive of this process as a cybernetic network of distributed experimental learning where physical location is less important as the capacity to partake in long-distance semiotic exchange.

As part of this process, the poor people themselves are not merely incidental or marginal "appendages" of the exploration process. They are not mere *consumers* in the marketplace of goods, services, technologies, habits, values, and ideas. They are active *coproducers* of such processes, and *co-innovators* (sometimes in the vanguard of innovation and sometimes in the late adoptive stages of innovation) in the dual realms of physical and social technologies. So, they not only *choose* from a pregiven set of problem-solving alternatives (what the Supermarket or the Megachurch wants to offer them) but they contribute to the expansion of the sets of alternative solutions. They engage in complex ("type 2") adaptation that always involves creativity and mutability. They not merely adjust their actions to the actions of bigger players around them; they flex their muscles in proportion to their economic and cultural capital to shape the world around them. After they are granted guaranteed institutional access to the unconditional right to innovate without having to ask for permission, as well as access to basic economic resources in the form of UBI, poor and marginalized people exercise their autonomy – what Van Parijs (1995) called "real freedom," and what Widerquist (2013) called the "power to say no" – the power to

destabilize, transform, and rewrite the innovation landscape from within (endogenously). Of course, the actions of poor people are not infinitely powerful, infinitely innovative, or infinitely welfare-enhancing. They are still constrained, influenced, and modified by the existing economic power structures and cultural habits and ideologies. To the extent that there exists an intolerably unequal or unfair distribution of economic or social capital in the society, this may act as a serious impediment to permissionless innovation in the service of the poor. After all, if poor people are heavily affected by the habits, ideas, and choice sets offered to them (even non-coercively) by agents with more power or higher levels of economic or social capital than them, they may be effectively cajoled into limiting their choice set to an artificially narrow bound by hegemonic power structures. This may surreptitiously limit the capacity of the permissionless innovation ecosystem to generate social innovations that help poor people solve their problems. This may, in fact, call for additional remedies. Interdisciplinary research is needed to study the most effective ways in which such structural impediments to the effective exercise of the autonomy of the poor people can be best removed without undermining the polycentric order itself. After all, it seems to me that the polycentric order is the most potent destabilizer of existing power structures that human beings have yet developed. It is capable of dislodging entrenched economic power structures as well entrenched cultural and ideological power structures (given enough time). At any rate, going back to Polanyi, we can treat the problems of the poor and the disadvantaged (i.e., tackling poverty relief) as an example of a polycentric "puzzle" that only a decentralized, experimental community can effectively solve (if *anybody* can):

> Under this system, each helper will act on his own initiative, by responding to the latest achievements of the others, and the completion of their joint task will be greatly accelerated. We have here in a nutshell the way in which a series of independent initiatives are organised to a joint achievement by mutually adjusting themselves at every successive stage to the situation created by all the others who are acting likewise. Such self-coordination of independent initiatives leads to a joint result which is unpremeditated by any of those who bring it about. Their coordination is guided as by 'an invisible hand' towards the joint discovery of a hidden system of things. (Polanyi, 1962, p.2)

Here, one caveat is in order. Exploration, like anything else, can be taken too far. Innovations and discoveries take time and involve risk and uncertainty. In effect, endless exploration would entail the endless deferral of certain present rewards for the sake of uncertain future rewards. Investing everything into an uncertain future cannot be a sustainable strategy since people have to live in the immediate present. So, in the short run, we need to spend resources on exploiting existing physical and social technologies, such as medical treatments and consumer goods. However, in the long run, societies should put the majority of social resources into exploring the design space of potential innovations. Governments should make large-scale investments into improving the adaptive efficiency of the social order to bring more and better innovations about. As part of these social investments, which can take many forms, governments should consider strengthening the evolutionary liberal rules of the PIUBI ecostructure. These rules strengthen every citizen's right to innovate without having to ask anybody for permission, protect them from coercive encroachments and threats by other people, and guarantee them the right to UBI, which functions as a neutral platform for innovation for those with little money.

Ideally, the PIUBI scheme could have a *dual* function: some of the resources would be spent on *exploitation* (to prevent welfare losses in the short run), and the rest would be spent on *exploration* (to maximize long-term payoffs). Rather than attempting to "solve" the optimal balance between the two investment strategies through government *fiat*, the balance would largely emerge from the spontaneous interactions of people and the nature of their private consumption and investment decisions. UBI would allow agents to exploit existing resources or to innovate and explore beyond them, since it would not be tied to any particular pattern of consumption, production, technology, social norm, or lifestyle choice. As a result, whether out of random mutation, stupidity, or serendipity, some people will end up exploring the possibility space of innovations and discovering new things. Many of these new things will hurt them (since most mutations are harmful) but some will be useful, not only for themselves, but for the whole society. In this sense, my argument for liberal evolutionary UBI is an argument for a high (although not *infinitely* high) exploration/exploitation ratio in the innovation space. In this scheme, more resources are spent on *exploration* than *exploitation*. This argument is motivated by the (hypothetical) assumption that UBI would, indeed, incentivize people to use their freedom and resources

to engage in more exploration than exploitation when compared to the current system and other plausible alternative welfare state schemes. This relies on theoretical and empirical assumptions that still need to be ironed out against objections and real-world tests. Before such tests are made, however, and before empirical data can be properly interpreted, developing a robust framework of analysis is required to filter out noise and to detect patterns in the data. This requires analysing the *exploitation potential* of UBI as distinct from its *exploration potential*. I shall call the exploitation potential of UBI its cushion function; and the exploration potential of UBI its platform function. The real-world potential of UBI is bound to be some (undetermined and contextually sensitive) mixture of incentivized exploitation ("UBI as a cushion") and incentivized exploration ("UBI as a platform for innovation").

5.5 UBI as a *Cushion* Vs. UBI as a *Platform*

Critics of the welfare state often conceive of it as an institutional trap that keeps poor people stuck in place, stagnates the broader economy, and distorts the smooth operation of the labour market. There is some truth to these accusations. Of course, from the point of view of the welfare recipients, this kind of "exploitation" of free money is not wholly unwelcome since it makes them able to enjoy a rather comfortable (albeit somewhat passive) lifestyle. Indeed, such concerns are some of the major drivers of the UBI debate as well (on both sides). However, many proponents of the welfare states rightfully counterargue that some of the policies of the welfare state, especially the social insurance schemes, leave people with sufficient incentives as to not to hamper their activities or the efficiency of the economy in severe ways. Few people simply draw welfare checks and do nothing on top. Furthermore, they may argue, even if welfare recipients do nothing creative or innovative (or even particularly welfare-enhancing) with the money, having a robust social safety net in place plays an important role in legitimizing the creative destruction of the marketplace by making sure that gains of disruption and of economic growth trickle down to the lower strata of the society in an inclusive manner. In this sense, the safety net does not have to be particularly innovation-fostering for the welfare recipients on the individual level, as long as it allows *other people* (primarily entrepreneurs other innovative

individuals) to keep being innovative on the system level. In this sense, the net social effect of the safety net (no pun intended) may be innovation-fostering over the long run even if poor people constitute a permanently non-innovative, passive underclass. At any case, most critics *and* most proponents of the welfare state, despite their normative differences, can agree that the welfare state acts as a kind of cushion (or welfarist side constraint) on the chaotic forces of capitalism. Predictably, the critics will see this as a reason to reject the welfare state, while the proponents see this same fact as a reason to favour it – either because they think that there is something inherently problematic about the rapidly accelerating pace of unregulated capitalism, or because they think, as I have indicated, that without the welfare state poor people would favour even worse regulatory solutions (and thus undermine the sustainability of the permissionless innovation ecosystem).

We may summarise this position as the claim that UBI functions as a *cushion* on Schumpeterian creative destruction. This view underlies much of the contemporary debate around UBI, from Silicon Valley's techno-pessimistic and techno-optimistic visions of a jobless future (Tegmark, 2017; Yang, 2018), to the ecological, communitarian and socialist critiques of capitalism. (Rifkin, 1995, 2014; Mason, 2016; Srnicek & Williams, 2013, 2015) Many authors, both for and against UBI, agree that the introduction of the UBI functions partially as a cushion that protects people against the negative effects of creative destruction. As a result, much of the contemporary debate focuses on the relative merits of the arguments for and against UBI from the point of view of the *cushion* effect of basic income on the process of creative destruction. According to this view, UBI allows society to *exploit* existing innovations in a more inclusive fashion (so that their benefits better reach everybody) without the poor and disadvantaged people having to contribute to the society in any meaningful way in return. In the first chapter, I discussed counterarguments to the empirical arguments underlying the socioeconomic effects of the Fourth Industrial Revolution on jobs, business practices, technologies, ideologies, politics, and morality. I showed that such effects are radically uncertain and it is not clear whether *permanent* cushions are needed, since it is not clear whether permanent unemployment is at all likely. It may well be that evolution leads to better and better paying jobs in the future; we simply do not know for sure. The only thing that is certain is *the enduring fact of permanent uncertainty* as a constraint on the epistemic and technocratic competence of all agents.

(Lehto, 2023, forthcoming) The ubiquitous presence of permanent (radical) uncertainty suggests that social insurance as a socioeconomic cushion that constrains creative destruction needs to be secured against epistemic and technocratic hubris. Cushions may well be very much needed, but it is very hard to know *where, when,* and *how* they are most needed.

We should not build our future exclusively on the prevalent trends of today. We need to plan for the unplannable and prepare for the unpreparable. This entails preparing institutional cushions against the radical uncertainty of creative destruction. In this context, UBI may function as a superior cushion compared to most non-UBI alternatives, since it may be able to overcome some of the epistemic and technocratic limitations of the existing bureaucratic and technocratic delivery mechanisms of social insurance. Universal and general and automatic benefits may systematically outperform the (patchworked and discretionary) benefit systems currently in existence. UBI, in this sense, may cushion poor people better at a relatively affordable cost compared to many alternative forms of cushions. And since we need cushions, we may as well implement UBI as a cushion. However, it seems to me that UBI may be an excessive response to the mere challenge of delivering a more comfortable and secure cushion. It may cushion too much, or at a too high a cost. If the only thing we care about is designing a welfare cushion, we may worry about some of the design criteria of UBI as being excessive, too costly, or misplaced. So, we might want to rethink our cushion model. There is also another reason to be sceptical that the argument for UBI as a cushion against radical uncertainty is a cogent one. The cushion approach to UBI is misleading or even dangerous to the extent that, in addition to relying on fallible empirical predictions, it completely misses the *direction* of desired change. It assumes that the world is automatically careening towards rapid changes and the role of the government is to slow things down to manageable levels. This assumption is probably false. It is hardly the case that, in the absence of UBI, the welfare state and the marketplace will be poised to self-accelerate and careen full speed ahead into a maximally "creative destructive" direction. On the contrary, the much bigger issue might be the *opposite* problem: the sluggishness and non-innovativeness of the market order. Indeed, without the PIUBI framework, it may be completely impossible to accelerate creative destruction (the process of social learning) to the critical point where it produces, and sustainably continues

to produce, its important benefits. This argument overlaps in tenor and tone with the previous argument that the presence of an effective and robust welfare cushion, as it lowers the costs of failure, legitimizes and sustains the creative destructive order of rapid socioeconomic development. This, incidentally, explains why many proponents of socialism oppose the welfare state as being the "enabler" of the capitalist market order. They see it as legitimizing its chaotic impetus. And they are right. That is precisely its function.

Indeed, the evolutionary liberal approach to UBI is challenging to both the proponents and critics of UBI today. This view states that, even disregarding its possible cushion effect (capacity to lower the cost of bad luck and experimental failure), *the implementation of UBI might in fact accelerate creative destruction*. In other words, UBI might be a useful tool, or a useful institutional solution, to the problem of effectively accelerating the innovation potential of the spontaneous order. And indeed, I believe that the best case for UBI is not the cushion argument but rather the *anti-cushion* argument, or the "*platform"* argument, according to which *UBI is only secondarily a cushion and primarily a platform*. The desired direction is not that of curtailing or constraining the chaotic potential of the spontaneous order but rather the opposite: that of *facilitating, empowering, and accelerating the creative destructive power of spontaneous order (while simultaneously protecting people against its worst effects)*. From this perspective, the criteria of success of a good welfare state program must be turned on its head: we are still fundamentally concerned about human welfare and human flourishing, but we are striving to achieve it not with the establishment of cushions (alone) but (also) with the establishment of acceleration buttons or gas pedals that make it easier for people to partake in the creative destructive process by diversifying, individuating, socialising, combining, innovating, deviating, and evolving.

5.6. The Tragedy of the Surfers: Rawls revisited

In this section, I shall return to the influential discussion around work ethic and social contribution in the UBI debate, in order to better illustrate the "UBI as a platform" / "UBI as a cushion" dual function of the PIUBI framework. The most lucrative place to start is at the beginning. For that reason, I shall now return to one of the seminal debates in the history of

modern UBI literature, namely, the archetypical dispute between John Rawls and Philippe Van Parijs (and their followers) about the legitimacy of "feeding the surfers." This debate caused a big splash for several decades. In fact, most of the good arguments in the debate (as well as the bad and the ugly) have already been made, and one might wonder whether I have anything new to add to the conversation. However, let me offer a couple of reasons, beyond its ongoing iconic significance, why we should still focus on this debate: 1) Not only is the debate *iconic*, but it is also *symbolic* of the broader and more important debate in our political culture regarding the role and value of personal responsibility and social contribution in the contentious "government – citizen" (including "welfare bureaucracy – benefit recipient") relationship. 2) The case of surfers is an especially interesting one, because it carries so many connotations and hidden assumptions that are worth unpacking, breaking apart, and putting back together again under the new lens.

The recent origin of this debate lies in differing interpretations of Rawls's liberal egalitarian theory and its emphasis on the principles of fair social cooperation (Rawls, 1971, 1988, 1999; Van Parijs, 1991, 1995; White, 2006). The debate arguably consists of different attempts to reconcile the tension between the capitalist "work ethic" (Weber, 2001) and the ethical demands of "liberal neutrality." (Birnbaum, 2011) In a mere footnote to his 1988 article, "The Priority of Right and Ideas of the Good", Rawls (1988, p. 257) argued that "[t]hose who are unwilling to work [… such as] those who surf all day off Malibu must find a way to support themselves and would not be entitled to public funds." His reasoning, here, was that those who refuse to work get to enjoy more leisure than the rest, so it would simply be unfair to support the lifestyles of lazy hippies. Since they are "rich" in leisure, with leisure being one of Rawls's possible "primary goods" (goods which all the members of the society are supposed to have an equal ability to benefit from), work-shy people do not count among the "least advantaged" members of the society. And being counted among the least advantaged is, for Rawls, a requirement for being eligible for government support. In a separate paper around the same time, Jon Elster (1987, p. 719) echoed Rawls's aversion when he wrote that the UBI proposal "goes against a widely accepted notion of justice: it is unfair for able-bodied people to live off the labor of others. Most workers would, correctly in my opinion, see the proposal as a recipe for exploitation of the industrious by the lazy." Stuart White (2006, p. 1) called this commonly made objection the "exploitation objection"

to UBI, according to which an unconditional basic income "is unfair because it allows people to live off the labour of their fellow citizens without making a reciprocal productive contribution to society." Van Parijs's (1991) influential response, through an elaborate internal critique of Rawls's moral system, reached the conclusion that "a defensible liberal theory of justice, that is, one that is truly committed to an equal concern for all and to nondiscrimination among conceptions of the good life, does justify, under appropriate factual conditions, a substantial unconditional basic income." (Van Parijs, 1991, p. 102)

My response can be summed up as follows: 1) Any liberal theory of the basic structure must pay attention to, but not enslave itself to, the ideas of the work ethic, reciprocity, and social contribution. 2) The notions of fairness and reciprocity are misleading and often meaningless in an impersonal system like a rule-based social order. This is related to, but distinct from, Hayek's stronger claim that the notion of "social justice" is as meaningless as the notion of a "moral stone." (Hayek, 2013, p. 241) 3) Social contribution is an emergent outcome of the long-term spontaneous operation of people within the rules of the basic structure of the social order. 4) Any one agent's "social contribution" is hard to measure and control, and is definitely not identical to the declared intent, or proven record, of seeking paid employment. 5) The proper *maximand* of the basic structure is the *aggregate (and long-term) social contribution* of *all* the members of the social order, not the *individual (and short-term) social contributions* of its particular members. 6) The most accurate technical meaning of "social contribution" in the PIUBI framework is the capacity to contribute to the production of innovations and complex adaptations, or the capacity to contribute to solving social problems from the bottom-up. 7) Innovations are usually not the result of a few isolated agents acting alone but the result of interactions between many people embedded in broad and deep social networks, where the value of individual contributions and personal responsibility are nearly impossible to track. 8) A society with high aggregative innovation capacity is therefore usually (although there are exceptions to this rule) one characterized by high aggregative social contribution from its members. 9) Discouraging free riders – Rawls's "surfers" as opposed to actual surfers – remains a worthwhile task but this needs to be balanced against the broader institutional (or "ecostructural") project of encouraging permissionless innovation, which thrives under *liberal neutrality*. 10) Overall, unless a culture of protracted indolence or unproductivity infects the mass population, the

government should probably err on the side of "too much" liberal neutrality - *even* if this also impedes the ability of the government to punish vicious free-riders ("surfers" or "gamers" or "druggies" or whatever the latest stigmatized group may be).

Therefore, although gainful employment remains one of the most reliably "proxies" that someone is engaged in socially productive and meaningful activities, the reverse is not true: i.e., it is not true that just because someone is *not* gainfully employed (or in a comparable position), they are *not* engaged in socially productive and meaningful activities. Many people can contribute to the flourishing of a complex society in different ways. For example, this group may include scientists, artists, freelance writers, third sector volunteers, family caretakers, YouTube content creators, video game hobbyists, local community organizers, etc… However, this is not to suggest that it would be worthwhile to try and complete a comprehensive list of such activities; I very much doubt it. My only reason for drawing such a rough list is to illustrate the simple point that the definition of a "productive occupation" is arbitrary and contested. More deeply still, I wish to argue that although individuals, families, businesses, and organizations should be entitled to discriminate between agents based on their own internal criteria of excellence, the government (or, more accurately, the basic structure of the society) should *not* try to demarcate the boundary between "social contribution" and "social non-contribution," at least in any naïve, clear-cut fashion. Instead, it should focus on shaping the rules of the game and the institutional incentive structure in such a way agents have the capacity, resources, and the motivation to contribute to the creative problem-solving capacities of the decentralized cybernetic order. This is what it means to push for higher levels of "adaptive efficiency" or "social intelligence."

In **Chapter 7**, I will look at the Job Guarantee and Participation Income proposals. The criticisms I have levelled in this section against naïve moralism about social contribution apply there as well. This counts in favour of UBI against alternative proposals. Before that, however, let me point out that similar concerns problematize several other proposals, such as tying UBI to a standardized "work week," as the following discussion shows.

5.7. A critique of Bregman's proposal for a 15-hour workweek

The PIUBI model offers a way to rethink some of the normative parameters of the contemporary UBI debate and the broader issues surrounding the future of welfare state governance. The best way to illustrate how permissionless innovation operates is to think through a concrete example that is pertinent to the central concerns of welfare state governance. As an example, I will discuss Rutger Bregman's (2016) argument, in his book *Utopia for Realists: The Case for a Universal Basic Income, Open Borders, and a 15-Hour Workweek*, that UBI should be ideally combined with additional labour market regulations. The "full package" of governance solutions that Bregman favours consists of three interrelated main proposals. Bregman thinks that UBI should ideally be combined with the supplementary policies of "Open Borders" and a "15-Hour Workweek." I am not going to discuss the merits of *all* of his proposals, or how they interact; although the topic of Open Borders is very fascinating, I will leave it aside for now. Instead, I will focus on his other main proposal, the "15-Hour Workweek." This is a typical example of the type of top-down regulatory measures that are popular in the UBI debate but which, if enacted into law, would predictably hamper the ability of UBI to act as a tool of permissionless innovation. Or so is my claim. The PIUBI framework provides an alternative (and arguably superior) way to conceptualize labour market innovations and the normative demands of welfare state regulation.

What is a "15-Hour Workweek"? It means that working people (either by law, convention, or personal choice) work for 15 hours a week. Bregman frames it as a continuation of Keynes's (1930) vision of a society where most human needs are easily met through rising living standards, so that people have to work less and less. In this sense, the 15-hour workweek can purportedly be achieved through sheer economic and industrial development. However, Bregman (2016, unpaged) makes it clear that he believes that achieving it "will require collective action – by companies or, better yet, by countries," involving legislative measures and the development of a "national strategy." One wonders why something that purportedly emerges organically from industrial development requires political measures to bring about? Would it not come about on its own accord, when the conditions are ripe, regardless of the involvement of such top-down incentives? At any rate, let me reframe the proposal from the PIUBI point of view. This makes it possible to discuss the merits and demerits of Bregman's proposal in the broader UBI debate.

First, the "15-hour workweek," if it ever manifests in reality, will exhibit a complex sociological reality that involves cultural practices, social norms, legal regulations, and more. However, at its basis, the "15-hour workweek" can be modelled as an *innovation*; and, more specifically, as an *innovative social technology*. This can further be analytically decomposed into mutations and deviations in the *values*, *habits*, and *routines* of the agents in the economy. For a 15-hour workweek to become reality, all it takes is for people to start working for 15 hours a day; and this outcome can be achieved through various means. (The same goes for all forms of social technologies, such as "speaking Spanish" and "respecting one's peers.") The idea that a 15-hour workweek may emerge as a result of bottom-up evolutionary developments in productive technologies, models of industrial organization, labour market conditions, cultural expectations, and social norms, is perfectly consonant with the PIUBI framework. However, the PIUBI framework refuses to *prejudge* – without continuous evolutionary experimentation – whether a 15-hour workweek is superior to a 17-hour workweek, a 30-hour workweek, or an 80-hour workweek. Instead, it encourages experimentation, diversification, and competition between multiple workweek habits.

There is no need to think of the economy, as Bregman arguably does, as a harmonized and synchronized system beholden to a single rule about how long (or short) the workweek should be. In an adaptive and dynamic economy, there is room for the accommodation for multiple competing workweek schedules in the same economy, industry, or even in the same company, just like there is room for the accommodation of multiple competing religious beliefs, dietary practices, or sleeping schedules. Now, of course, some labour market standards are likely to be picked up and spread more prominently than others, while others will be rejected as generally very harmful to worker welfare and/or productivity, and this kind of selective sorting (filtering) is indeed the very function of evolutionary learning. Monocultural domination by any single standard is, however, for all intents and purposes, precluded. So, Bregman's proposal for the 15-hour workweek, if taken seriously, perpetuates a wrong paradigm according to which the labour market should be treated as a monolithic structure of routinized habits. It assumes that society should be dislodged from *one* prevailing set of monolithic practices – "Equilibrium 1" – to *another* singular set of monolithic practices – "Equilibrium 2." It fails to sufficiently recognize that the economy contains multiple dynamic equilibria which are constantly mutating and evolving across

multiple scales in a process of continuous disequilibration. The economic practices, habits, and values associated with the length of the workweek, too, are constantly being dislodged from stable equilibria as different individuals, families, companies, and industries experiment with various innovative workweek structures. The innovation ecosystem operates on multiple independent levels to generate a spontaneous pattern of the diffusion of innovations. Indeed, the logic of multi-level evolutionary selection dictates that the innovation landscape around workweek practices should be best modelled as a diverse ecosystem, where the "15-hour workweek" is only one "innovation" or "routine" or "social technology" among thousands of others, all vying for the proverbial spot in the sun. Just like any other innovation, the "15-hour workweek" innovation can be adopted, selected, diffused, modified, tweaked and modified by any agent (or set of agents), so that one country, industry, company, department, work group, individual, or family may adopt the 15-hour workweek, while another may adopt the 16-hour workweek, and third yet may adopt the 40-hour workweek (etc…). As competitive experimentation in different workweek choices runs its course, this generates an evolving pattern of diffusion. Some workweek habits get amplified and others get dampened. Nor are choices fixed over time. Agents are free to change their minds, and the very *same* agent may adopt the 15-hour workweek at one time and the 40-hour workweek at another time, whether for a good reason, a bad reason, or no reason at all, e.g., as the result of a sheer random mutation in their work habits. Incidentally, the logic of the competitive process ensures that mutations generated for bad and insufficient reasons are often just as beneficial for social learning as mutations generated for good and sufficient reasons. In science, the discovery of the penicillin came about through a happy accident. In nature, too, biological mutations that lead to marvellous innovations like flying are usually the result of similar happy accidents (whether in the form of random genetic variation, sexual recombination, or genetic drift). Similarly, it is not inconceivable that the discovery of the "optimal workweek," i.e., the workweek schedule that most or all agents can benefit form (if there is such a thing), is likely to come about through a similar random mutation, or accident, in labour markets, that starts in the margins of the society but eventually gets picked up and amplified through selective social filtering over successive generations (subsequent agent interactions in the markets).

This brings me to my central criticism of Bregman's proposal. Entirely regardless of whether the 15-hour workweek is a good idea or a bad idea, legislating such a labour market standard would limit the ability of UBI to function as a tool of permissionless innovation in labour markets. The ecostructural PIUBI framework challenges the view that UBI should be combined with such monolithic labour market standards, since it sees the economy as a polycentric system of experimental learning. It therefore encourages employees and employers not only to adopt best practices from across the industry, but also to experiment with a diversity of strategies, including marginal and unpopular ones, in the design of their labour contracts. Of course, it is not always feasible to demand endless flexibility, or openness to continuous experimentation, from people who are trying to make ends meet and who subsequently have a lot to lose from experiments gone wrong. Encouraging experimentation comes with the full recognition that transaction costs association with labour market data gathering and contract (re)negotiation are not zero. People have various "sticky" beliefs and habits that limit their psychological trait openness, and the costs of failed experiments may indeed be very high, so people may (rationally or irrationally) prefer to rely on prevailing industry standards, routines, and "best practices" as a proxy for what should be done in individual cases. Standardized "quasi-equilibria" (widely spread social technologies) around workweek practices may emerge organically from labour markets with high transaction costs. For example, in countries with Christian heritage, people generally work less or (none at all) on Sundays. Likewise, the 30-to-40-hour workweek has become standardized in most Western countries. Such habits, however, can be challenged through permissionless innovation. It is important to keep in mind than even where the rewards of value-conservatism and habit-conservatism in labour markets are high, i.e., where relatively standardized and routinized labour market practices yield consistently high rewards ("exploitation"), it remains important to invest resources into experimental learning ("exploration") on the margins so that people can discover better ways of doing things. This is incompatible with mandating a 15-hour workweek or any other singular standard that prevents people from creatively experimenting in relatively harmless ways. (This does not preclude mandating some minimum safety standards, regulations, and the like, that do not significantly interfere with the capacity of agents to innovate in their contracts.)

Some might object that increased flexibility in labour markets would lead to undesirable consequences, since poor people are effectively beholden to the whims of their employers as long as they need their jobs (or *any* job) in order to survive. In other words, the inequalities in the bargaining power between employers and employees may lead to exploitative or unfair labour practices and contracts that effectively coerce income-poor people into working more, less, or differently, than they otherwise would. There is much truth to this charge in an economy where jobs are scarce, potential employees are plentiful, and workers lack the effective means to negotiate better contracts, shop for alternative jobs, or safely drop out of the labour force onto a guaranteed income cushion. However, this argument arguably loses much (if not all) of its sting under the PIUBI framework. Having access to basic income regardless of one's employment status, which is what the PIUBI framework guarantees, makes it more plausible that permissionless innovation in labour market practices can reflect, and often does reflect, not merely the interests of the employers, industrialists, and owners of capital, but also the interests of poor, disadvantaged, and working-class people. After all, if people truly have the "power to say no" to involuntary or exploitative labour conditions (Widerquist, 2010, 2013), which is what the UBI system makes possible (as long as it is set as a sufficientarian level), poor people are unlikely to accept a workweek schedule that significantly hampers their interests or ability to pursue different lifestyles, habits, and values. So, if people choose to work for 20 hours, 30 hours, or 50 hours, this is likely largely a reflection of their own preferences, interests, values, and personal quirks (which they may have absorbed, of course, from their parents, friends, and surrounding community), rather than the preferences, interests, values, and personal quirks of their bosses.

The PIUBI system arguably offers better alternatives to poor people through the guarantee of effective economic exit from the labour market which is combined with an inbuilt flexibility between different labour market arrangements, since UBI is compatible with receiving additional labour income on top of UBI from multiple sources, *regardless* of the chosen labour market arrangements, type of work, length of contract, workweek schedules, or other contractual details. Of course, whether the emerging workweek preferences and practices under this system are *healthy* or *desirable* is another question. There is no single answer to this question since providing a satisfying answer would involve paying close

attention to the full diversity of actions, interactions, and outcomes in a complex socioeconomic order, and drawing normative conclusions from the ambiguous pattern that emerges from it at any given time. In a diverse labour market, where permissionless innovation is encouraged, there are millions of different choices that people make, and millions of different innovations in habits, routines, and ideas (social technologies) that people may adopt, so the typical worries about the messiness of evolutionary development apply. Some people are liable to make mistakes, even major ones, in their choice of occupational standards, labour market habits, and ethical values, and suffer from the consequences. Evolutionary systems do not produce optimal outcomes, but messy, wasteful, and halting movements towards local (perceived) improvements. Many factors interfere with the process of unilinear progress towards improvement: agent heterogeneity, informational asymmetries and knowledge gaps, faulty psychological biases, contagious but destructive ideas and habits, etc. Overall, several predictable features of the complex and evolving socioeconomic order are likely to ensure that some people will work *more* than they should, *less* than they should, or *differently* than they should. I only wish to claim that an ever-evolving diversity of workweek schedules (and other social technologies), and a healthy competition between them, carries the best hope for nudging the society towards adaptive, endogenous labour market reforms that give them better alternatives. Over time, this will generate evolving patterns of variation, selection, and diffusion in labour market innovations which will cause some people to work more, some to work less, and all to work differently than they currently do. Under appropriate institutional incentives, this may increase the capability of labour markets to solve the problems of the poor. Whether this means the adoption of a 15-hour workweek (by some or all agents) or something completely different and unexpected (such as moving from a seven-day week to a 10-day week or automating all human labour with intelligent machines) remains to be seen.

Chapter 6: UBI as a Tool of Human Enhancement and Transhumanism

6.1. Introduction

How far can the evolutionary liberal PIUBI model be taken? What are the limits of its permissibility? Should evolutionary experimentation be limited to the cultural domain or should it extend to the biological domain from whence it was expunged as an understandable reaction to Social Darwinism? What is the legitimate role of the welfare state in the enhancement of human capacities? In this chapter, I inquire about the potential risks and benefits of extending the right to deviate, mutate, and innovate introduced in the previous chapters into the controversial, theoretically fascinating, and increasingly topical domain of *Human Enhancement Technologies* (HETs).

This topic is surely one of the most controversial but also one of the most important ones for a comprehensive account of socioeconomic evolution. Permissionless innovation in physical and social technologies, as I have explored in the previous chapter, challenges what it means to be a human being on multiple fronts. There is no reason why such processes would not ultimately seep into the realm of biology. I argue that permissionless innovation in Human Enhancement Technologies (HETs), although it needs to be subjected to some ethical and political guidelines (especially in relation to the regulation of existential and catastrophic risks), should be tolerated, and sufficientarian access to HETs provided to all willing individuals in the society. Nonetheless, I also argue that the *right* to innovate in HETs does not justify imposing a *duty* to innovate in them, since the coercive enforcement of the fulfilment of such a duty, through a technocratic or eugenic state, carries higher risks than benefits. Evolution, in the long run, is best served by allowing people to opt in or out of self-enhancement. So, even if we care about nothing else than the maximization of human evolvability (which, after all, may *not* be the only thing we care about), we should limit ourselves to enforcing the *right to innovate* in HETs combined with the *right to basic income,* which supports voluntary access to HETs. Access to UBI makes the innovation ecosystem more sensitive to the interests of poor and disadvantaged people. So, *there is a*

strong case to be made for the general right of all citizens – including the poor and the disadvantaged – to engage in the polycentric exploration of innovations in human enhancement technologies and other controversial and experimental areas of social evolution.

Before I continue, let me offer two more caveats: 1) Since, in this chapter, I will talk about experimental technologies and innovations that either do not yet exist, may never exist, or, if they exist, their economic, sociological, and moral consequences remain untested, a lot of the discussion will be hypothetical, cautious, and exploratory. This is the predictable consequence of charting a "cutting-edge" terrain. Indeed, the experimental method rests on the fact that we need to fumble in the dark before (if ever) we find the light switch. 2) A lot of the legitimate ethical worries about human enhancement centre around the question of family planning through gene editing ("designer babies"). I agree that the question of *offspring enhancement* is wrought with ethical worries, especially in a market system, that cannot be settled by a simple appeal to individual rights. (Habermas, 2003; Glover, 2006; Satz, 2010) The rights of the parents to gene edit their offspring should be balanced with the rights of the offspring, and it is not obvious how this balance should be best handled in practice. For this reason, I will limit myself to interrogating the legitimacy of *adult self-enhancement*. I will take no position on offspring enhancement.[39] The permissionless innovation model, like any liberal model, is best suited for preventing and settling disputes between *adults.* Justifying voluntary adult-adult HET transactions, and self-enhancements, is simply easier to defend, it seems to me, so I shall limit myself to that realm. This does not mean that expanding the model into parent-child or parent-embryo relationships would not one day be warranted, especially given the fact that embryo screenings, abortions, and similar biomedical family planning practices are already quite commonplace.

6.2. Human Enhancement Technologies (HETs)

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[39] One could further distinguish between the desirability of pursuing *controlled gene editing research* on human embroys and that of (unsupervised) *permissionless innovation with gene editing*. The former is safer, so it has a lower bar of acceptability, but I doubt it is "moral imperative." (Savulescu, Pugh, et al., 2015)

In this section, I will focus on the controversial and topical question of "human enhancement" (HE) as one of the most important avenues of permissionless innovation in the coming decades. HE refers to the process of intervening on certain biological and non-biological features of the human organism in a way that reshapes its capacities beyond the "ordinary" range of human achievement. (Kitcher, 1996; Agar, 1998, 2004, 2010; A. Buchanan, Brock, Daniels, & Wikler, 2000; Savulescu, 2001; Kass, 2002; Sandel, 2007; Fenton, 2008; Savulescu & Bostrom [Eds.], 2009; A. Buchanan, 2011a, 2011b; Savulescu, ter Meulen, & Kahane [Eds.], 2011; Persson & Savulescu, 2012; Metzl, 2019) HE is sometimes, although not necessarily, associated with "transhumanism" and "posthumanism." (Nietzsche, 2006; Licklider, 1960; J. Huxley, 1968; Deleuze & Guattari, 1987; Leary, R.A. Wilson, & Koopman, 1991; More, 1990, 1993, 2013; Kurzweil, 1999, 2005; S. Fuller, 2011, 2013, 2016; More & Vita-More [Eds.], 2013; Lilley, 2013; S. Fuller & Lipinska, 2014; Haraway, 2016; Harari, 2016) HE is also widely discussed in the "Fourth Industrial Revolution" literature as an important disruptor and destabilizer that poses new governance challenges that welfare states need to take seriously. (Brynjolfsson & McAfee, 2014; Schwab, 2017; Tegmark, 2017)

Broadly defined, HE is nothing but a logical continuation of tens of thousands of years of human innovation in prosthetic and social technologies, from the invention of fire and the wheel to the invention of sedentary encampments, grain storages, and artificial weaponry: "[h]uman beings have always tried to enhance themselves – to improve their mental, physical, and emotional capacities," while inventions such as medicine and the scientific method can be seen as examples of the "dramatic enhancement of our cognitive powers." (A. Buchanan, 2011a, p. xi) Savulescu & Bostrom (2009, p. 2) concur: "In one sense, *all* technology can be viewed as an enhancement of our native human capacities, enabling us to achieve certain effects that would otherwise require more effort or be altogether beyond our power." Contemporary HE technologies are only the latest, most deliberative stage in the long, ongoing process of self-enhancement: "for the first time we have scientific knowledge that has the potential for transforming ourselves more profoundly – and certainly more deliberatively than ever before." (A. Buchanan, 2011a, p. xi) As a result of compounding cultural, economic, and technological evolutionary advances, "most humans now live in societies with millions of people, with an advanced scientific technology that

enables them to exercise an influence that extends all over the world and far into the future." (Persson & Savulescu, 2012, p. 1) The very growth of civilization may be nothing but the story of the gradual enhancement of our human nature. Evolutionary psychology and sociobiology have long noted our species' notable "eusociality", i.e., our capacity for advanced and protracted human cooperation (Darwin, 1871; Turchin, 2016) and "shared intentionality." (Tomasello, 2014) Our eusociality can be seen as an evolutionary ratchet for moral and cultural progress that takes advantage of our inbuilt "blueprint" (Christakis, 2019) to generate progressive developments (disruptive innovations) that continually enhance our given capacities. In this sense, our genetic and cultural inheritance, far from being fixed, is a flexible platform for evolutionary expansion that is pushing us to continually modify our "given" nature through biological (genetic) mutations and cultural (epigenetic) mutations. The myth of Prometheus served as a warning but also as a beacon to our ancestors.

Nonetheless, the broad definition of HE runs into conceptual difficulties: "If the concept of human enhancement is stretched to this extent, it becomes manifestly unfit for service as an organizing idea for a new and distinctive field of ethical inquiry." (Savulescu & Bostrom, 2009, p. 3) For this reason, it is necessary to specify what aspects of human evolution we are talking about when we are talking about human enhancement. This can be solved by defining the concept narrowly enough to avoid the above objection while defining it broadly enough to do justice to the rich and endless diversity of emerging technologies. *Narrowly* defined, HE often refers to the controversial advances in *biological* and *genetic* technologies, treatments, and drugs. In particular, it refers to *biomedical enhancements* that "achieve improvements in our capacities by working directly on the brain or body [through, e.g.,] the administration of drugs, implants using genetically engineered tissue, direct brain-computer interface technologies, and insertion of genes into human embryos. Emerging technologies have the potential to transform our very biology." (A. Buchanan, 2011a, p. xi) By convention, all such biomedical tools and methods are referred to as "human enhancement technologies." (HETs) Note that "technology" refers not only to *technical* and *industrial* artefacts but also *cultural* artefacts (ideas, habits, values) that enhance human flourishing. So, HETs include both *physical* and *social* HE technologies. (Nelson & Winter, 2002; Beinhocker, 2006) Since there is no clear dividing line between biomedical enhancement and other types of enhancement, I think that the class of HETs should

encompasses biomedical enhancement as only a *special case* of a broader class of social and physical technologies that have a chance of enhancing our biological makeup. Such a definition of HETs is broad enough to encompass the expansive range of physical and social technologies while being specific enough to pay special attention to the emerging technologies associated with recent scientific progress, especially around biomedical enhancement, gene editing, and artificial intelligence. So, although HETs are merely the latest incarnation of the types of entrepreneurial and cultural innovations that I have discussed in the previous chapters, they are also something unique. What makes HETs unique is the promise (or threat) of fundamentally changing our biological and cultural capacities in ways that were previously impossible. This opens the door to rewriting the very "hardware" and "software" of human nature. In the (not so) long run, if the transhumanists and posthumanists are correct, HETs hold the promise (or threat) of fundamentally evolving humanity beyond the existing material constraints of *Homo sapiens*. This process is unlikely to be a unilinear onward march of progress. It is more likely to be a messy experiment – and messy experiments are exactly what evolutionary governance is poised to handle. Note that nothing hinges in my argument on the empirical question of whether HETs, indeed, will make people better off. Indeed, the mere fact that *we do not know*, but have the means to find out, justifies engaging in ongoing experimentation. Then we will know.

6.3. Modification vs. Enhancement: Terminological Clarifications

A little terminological clarification is in order. The term human enhancement carries normative connotations. To enhance means to make "better" – but compared to what baseline? Assuming that all modifications are enhancements is problematic because people have different ethical views of what constitutes improvement. For some people, let us assume, a static life consisting of living in harmony with one's given talents and capacities is the best life there can be. For them, human "enhancement" will only make things worse to the extent that it makes people move away from this ideal ethical life. (Sandel, 2007) For them, such enhancements are nothing but undesirable modifications. The normative desirability of engaging in human modifications is socio-ethically contested.

Descriptively, *human modifications are innovations, or socioeconomic technologies, that change the parameters of human capacities beyond the (average or expected) "normal distribution."* Such modifications can be desirable, undesirable, or neutral. Modifications act on, and modify, our "given" genetic and cultural inheritance. They change, or expand, the availability of (internal and external) resources, agent capacities, and environmental possibilities. Modifications make it easier, for an agent, to achieve some purposes (values) and harder to achieve other purposes (values). "Better" and "worse" are always *agent* and *context* relative. So, growing a third leg, or a bigger brain, may be advantageous to *one* agent but disadvantageous to *another* agent, and advantageous to one agent on *one* occasion but disadvantageous to the same agent on *another* occasion. Indeed, all mutations and adaptations, including in the realm of HETs, derive their fitness from the constantly shifting selection pressures posed by their environment, and it is meaningless to talk about an "enhancement" detached from the environment in which they manifest. Since judgments of relative fitness are agent relative, society cannot prejudge modifications as being *prima facie* "good" or "bad," *sub specie aeternitatis*. For example, one cannot judge a hammer as being "good" or "bad" for solving problems unless one specifies the purpose for which the tool is applied. A simple hammer is very good at solving the "broken chair" problem but very bad indeed at solving the "broken computer," let alone the "broken heart," problem. There is therefore no justification for speaking normatively about "human enhancement" except as a functional category of solving (or failing to solve) some adaptive problems attached to evolutionary complexity. All enhancements are modifications but not all modifications are enhancements. Some modifications are *neutral* while others *augment* or *diminish* our powers to solve problems in a changing world. Knowing which modifications are enhancements in the sense that they contribute to adaptive fitness requires continuously exploring the fitness function (the peaks and valleys) of the problem-solving landscape. It requires experimentation, and a high tolerance for risk, error, and waste.

6.4. Michael Sandel vs. Allen Buchanan on HETs

Michael Sandel (2007, 2012) argues against experimentation in human enhancement from the point of view of a communitarian, bioconservative critique of liberalism. Following in the footsteps of other HE critics like Kass (2002) & Habermas (2003), Sandel draws a sharp ethical distinction between using science and technology as *accompaniments* to, and *treatments* of, existing human nature, versus using them as *enhancements* of it:

> "Genetic engineering to create designer babies is the ultimate expression of the hubris that marks the loss of reverence for life as a gift. But stem cell research to cure debilitating disease, using unimplanted blastocysts, is a noble exercise of our human ingenuity to promote healing and to play our part in repairing the given world." (Sandel, 2007, p. 127)

He bases this argument on the assumption that there is something ethically dubious with attempting to overcome our "given" nature with all its flaws and imperfections. He urges people "to cultivate a more expansive appreciation of life as a gift that commands our reverence and restricts our use." (Sandel, 2007, p. 127) So, although it is acceptable to develop better *treatments* to the *malfunctioning* of our given nature, it is unacceptable to develop better *enhancements* to the *"normal"* functioning of our given nature. Hence, stem cell research, for Sandel, is acceptable, but "designer babies" are not. Sandel's examples are problematic. The case of "designer babies" involves difficult ethical questions about what the obligations of parents to children are. I will concede that designer babies are more problematic than curing cancer. But let me rephrase the issue in terms of the less problematic case of *self-enhancement*: Do I have the right to pursue enhancements, directly on my own body, beyond "normal" health, mental wellbeing, eyesight, intelligence, beauty, etc.? What makes *treatment* acceptable but *enhancement* unacceptable? They both involve the possibility of *welfare enhancement* and *solving human problems*, after all. Why should we abstain from increasing our wellbeing in any ways that we can?

From the evolutionary point of view, Sandel's argument, despite its intuitive appeal, is rather unscientific and unsound. The idea that we should cultivate a "reverence for life as a gift" ignores two key facts that make it rather implausible as a normative imperative: 1) Some people are born with the "gift" of cystic fibrosis, epilepsy, chronic joint pain, collapsed lungs, low impulse control, and malignant psychopathy. Do these characteristics really deserve an attitude of "reverence?" It seems obvious that nature makes mistakes. The fact

that nature is a machinery for producing endless mutations but most mutations are bad is one of the key tenets of evolutionary biology. 2) The idea that human nature is *fixed* is incredibly short-sighted. The history of human civilization is the history of gene-cultural coevolution. Human beings have always acted with "hubris," from the moment they invented the wheel, tamed wolves, and developed literacy. What is so special about the current ("given") endowment of biological and cultural capacities that they need to be frozen in time against future evolution? Is *that* not "the ultimate expression of hubris?"

Allen Buchanan, who describes his position as neither "anti-enhancement" nor "pro-enhancement" but "anti-anti-enhancement," (2011a, p. 20) argues that Sandel's criticism is based on "the pre-Darwinian idea that species have fixed essences." (2011a, p. 120) This is something we should "give up" in order to be open to the possibility that biological evolution could be continued through partially "deliberative," conscious means. (2011a, pp. 120-121) As a result, Buchanan offers a more nuanced policy position that recognizes the legitimacy of HETs but also the need for the government's power to regulate them:

> A society that engages in the enhancement enterprise recognizes the legitimacy of biomedical enhancement, as one mode of enhancement among others, both as a personal aim that individuals may permissibly pursue and as one permissible policy goal among others with which it must compete, through the political process, for public resources." (A. Buchanan, 2012a, p. 16)

It seems that such a normalization of the "enhancement enterprise" as the legitimate object of individual choice and government policy should be the *minimal* starting point for public policy going forward, since it makes it possible for HET innovations to circulate in the society, albeit subject to various regulations and controls that are left unspecified and open-ended. Allen Buchanan's model of the enhancement enterprise approaches liberal neutrality, and it provides a useful corrective to Sandel's bioconservative fetishization of the "given" flaws of human nature. The question is whether normalization is enough. Will normalization mean the subjugation of HETs to stringent government regulation? If we accept that HETs carry major promise for poor and disadvantaged people, should the pro-enhancement position not be asserted more forcefully? And if so, how far should it be taken? Allen Buchanan's position is compelling in its caution, but it does not go far enough. However, before I offer my *own* proposed solution, let me discuss Persson & Savulescu's

(2012) solution. They have argued that the government may well have a *duty* to support enhancement and perhaps even *mandate* it under certain assumptions. That is a claim worth exploring. I shall show that it has some flaws that render it inapplicable as a general principle.

6.5. Savulescu's *Active* HET Policy: The Duty *to* Enhance

Hayek famously lamented that humanity has evolved to live in small tribal groups by endowing us with instincts, sentiments, and values which have numerous maladaptive effects on our ability to survive as, or sympathize with the values of, a complex civilization: "The values which still survive from the small end-connected groups whose coherence depended upon them, are, however, not only different from, but often incompatible with, the values which make possible the peaceful coexistence of large numbers in the Open Society." (Hayek, 1982, 294) More recently, in a different context, Persson & Savulescu (2012, p. 1) have argued that "our psychology and morality have evolved for a life in small societies with primitive technology and have not developed in pace with the changes brought about by technology." Whereas Hayek worried that this would make people resent a complex market order, Persson & Savulescu argue that the problem is even worse, since the consequences are potentially existentially catastrophic; our maladaptive moral code may not only lead to *political collectivism*, as Hayek thought, but even *species extinction*: "The extraordinary progress of scientific technology has increased our powers of action so that we can cause ultimate harm, i.e. render worthwhile life forever impossible, by weapons of mass destruction or by deleterious climate change and environmental destruction." As a result, "we are in need of moral enhancement, by traditional or novel biomedical means, to bring down the risk of ultimate harm." (Persson & Savulescu, 2012, p. 1) So, unless we change our morality, we are stuck with moral values that do not reflect best possible human aspirations. Our outdated *morality* can be explained as a type of outdated *cultural technology* rooted in our *biological technology*. This assumes, with modern evolutionary psychology, that the state of our biological makeup underlies our capacity to compassion and moral reasoning. (A. Smith, 1759; Darwin, 1871; E.O. Wilson, 1975, 1998; Lumsden & Wilson, 2005; Haidt, 2012; Tomasello, 2014; Turchin, 2016; D.S. Wilson, 2019)

Are unenhanced people "unfit for the future?" (Persson & Savulescu, 2012) Does their unfitness pose the threat of catastrophic harm to our civilization? To solve such problems, Persson & Savulescu (2012) have argued that the state should incorporate HETs into its active policies and either incentivize, nudge, or coerce citizens into engaging with HETs. According to this position, which we might call the "*Active HET Policy*" position, which can be seen as an updated version of classic eugenic policy (Galton, 1883), HETs are so important that the government has an active duty to go *beyond* merely 1) giving people the freedom to engage in permissionless innovation in HETs (the "right to innovate") and 2) giving people some free money to engage in the former (the "right to basic income"). Instead, the government has a duty to 3) actively promote and encourage, and perhaps mandate, the production, adoption, and diffusion of (at least some) HETs.

Is there a warrant for moving beyond the framework of liberal neutrality? What are the problems with this view? First, let me distinguish between the *weak* form and the *strong* form of the *Active HET Policy* position. Actual policy positions may exist on a diverse spectrum between these two antipodes. The weak form lies on the "soft power" end of the Active HET Policy spectrum, and it relies on gentle nudging, public health campaigning, "sin taxing," expressions of public approval and disapproval, and the like, to gently affect people's attitudes, habits, and values, ideally in a freedom preserving way. For example, the government may subsidize certain R&D efforts that focus on generating smart drugs that increase the ability of students to learn and process new information. Or it may offer young people free samples of smart drugs with a note that says "Please try these out for yourself. They are good for you. Sincerely, The Government." On the other hand, the strong form – at the "hard power" end of the Active HET Policy spectrum – mostly relies on prohibitions of non-HET alternatives and coercive mandates on the production, consumption, and diffusion of HET technologies. For example, this may include public schools forcing all students to take smart drugs as a requirement for attending class, or public hospitals forcing parents to prenatally screen and abort babies with suspected congenital diseases or birth defects. Such active HET policies are conceivable not only under authoritarian and totalitarian governments but also, to a lesser extent, under various forms of liberal democratic welfare state regimes. Governments that already have a disposition to heavy-handed interventionism can be persuaded by the scientific evidence in favour of the collective

benefits of the widespread consumption of HETs to mandate or subsidize the production, consumption, and diffusion of their favourite HETs.

The weak form does not pose a serious obstacle to the smooth operation of the PIUBI framework. My main argument is against the strong form of the Active HET Policy. After all, whatever the pros and cons of active policy nudges, and there are good arguments on both sides of the debate (Sunstein & Thaler, 2008; Devereaux, 2017; Rizzo & Whitman, 2020), there is comparably little *existential* or *systemic* harm that the government can do when it engages (prudently or foolishly) in nudging people in this or that human enhancement direction, as long as people generally retain the freedom to act contrary to the advice and recommendations of the government, and as long as poor and disadvantaged people are entitled to unconditional economic resources (UBI) that gives them the robust "power to say no." (Widerquist, 2013) However, although the PIUBI framework may be agnostic as to the desirability of various forms of "soft power" exercised in favour of HETs, it unequivocally rejects the strong version of the Active HET Policy position, *except* in the unlikely scenario that such an enhancement is absolutely necessary to prevent, say, species extinction. I happen to disagree with Persson & Savulescu [2012] about whether such a scenario is already upon us, and on whether we should act on our fallible judgment on such matters even if we had a high level of confidence in our empirical assessment, but I share their principled commitment to the idea. Absence such conditions, however, a legislative reliance on such prohibitions and mandates undermines the operation of the spontaneous order, since it presumes that requisite knowledge about what HETs are good for people is already known and available to social planners. This repeats the mistakes of socialist calculation. (Hayek, 1945; Lavoie, 1985a) For example, an overenthusiastic reengineering of the human genome, especially if applied on the scale of whole populations, might risk causing unintended harm that exceeds the intended benefits. This is why it is better to proceed cautiously and experimentally. Historical experience with eugenic practices in the past should further caution us against repeating the mistake of past social planners of believing that our current scientific knowledge, with all its biases and uncertainties, is well-founded enough to serve as a foundation for large-scale social engineering. For example, we still do not fully understand how our genes work to produce specific traits or capacities. As Steven Pinker (2016) has argued:

"To genetically engineer someone, it's not a matter of sticking in *one* gene. You'd have to replace *thousands* of genes. We have no idea how to do that. We're not going to know how to do it anytime soon. And we also don't know how many of those genes might lead to an improvement in one aspect and a risk in *another* aspect. There may be a gene that increases your IQ by two-thirds of a point but also increases your chances of getting brain cancer or bipolar disorder by a third of a point."

This suggests that the risk/reward function of experimentation is difficult to predict. This calls for prolonged ethical debate around gene editing. (Singer, 2010; Andorno, Baylis, et al., 2020) At any rate, I think it would be reckless and irresponsible to delegate widespread discretionary powers to welfare bureaucrats and experts over the enhancement prospects of citizens. This threatens to reduce the rate of innovation from the bottom up, to say nothing of the indignities caused by coercion. Any rate, the course of human evolution will look very different depending upon which HET framework wins out in the long run.

What, if anything, should be done about our outdated moral reasoning and other unenhanced capacities? I will argue that Savulescu is correct that we should not only *tolerate* but also *morally encourage* human enhancement. I further think that the permissionless innovation framework is the most promising way to approach it – and better than either a government ban on such technologies or a government imposition of such technologies on unwilling subjects. Therefore, all individuals should be granted *the right to innovate in HETs without having to ask anybody for permission*. However, this conclusion only holds if a) the regulatory arm of the government commits itself to existential and catastrophic risk management (to prevent catastrophic harm), b) the *right to innovate* is properly secured in the ecostructural rules (to secure the formal conditions of permissionless innovation), and c) poor and disadvantaged people are granted the *right to basic income* to partake in the experimental "garage tinkering" around HETs (to ensure that the poor and the disadvantaged are included in the innovation ecosystem). Co-securing these rights, it has been argued, is best guaranteed under the liberal PIUBI framework. Furthermore, this *right* to innovate in HETs does not entail a *duty* to do so, since innovation grows more reliably under non-coercive and diverse environments, and since fallibilistic humility in the face of radical uncertainty is the appropriate yardstick of ecostructural

governance. Therefore, 1) the only *negative* duty that people have is not to interfere with the experimental enhancements of others, while 2) the only *positive* duty they have is to contribute, through the tax system, to the upkeep of the rules of the state as 2a) the regulator of catastrophic risks and 2b) the umpire of the rights structure, which includes the right to a basic income for all citizens. This is the view that I shall defend next.

6.6. The *Liberal* HET Policy: The Right to Morphological Freedom

In previous chapters, I have given reasons to think that the expansion of the *right to innovate* and the *right to basic income* to poor and disadvantaged people could have socially beneficial consequences. The logical next step is to interrogate the transgressive limits of such innovation. What happens if we take seriously Mill's dictum that "exceptional individuals, instead of being deterred, should be encouraged in acting differently from the mass"? (Mill, 2003, p. 131) What if we read this plea for eccentricity in a Nietzschean fashion as a call for self-overcoming and self-transcendence, as some transhumanists like Max More, have done? (More 1990, 1993; Nietzsche, 2006) Should "exceptional individuals" be allowed to transgress beyond the limits of common-sense values and habits? Should "acting differently from the mass" extend to the right to modify or augment one's genes? What about *unexceptional* individuals? What about poor and disadvantaged people? What is the relationship between "heroic" individualism and the collective project of solving social problems? This is what the Human Enhancement debate forces us to consider.

I have examined the Bioconservative HET Policy and the Active HET Policy positions and found them wanting. Neither the *duty to refrain from enhancing* nor *the duty to enhance* are warranted (under ordinary circumstances). It seems to me that the right to innovate should be tolerated and, where cultural norms are sceptical towards it, protected from the majority opinion that wishes to suppress it. Human enhancement is ethically defensible from the point of view of social evolution, since human enhancement opens up promising new evolutionary pathways that are worth exploring. Furthermore, widespread human enhancement also seems technologically and economically inevitable without massive coercive transformations away from the current social model. The only reliable way to stop

the spread of HETs is to enforce a set of exceedingly strict social norms and legal prohibitions that not only come with great economic and welfare costs but threaten the foundations of a free society. Efforts to suppress enhancements have failed in the case of doping in sports, where doping remains widespread despite strong moral and legal sanctions against them. The basic values of liberty and equality that underlie the framework of permissionless innovation are pushing in the direction of widespread human enhancement, not only as a natural expression of the right to innovate of sovereign individuals, but also as a professional calling of engineers, scientists, inventors, and amateur "tinkerers." Indeed, a governance framework that takes an overly risk-averse attitude towards HET cannot be justified from the point of view of human welfare advancement, since much of the most important innovations that already occur, and are liable to occur in the near future, occur in the field of HETs. It is hard to conceive how human society *could* solve many of its most pressing problems *without* HETs. For example, human *mortality* is arguably our single biggest social problem. (De Grey & Rae, 2007) Almost nobody wants to die and dying is source of pain for the living. The only possible cure for mortality, if one exists, lies in the tireless pursuit of experimental HETs. This promise alone justifies taking HETs seriously.

The PIUBI framework is naturally friendly towards, although not uncritically enthusiastic about, HETs, as tools of expanding human possibilities and the human welfare frontier. The PIUBI framework is committed to supporting free speech, scientific exploration, technological tinkering, and consumer sovereignty through legal, political, and institutional means. The end result is a society where the *right to innovate in HETs* is recognized. The institutionalization of the legal, political, and economic possibilities of human enhancement can be achieved primary through the setting of HET-friendly ecostructural rules. But the ecostructural rules should also include the universal right to a sufficientarian access to basic resources. So, the ecostructural rights should include the formal right to innovate in the realm of HETs *combined* with a substantial right to a basic income.

The *Evolutionary Liberal* HET Policy argues that the right to innovate should include the right to innovate in human enhancement and transhumanist beliefs, habits, practices, and technologies. Indeed, the general argument in favour of permissionless innovation in consumer goods, business routines, cultural practices, technologies, and moral norms

extends naturally to HETs, since there is not strict ontological boundary between, say, sunglasses and brain implants. Human beings have been enhancing their minds and bodies, and evolving their cultural standards and practices, for tens of thousands of years, and it would be parochial to imagine that our current standards and practices are anything but a resting stop on this long journey. To illustrate the relevance and application of "right to innovate," I will discuss how it compares to two central concepts in the transhumanist literature: 1) the *proactionary principle* (More, 2013; S. Fuller & Lipinska, 2014) and 2) *morphological freedom.* (Sandberg, 2013; S. Fuller, 2016; Szabados, 2017)

The *proactionary principle*, as defined by More (2013, p. 258), is "motivated by the need to make wise decisions about the development and deployment of new technologies and by the crucial need to protect technological experimentation and progress." As S. Fuller & Lipinska (2014, p. 32) concur, the principle provides the regulatory justification for transhumanist morphological freedom and the right to innovate: "If precautionaries would have us minimize risk-taking, proactionaries define the human condition in terms of its capacity to take, survive and thrive on risk." In the language of evolutionary theory, the proactionary principle insists on the right to take risks, experiment, and fail. It does not deny the presence of risks, but it insists on the primacy of freedom as an organizing principle. It therefore naturally gives credence to the concept of *morphological freedom*.

Morphological freedom is best understood as a sub-category of the broader freedom to engage in human enhancement guaranteed under the proactionary principle (what I have called "the right to innovate"). Anders Sandberg (2013, pp. 56-57) derives his transhumanist justification for "morphological freedom as a right" from the argument that "[w]e are technological beings who cannot survive without the tools and resources we employ, and if we are denied them we cannot thrive." Therefore, if we are denied access to new technologies that increase our chances of survival and flourishing, our rights to life and happiness are not respected. This same logic extends to technologies that modify, transform, and enhance our own bodies: "From the right to freedom and the right to one's own body follows that one has a right to modify one's body. If my pursuit of happiness requires a bodily change – be it dying my hair or changing my sex – then my right to freedom requires a right to morphological freedom." (Sandberg, 2013, p. 57)

Sandberg emphasizes the *individualistic* benefits of the exercise of one's right to morphological freedom. And indeed, experimentation in new and controversial technologies is inextricably linked with a kind of "art of living" that is bound to one's personal identity and self-expression. From tattoos to mind altering substances and genetic engineering, morphological freedom has been tied to Romantic and heroic notions of ("rugged") individualism. Max More (1993), too, appeals to Nietzschean self-overcoming as the appropriate standard for transhumanism. He opens his 1993 article with the following, aggressively individualistic, Nietzsche quote: "We, however, *want to be those who we are* – the new, the unique, the incomparable, those who give themselves their own law, those who create themselves!" (More, 1993, p. 15) This, of course, is very different from the public-oriented justification of freedom found in the PIUBI framework, since heroic self-expression is not an important part of the public benefits of innovation, except indirectly. The indirect normative justification of Nietzschean or Randian heroic individualism as a useful (although not central) part of the permissionless innovation ecosystem is found in the Schumpeterian recognition that entrepreneurship is an important part of the innovation ecosystem, and entrepreneurship often demands heroic character traits. Most people lack the tenacity, will power, or imprudence to innovate, so those who are willing to take more risks, and deviate from social norms, are often performing a public service. In this sense, the "requisite diversity" of the innovation ecosystem benefits from such diverse "heroic" individuals who are willing to explore new and strange territories. The public benefits of private heroism are found in the public diffusion of their innovations.

It is also worth pointing that Max More's (1993) analysis is less individualistic as it first appears, since he explains his individualistic principle of self-transformation as an outgrowth of a naturalistic principle of cosmic evolution that he called "Extropism," which refers to the *negation of entropy* through human agency and "technological self-transformation." Extropy is the creative principle (or the principle of *increasing order*), whereas entropy is the destructive principle (or the principle of *increasing disorder*): "Extropy is a measure of a system's intelligence, information content, available energy, longevity, vitality, diversity, complexity, and capacity for growth." (More, 1993, p. 15) In this sense, More's transhumanist vision of a Nietzschean philosophy of "self-overcoming" grounded in the cosmological forces of self-organization, which is aligned with the broader self-organization

literature in the natural sciences. (Biebricher, Nicolis, & Schuster, 1995) The nomenclature of "extropy" is related to Erwin Schrödinger's (1992) influential definition of "negentropy" (or "negative entropy") as the fundamental principle of life, which refers to the capacity of self-organizing biology to move towards higher degrees of order and complexity. It is also similar to Varela & Maturana's (1972) concept of *autopoiesis* (self-creation) and Prigogine & Stenger's (1984) concept of "self-organization" as the production "order out of chaos." Transhumanism, or extropianism, in this reading, is simply a conscious continuation and acceleration of the spontaneous evolutionary forces existing in the natural word. In the words of Szabados (2017, p. 6), More's extropic principle stands for "the human desire to understand, control and surpass nature" – again a very Nietzschean theme.

What primarily interests me here, however, is the institutional, legal, and moral dimension of extropianism and transhumanism. In both More (1990, 1993) and Sandberg (2013), morphological freedom is largely reducible to negative freedom and therefore libertarianism: "Morphological freedom is, like the others, a negative right. It is a right to be able to do certain things, but it does not in itself imply others are morally obliged to support exercise of it. (…) As a negative right, morphological freedom implies that nobody may force us to change in a way we do not desire or prevent our change. This maximizes personal autonomy." (Sandberg, 2013, p. 57) Szabados (2017) likewise defines morphological freedom as a "human right." At any rate, it is clear that the *right to innovate* is friendly to *morphological freedom*. But is there any positive role left for the welfare state?

6.7. Justice in Diffusion, HETs, and UBI

One of the most important issues in the HET debate is determining *who* gets access to HE technologies, *when*, and *at what cost*: "In a world in which innovation is a central fact of life, the diffusion of beneficial technologies should occupy center stage in our thinking about distributive justice." (A. Buchanan, 2011a, p. 243) Uneven distribution of the fruits of progress could lead to new socioeconomic inequalities represented by the class division between the "haves" and the "have-nots" of HETs. The "enhanced" humans could become either a super-class or a sub-class, depending on how they would be perceived and treated

in the society. For example, through their privileged access to HETs, the rich might be able to "elevate" themselves into a new super-class, thus amplifying existing class differences and generating new ones. This egalitarian worry is often paired with the sufficientarian worry that some HETs might not be available to all people at sufficient quantities, or at sufficienly affordable costs, to meet their basic needs. We should not "smugly assum[e] that the benefits of biomedical [and other] enhancements will 'trickle down' to the worst off. Even if valuable innovations tend to become more widely available over time, they may do so too slowly." (A. Buchanan, 2011a, p. 243)

The evolutionary perspective provides good reasons to be optimistic that innovative technologies will spread out to the whole population in the long run, although there may be good reasons to worry about egalitarian and sufficientarian concerns in the short run. The reason for the optimism is that the observed pattern in history is for most technologies to come down in price after the "vanguard of innovation" (the group of people who have early access to an innovation) have first reaped the initial benefits, usually at a higher per unit cost. Computers, smart phones, the rule of law, dental care, elementary schooling, and supermarkets have all started out as rare and expensive innovations that have subsequently become available to wider and wider sections of the population. General economic growth makes it possible for even the poorest members of the society to become fully enmeshed into the consumption and production of innovations, and welfare state measures can be used to accelerate the diffusion process or to make it more inclusive. There is reason to assume that such trends will operate on HETS as well. Contrary to the dystopian worries of some critics of HETs, the ability to enhance one's capacities through social and physical technologies, in the long run, is unlikely to be limited to the rich, but will also become widely available for low-income people. The logic of technological development, as observed in modern history, suggests that, barring large-scale political or economic repression, the widespread ability to engage in human enhancement will be increasingly available to more and more people. That said, additiional measures might be needed to resolve the sufficientarian worry about justice in diffusion in the short-to-medium run. In particular, I will accept Allen Buchanan's argument that "when powerful innovations do not diffuse widely, but are available only to some, this creates opportunities for domination and exclusion, as well as the loss of opportunities for improving the well-being of the world's

worst off people." (A. Buchanan, 2011a, p. 244) Countering domination and exclusion are at the heart of the liberal project, and since there are reasons to worry about the inherently inequality-generating and class-divide exacerbating effects of disruptive innovation, there are good reasons to favour mechanisms for maximizing the inclusiveness of development beyond *laissez-faire*. Striking the right balance between (long run) exploration and (short run) exploitation consists in maximizing the payoff of growth within the constraints of sufficientarianism that sets a high value in solving the problems of the poor through facilitated access to innovations. This can be called "justice in innovation."

One of the groups that might benefit the most from improved access to HETs are the poorest and disadvantaged segments of the society. HETs have the possibility to shape, modify, and potentially improve the lives of the most vulnerable and poorest members of society in significant ways. If HETs are significantly regulated by the government, as they most likely will be, people will only have (legal) access to *formally approved* HETs that, on the one hand, 1) they are legally and reliably able to buy *and* afford on the private market, and, on the other hand, that 2) they are legally and reliably able to receive as additional in-kind and cash assistance from the public sector (e.g., through public health services). Of course, people are not completely beholden to the law. In addition to formally approved HETS, people can also have access to *black markets* (illegal purchases and sales of HETs) and a *corrupt public sector* (whether in the form of bureaucratic loopholes, selectively enforced regulations, or bribed officials). Oftentimes, such illicit mechanism can be valuable resources that allow poor and disadvantaged people to get better access to controversial technologies that can make them better off. Indeed, illicit markets and public corruption can be useful although unpredictable tools of achieving justice in the diffusion of innovations. (This was true, for example, of the illicit abortion clinics in Communist Romania.) This is true whenever the regulatory framework fails in the task of protecting people from harmful innovations while enabling people to have access to beneficial innovations; or whenever the in-kind services of the welfare state fail to facilitate the diffusion of beneficial innovations to the poor and the disadvantaged members of the society beyond what the market can provide them. At the same time, relying on black markets and corrupt government services comes with various individual and collective costs. Indeed, largescale illegality, whether in the private market or in the public sector, undermines the very foundation of a stable social

order. This makes black markets and corrupt governments unreliable and undesirable sources of HETs for the poor and the disadvantaged communities in the long run. So, it is much preferable to create a formal institutional framework that officially supports permissionless innovation in HETs and diffuses their benefits broadly within the norms of legal transparency, generality, simplicity, nondiscrimination, and the other desirable features of the rule of law.

The question is this: if we accept the premise that HETs are one of the most important goods that poor and disadvantaged people need and deserve in order to solve their problems, does the government have a duty to make sure that poor and disadvantaged people, too, have access to HETs? Indeed, does the welfare state not have as *special* duty to level the playing field, and to make sure that HETs are not only available to those people who are better connected, richer, can move to a more permissive jurisdiction, or who have access to black markets or corrupt government officials? I believe the answer is affirmative. From the point of view of facilitating evolutionary strategies to solve social problems, *the government has both a) a general duty to ensure that there exists a framework of permissionless innovation in HETs for all citizens, and b) a particular duty to ensure that all people (who are willing to engage with HETs and can potentially benefit from them), regardless of their wealth or status, have guaranteed access to HETs*. Access to HETs, I shall argue, can best be guaranteed in the form of the PIUBI ecostructure which combines the right to autonomy (the "*freedom*-to-innovate") with the sufficientarian right to UBI (the "*resources*-to-innovate").

UBI might be a necessary corollary to the right to innovate in HETs, since it ensures that all people, including the poor and the disadvantaged, have robust access to experimental and innovative social and physical technologies. It might not be *enough*, since in kind benefits, targeted cash benefits, and universal services have some advantages that are not capturable by a simple universal cash program. But it may be *necessary*. Under the PIUBI system, unlike under other welfare mechanisms, access to controversial technologies and other innovations is not controlled (for ordinary risks) by public authorities, nor are particular innovations given preferential or discriminatory treatment. Conditional and targeted welfare state measures reduce the autonomy and independence of welfare state recipients, whether in the form of the "upstream conditionalities" attached to government benefits

and services, or in the form of the "downstream conditionalities" attached to the various market and technology regulations. As a result, providing a liberal rights structure that guarantees not only the universal and unconditional right to innovate but also the universal and unconditional right to UBI may be institutionally required to not only to treat people with dignity and respect, but also to allow them to make meaningful HE choices.

6.8. Basic Income Models in Libertarian and Democratic Transhumanism

Transhumanist politics has a few different strands. The most common ones are *Libertarian Transhumanism* (More, 1990, 1993; Sandberg, 2013) and *Democratic Transhumanism* (S. Hughes, 2004; A. Buchanan, 2011a, 2011b). My own theory falls somewhere in between since it combines a strong commitment to freedom with a strong welfare state. Libertarian Transhumanists are divided on the issue of UBI. One the libertarian founders of transhumanism, Max More (2020), argues against UBI on the basis of its perceived inefficiency, work disincentives, and negative effect on economic growth. Instead, he argues for "Universal Distributed Capitalism" (UDC), a type of national dividend scheme, where poor people are made shareholders of companies to allow them to benefit from the fruits of an increasingly automated digital economy. He favours a one-off payment model, similar to Thomas Paine's (1945) or Ackerman & Alstott's (1999) national dividend schemes, on the basis of their supposedly better work incentives. More's dividend model is compatible with the aims of libertarian transhumanism, but it does not offer a viable alternative to the existing welfare state, since it fails to provide basic economic security for all citizens. So, UDC it does not offer a viable substitute to UBI, at least as More presents it.

Ray Kurzweil (2008), an early proponent of transhumanism, has expressed support for something along the lines of UBI as a "step in world progress" towards an "era of abundance." Similar arguments were already made by the proto-transhumanist Buckminster Fuller (1969, p. 39, my italics), who argued that "we must give each human who is or becomes unemployed *a life fellowship in research and development* or in just simple thinking. Man must be able to dare to think truthfully and to act accordingly without fear of

losing his franchise to live." Another important futurist, Robert Anton Wilson (1990, pp. 145-148), further developed Buckminster Fuller's ideas, by arguing that "unemployment is not a disease, but the natural, healthy functioning of an advanced technological society." (R.A. Wilson, 1980, p. 145) At the same time, Wilson recognized that "[k]nowledge itself is inherently self-augmenting. Every discovery 'suggests' further discoveries. Every innovation provokes further innovation." (R.A. Wilson, 1980, p. 146) This is similar to Matt Ridley's (2020) idea of "ideas having sex." R.B. Fuller and R.A. Wilson deserve credit for being among the first "transhumanists" to argue that UBI, in addition to being an *income cushion*, could be seen as an *innovation platform* that could foster the capacity of citizens to pursue creative social projects. Although they often relied on dubious assumptions about the inevitability of mass unemployment, they saw UBI as primarily as a means of accelerating freedom, creativity, and innovation. For Wilson (1980, p. 148), the primary purpose of implementing a UBI (or NIT) would be to encourage "the inborn drive to play, to tinker, to explore, and to experiment", which is the foundation of "human creativity." To implement UBI, R.A. Wilson (1980, pp. 147-148) proposed the following three-stage plan:

1) "Stage I is to recognize that cybernation [automation] and massive unemployment are inevitable and to encourage them. This can be done by offering a $100,000 reward any worker who can design a machine that will replace him or her." (This can be seen as a negative version of the sort of "Robot Tax" that is sometimes discussed today.)

2) "Stage II is to establish [UBI]" at a modest level.

3) "Stage III is to gradually, experimentally, raise the [UBI]," in a prudent manner, to ultimately "give every citizen the approximate living standard of the comfortable middle class."

On similar lines, the U.S. transhumanist Zoltan Istvan (2015, February 13th) has argued in favour of UBI on the basis of the job automation hypothesis: "there's no point in pretending society can avoid a future Universal Basic Income (UBI) – one that meets basic living standards – of some sort in America and around the world if robots or software take most of the jobs." The problem with Istvan's perspective is that it does not tie UBI to the concerns of freedom, autonomy, experimentation, and permissionless innovation. This is a bit of a

missed opportunity, considering that Istvan elsewhere champions a constitutional approach to morphological freedom, to which the right to UBI could be seen as a natural companion. Istvan's *Transhumanist Bill of Rights* (as reproduced in S. Fuller, 2016, pp. 44-45) proposes to introduce *morphological freedom* into the fundamental rights structure of the transhumanist constitution:

> *"Article 3.* Human beings, sentient artificial intelligences, cyborgs, and other advanced sapient life forms agree to uphold morphological freedom—the right to do with one's physical attributes or intelligence (dead, alive, conscious, or unconscious) whatever one wants so long as it doesn't hurt anyone else."

This is a good expression of the transhumanist component of the *right to innovate* guaranteed under the PIUBI scheme. Indeed, implementing this right within a *Bill of Rights* has the advantage of strengthening the constitutional aspect of ecostructural governance. As Steve Fuller (2016, p. 40, my italics) has pointed out, UBI, in this context, "can be understood as a state-underwritten 'ground of being', *a guaranteed capital base for the pursuit of morphological freedom*. Such a policy would be especially attractive to those who might wish to experiment with alternative modes of being without having to be permanently associated with any of them if they don't turn out as desired."

Similar debates can be found within the tradition of *Democratic Transhumanism*. Let me now discuss Steve Hughes's book *Citizen Cyborg* (2004) where he argues in favour of using public policy to encourage enhancement subject to democratic control and governance. He writes: "we have an obligation to encourage as wide an adoption of enhancements as possible in order to minimize the inequalities that result from both natural genetic endowments and unequal access to genetic enhancements." (S. Hughes, 2004, p. 233) Here, he goes beyond the libertarians in advocating for a more active policy:

> "Transhumanists reject any coercion in genetic decision-making. (…) But that doesn't mean that a transhuman democracy shouldn't encourage people to take advantage of enhancements for themselves and their children." (S. Hughes, 2004, p. 232)

As a solution to the unequal and unfair distribution of access to HETs, he advocates for "subsidies and universal provision" as well as the following comprehensive list of policy options available for a democratic government in the regulation of HETs:

- Mandatory, no exceptions

- Required, but with religious exemptions

- Publicly funded and encouraged, but not obligatory

- Encouraged, but unsubsidized

- Publicly funded, but not encouraged

- Available unsubsidized on the market

- Available, but controlled by prescription

- Discouraged, by taxation and education

- Banned

(S. Hughes, 2004, p. 239)

He also expresses his support for UBI and universal health care. He writes, "democracies can provide universal economic benefits while advancing the technological innovation necessary to pay for them. Universal health care and basic income systems are essential as we make the transhuman transition, to ensure equal access to benefits (…) between the rich and poor." (S. Hughes, 2004, pp. 215-216) I agree with him on basic income and possibly also with health care. One only has to be careful with what one means by "universal health care." It can either refer to the state *guarantee* of affordable access to health for all (which is reasonable) or the state *monopolization* of said health care (which is innovation-stifling).

This is not the place to offer a comprehensive analysis of health care economics, or the difficulties associated with designing a fair, efficient, and flexible health care system. Nonetheless, from the point of view of ecostructural governance, it is possible to offer some general guidance on what the risks and rewards of universal health care are. For one, the system should preserve patient freedom and allow for, or even accelerate, continued experimentation and innovation in health care services. This means that the health care system, whatever its general design parameters, should guarantee the *right* of patients, doctors, and health care providers to engage in permissionless innovation. The system of "universal health care" should not be used as an excuse to crowd out, suppress, control, excessively regulate, license, or ban private clinics, doctors, drug manufacturers, etc. It should remain possible for people – both for their own sake and for the sake of the whole community as a "Society of Explorers" – to exercise their "real freedom" and "exit option" to bypass the government-run, or government-funded, health care. This means that people

should, by default, have the right to choose (even if this choice is officially frowned upon and discouraged) experimental alternatives, including risky, "unscientific," unlicensed, and untested ones. The cultural values, habits, and practices of HETs should be allowed to emerge from the bottom-up. Controlling the risks of such an approach may require additional investments into public education and public health campaigning, or even nudging, to make people better informed choosers. Within such constraints, a universal health care scheme is a perfectly legitimate and perhaps necessary supplement to (but *not* a substitute for) a UBI scheme.

6.9. Accelerationism and Basic Income

Before concluding, let me discuss one more corner of the transhumanist discourse where UBI has been actively debated. Many social critics today bemoan the fact that alternatives to capitalism appear unimaginable. (Fischer, 2009) *Accelerationism* refers to a loose network of post-Marxist sociologists and futurists (of whom there are curiously both "left-wing" and "right-wing" variants) who believe, with Marx, that capitalism contains the seeds of its own destruction, and that the capitalist process of self-destruction should be *accelerated* in order to bring about a better, post-capitalist world. (Marx & Engels, 2008; Deleuze, 1987; Land, 2011; MacKay & Avanessian [Eds.], 2014; Srnicek & Williams, 2013, 2015; Negri, 2014) As Marx & Engels (2008, p. 10) famously put it in *The Communist Manifesto*: "Constant revolutionising of production, uninterrupted disturbance of all social conditions, everlasting uncertainty and agitation distinguish the bourgeois epoch from all earlier ones. All fixed, fast-frozen relations, with their train of ancient and venerable prejudices and opinions, are swept away, all new-formed ones become antiquated before they can ossify. All that is solid melts into air, all that is holy is profaned…"

The Accelerationists, like Marx himself did, have an ambiguous relationship to the transformative power of capitalism. They bemoan its destructive power while celebrating its relentless evolutionary thrust. Advanced capitalism appeared to Marx as, paradoxically enough, the only way to socialism. Schumpeter (1942), too, can be seen as an accelerationist with his model of "creative destruction," although he did not welcome the

coming era of socialism that he foresaw. Among contemporary accelerationists, while some are sceptical towards UBI (Land, 2011), others (Srnicek & Williams, 2013, 2015) have expressed their support for UBI as a means of accelerating the self-destruction of capitalism. In their critique of contemporary capitalism, Srnicek & Williams (2015, unpaged), for example, argue that the "neoliberal" conception of *negative freedom* is too "formal" and "emaciated" (a criticism common to the Marxist tradition) and it needs to be supplemented by a conception of *positive freedom,* what they call "synthetic freedom," which provides the "material capacity" and the "financial and social resources" to be truly, substantially free: "it is this emphasis on the means and capacities to act that is crucial for a leftist approach to freedom." As part of this package, the authors recommend UBI:

> "[S]ynthetic freedom demands the provision of a basic income to all in order for them to be fully free. Such a policy not only provides the monetary resources for living under capitalism, but also makes possible an increase in free time. It provides us with the capacity to choose our lives: we can experiment and build unconventional lives, choosing to foster our cultural, intellectual and physical sensibilities instead of blindly working to survive." (Srnicek & Williams, 2015, unpaged)

The emphasis on "full freedom," "capacity to choose our lives," and the possibility to "experiment and build unconventional lives," are also shared by evolutionary liberal perspective. Ironically, the authors build a strawman of neoliberalism where supposedly such aspects of freedom are not recognized in the neoliberal tradition, even though, as I have shown, authors like A. Smith, J.S. Mill, and Spencer have theorized such ideas for centuries. However, to the extent that "neoliberals" like Hayek and Friedman, despite their support for some form of basic income, did not *present* basic income as a means of advancing such a substantive, positive conception of freedom, it is true that the "leftist approach to freedom" (as Srnicek & Williams call it) provides a valuable contribution to the transhumanist UBI debate. The disagreement arises, not from the positive conception of freedom (which I partially share with them), but from the broader commitment, by the progressive accelerationists, to a collectivist political order driven by an active welfare state that, in addition to providing valuable services, leaves little room for negative freedoms. Such a vision, whatever its superficial charm, appears ultimately self-contradictory when it,

on the one hand, promises an expansion of the "capacity to choose our lives" and the possibility to "experiment and build unconventional lives," but, on the other hand, does so *without* a corollary commitment to the polycentric order of liberal rights, through which the exercise of such freedoms is uniquely possible. For the Srnicek & Williams thesis to be plausible, they would have to explain how substantial freedom is possible without an economic realm that looks awfully, well, "neoliberal" – *even* if it is supplemented by a thick web of welfare state services and solidaristic structures that make it substantially progressive and left-leaning on top of the "minimally liberal" core. Srnicek & Williams are certainly right to emphasize that the substantial freedom requires the development of institutions, practices, habits, and values on the community level; and their work contributes to an understanding of their constitutive role to a "truly free" social order. But the kinds of robust communitarian habits and values that progressives crave can be best secured in a society constructed on the foundation of negative liberal freedoms. The PIUBI framework provides such negative freedoms better than their model.

6.10. The Regulation of Psychedelics: How *Not* to Do it

Let me end with a brief historical story that illustrates the severity of past and present *government failure* in the regulation of human enhancement technologies. As Earp, Douglas, & Savulescu (2017, pp. 174-175) have argued, psychedelic substances like ayahuasca and psilocybin are among the oldest human enhancement technologies. They have been used all over the world for various functional purposes. (Pollan, 2018) Furthermore, as recent research has confirmed, the guided consumption of psychedelic substances like psilocybin can have highly beneficial and sustainable effects on patients. For example, they reliably occasion, in a significant number of patients, "mystical-type experiences having substantial and sustained personal meaning and spiritual significance." (Griffiths, Richards, McCann, & Jesse, 2006, p. 268; cf. also MacLean, Johnson, & Griffiths, 2011) Another study reports "substantial and sustained decreases in depression and anxiety in patients with life-threatening cancer." (Griffiths, Johnson, et al., 2006, p. 1181) As Ira Bryock (2018, p. 420) has recently concluded, based on a review of the evidence, "[u]nscientific bias and nihilistic assumptions can keep effective treatments from people who desperately need them.

Despite the controversial history of psychedelic medications, palliative specialists who care for patients with serious medical conditions and common, difficult-to-treat nonphysical suffering have a duty to explore these hopeful, potentially life-preserving treatments." Given the promise of such treatments, the current regulatory environment has been excessively rigid and maladaptive from the point of view of patient welfare. It is still almost impossible for patients to get access to such therapies outside of a few clinical trials. The best scientific evidence suggests that psychedelics have a lot of therapeutic promise to help people who are struggling with serious illnesses like cancer and depression. It seems cruel for the regulatory state to keep on insisting that patients cannot have access to them.

Belouin & Henningfield (2018, p. 16) have argued that the restrictive regulatory environment surrounding psychedelics "developed during a time of fear, political concern, and misinformation about psychedelic substances that led to establishing substantial barriers impeding their research and potential clinical uses." Although there were some cases of scientific malpractice, especially during the 1960s, (Bonson, 2018) the ensuing strict government regulation halted legitimate research in the U.S. and most other countries for decades. Overturning decades of government failure in the mismanagement of HETs is no easy task. The regulatory history of psychedelic drugs is arguably one of the best documented cases of massive government failure caused by the misapplication of the precautionary principle. Legitimate concerns about patient safety and community cohesion (Andreae, Rhodes, et al., 2016) should not be abused, as they have been in the past, to justify stifling cultural innovation and scientific research. The PIUBI framework provides an alternative regulatory standard for such practices that is better aligned with the requirements of open society and bottom-up experimentation. This is in line with Pollan's (2018) recommendation for the tolerance of "neural diversity." The right to innovate, with appropriate regulatory caution, with psychedelic substances, should be a right that poor and disadvantaged people, such as depressed people and terminal cancer patients, have as the default option, without having to ask anybody for permission.

6.11. Conclusion: Inclusive and Experimental HET Policy

Arbitrarily limiting permissionless innovation to non-HET technologies is unjustifiable. There does not exist a clear dividing line between HE technologies and other technologies. All innovative technologies act on, modify, and enhance our sociobiological nature. As human modification/enhancement technologies get more advanced, the range of possible human modifications increases. Although this raises questions of justice and inclusiveness, these problems are not as serious as some people assume, since the price of enhancements is likely to decline rapidly over time. However, although the price of HETs may come down rapidly, income security in a complex market economy is likely to continue to remain precarious without a commitment by the government to a UBI that secures enough resources to all citizens, including the poor, to be able to afford HETs.

I have proposed that the PIUBI framework is superior to both the minimal state libertarian and the government-led alternatives at discovering which HETs are good for which agents, for what purposes, under what conditions, and in what ways. In general outlines, the PIUBI framework is somewhere between *Libertarian Transhumanism* and *Democratic Transhumanism*. The evolutionary liberal PIUBI model implements the libertarian emphasis on individual freedom, experimentation, and competition, but it combines them with a robust guarantee of economic resources to partake in HETs with the help of a (non-judgmental and non-paternalistic) government-funded safety net and open-ended range of other optional public services. It thereby ensures that poor and disadvantaged people are included into the innovation ecosystem as sovereign producers, entrepreneurs, and consumers with "real freedom" (albeit only in proportion to their wealth) to experiment with controversial social and physical technologies and to shape the contours of the innovation landscape. If given the power to do so, poor people can co-contribute to determining which HETs, and how, become selected and diffused.

At the same time, the PIUBI framework is arguably superior to the actively state-led alternatives, including *(Social) Democratic Transhumanism*, which seek to impose judgmental and paternalistic conditionalities on the use of HETs or override the self-propelling drive of the marketplace. Government-led policies, at best, can pinpoint existing HETs for social selection, and harness and exploit them for the sake of various carefully articulated social goals. Universal health care provision (or compulsory health insurance) may be a good, minimally paternalistic way to provide affordable access to HETs and other

innovative drugs and therapies to poor and disadvantaged citizens. At the same time, the government should not suppress private competitors or monopolize HET markets. Ultimately, the choice about whether to engage in HETs should be up to the people themselves. HET drugs and therapies should be available on the open marketplace with little to no occupational licensing or other forms of paternalistic regulation. Through UBI, public health insurance, and other redistributive programs, governments can make sure that HETs become more widely shared, better researched, or used in more inclusive ways. Governments can also provide general funds for academic HET research. Less certain is whether they should also engage in a limited form of "industrial planning" through the financing and subsidization of carefully selected HETs for targeted development.

At any rate, governments have an important role to play in ecostructural governance, and this is especially true with regard to the highly promising but also highly controversial HET innovations. Their long-term (or even short term) economic and social impact is radically uncertain, which requires regulating for disruptive risks but also facilitating their disruptive benefits. A completely anarchic attitude towards emerging technologies is impossible due to the presence of low-probability and high-impact risks, so the government needs to regulate new technologies for their potential catastrophic and existential risk factors. They may also optionally provide additional public goods and services to *incentivize* the safe production and consumption of HETs without (generally) *mandating* them on anybody. Nonetheless, governments should not attempt to substitute for the polycentric social learning mechanisms involved in the permissionless innovation ecosystem that alone can take sufficient advantage of local knowledge and decentralized competitive processes to achieve long-term advancements in the exploration of the risks and rewards of HETs.

Since HETs carry potentially great rewards (although also great risks), regulating them appropriately under the proactionary principle means monitoring them for catastrophic risks but granting people morphological freedom, which includes the right to innovate (or abstain from innovating) with human enhancement technologies. One of the main mistakes in present poverty relief is treating poor people as helpless and passive "targets" of aid rather than creative, curious, experimental, and innovation-prone agents. Leaving the task of human enhancement to Nietzschean superhumans (Nietzsche, 2006; More, 1990) or eccentric gentlemen (Mill, 1859) is neither just nor inclusive enough. It is advisable to

involve poor people into the human enhancement project, if they so choose, through basic income.

Chapter 7: Challenges, Pt. I: Permissionless Stagnation and Other Objections

7.1. Introduction

In the two chapters ahead, I will respond to some of the possible objections to PIUBI that seem the most serious. First, in this chapter, I will go through some objections to the permissionless innovation UBI model from the point of view of evolutionary theory, focusing on ways in which evolution does not always produce optimal or good outcomes.

In **Section 7.2**, I will explore the danger of *permissionless stagnation*, which refers to the capacity of bottom-up evolutionary processes to generate counterproductive or destructive "innovations." Freedom is a dangerous and risky business. After all, the PIUBI model leads to an increased reliance on the powers of the polycentric, competitive order to solve social problems, serve human needs, and self-govern a society. This is a demanding task, and it is no wonder if the *Open Society* will often make mistakes. So, it will be important to analyse ways in which permissionless innovation can contribute to what might be called "evolutionary failure" (with analogy to "market failure" and "government failure"), which can lead to undesirable consequences that poison markets, civil society, and the culture. In the end, I will argue that while the case for permissionless innovation seems *net positive*, we have good reasons to worry about some of the potential trends, such as *social isolation*, and *toxic networking,* that may arise from an overreliance on the evolutionary process.

In **Section 7.3,** I will inquire into the *categories of risk* produced under the permissionless innovation framework. I will differentiate between *ordinary* risks and *extraordinary* (including *existential*) risks. I will argue that protecting against ordinary risks does not justify deviating from the universality and unconditionality requirements of the UBI system.

Ordinary risks should be tolerated and tackled within the permissionless innovation framework, not outside of it. At most, they justify offering some extra social support in addition to UBI to people who fall into hard times. However, *extraordinary* risks (including *existential* risks) provide a noteworthy exception to the permissionless innovation framework. Since they undermine the very foundations of a free and open society, perhaps even civilization itself, people cannot be granted unlimited permission to engage in such innovations. UBI recipients cannot be granted unconditional license to use their money and autonomy in ways that generate extraordinary or existential risks. However, risk management poses its own sets of challenges, including the serious risks of government failure, that need to be weighed against the serious risks of non-intervention.

Finally, in **Section 7.4**, I will inquire about the role of *waste* in an innovative system. How much waste is tolerable? How do we know if the PIUBI model becomes "too" wasteful? And does not the fact that UBI allows people to engage in wasteful activities mean that there is something fundamentally wrong and inefficient about the whole idea of UBI? I will respond by arguing that waste plays an important role in any trial-and-error process; and indeed, a society that is not producing waste cannot be said to be capable of real experimentation. At the same time, excessive waste can become a problem when the ratio between waste and discovery becomes too low or when the rewards of discovery are too meagre.

7.2. Permissionless Stagnation: Social Isolation and Toxic Networking

Permissionless innovation can give rise to its own destruction. The fact that it can give rise to unimaginably positive breakthroughs does not negate the fact that the negative side needs to be taken seriously indeed. One of the key policy lessons of the evolutionary perspective is that spontaneous evolution can lead to a loss of diversity and therefore to a loss of the adaptive efficiency of the society. Being "stuck" or "locked-in" on a particular evolutionary path can stifle ecological diversity and prevent creative innovations from emerging. This is related to the problem of *path dependence*. (David, 1985, 1994; Arthur, 1994; Magnusson & Ottosson, 2009; Schreyögg & Sydow [Eds.], 2010; David & Wright [Eds.], 2003) Indeed, "the path-dependent trajectory to a state of lock-in involves systematic loss

of diversity. Destabilizing the dominant regime and maintaining or enhancing diversity are key to escaping a state of lock-in." (Van den Bergh & Kallis, 2013, p. 289) This may not involve putting on brakes on innovation altogether. Rather, it is a matter of setting some modest side constraints on its tendency to generate stagnation.

Let me give two examples of how permissionless stagnation can be generated:

Example 1: Social isolation. Basic income with no strings attached (i.e., permissionless innovation in behavioural outcomes) may allow people to exercise their exit option from the labour market. This might lead them to socially isolate. Social isolation might lead to the breakdown of social networks. This could be bad since networks are vital for permissionless innovation. If enough people socially distance themselves, and alienate themselves, out of the labour force without replacing them with equivalent or better social engagements, such mass displacement would be poised to reduce the strength and health of the networks that generate social innovations and percolate them across the entire social sphere. This argument is similar to the well-known conservative and indeed mainstream worry that basic income will make people lazy, and that this laziness is likely to be sufficiently bad for society as to constitute a strong argument against an *unconditional* basic income. In many ways this concern is shared by the complexity approach. Complex adaptation is averse to a kind of "atomistic individualism" in which people self-isolate themselves *en masse*. Complex adaptation depends on the maintenance of *creative interactions, and recombinations, in networks of social production.* Although the complexity perspective provides unique and new perspectives on what constitutes "social participation," it does not deny the need to integrate such concerns into the welfare state. A responsible welfare state ought to concern itself with identifying, developing, and harnessing the social capital of poor people. A healthy bottom-up ecosystem consists of active, creative, and socially active agents who are combining, de-combining, and re-combining in various social networks, organizations, and entrepreneurial actions. Self-alienating, minimally networked, and self-isolating "monads" may have a productive role in the society (as loners, freaks, hermits, fringe experimenters in living, and so on) but most innovation happens in networks. Even most artists have their enclaves. If the behavioural result of UBI is that more and more people self-isolate in largely unproductive ways instead of finding ways to socially network, it might become necessary to reform the UBI system. One way to reform the system into the direction of increased

social participation might be to introduce a modest amount of conditionality into the welfare system, e.g., in the form of Tony Atkinson's *Participation Income* scheme (Atkinson, 1996a, 2015). In next chapter, I shall discuss that scheme and other alternatives to UBI.

However, it is important to remember that this kind of "alienated" or "atomistic" future is by no means inevitable. A comparative analysis must carefully look at all the complex pro-social and anti-social, pro-participatory and anti-participatory, network-generating and network-destroying, effects of basic income vs. other policies, and to evaluate the overall effects. will not attempt a comprehensive analysis of the empirical results of UBI studies. However, let me briefly summarize the findings of the Finnish UBI experiment (2017-2018) by quoting the English summary of the government's final report:

> Basic income recipients experienced less stress and symptoms of depression and better cognitive functioning than the control group. In addition, the financial well-being of basic income recipients was better. They reported to be more often able to pay their bills on time. Trust and confidence were stronger among basic income recipients. The treatment group reported that they trusted other people and social institutions more than the control group. Moreover, they had higher confidence in their future possibilities. Basic income recipients also experienced less bureaucracy than the control group. (Kangas, Jauhiainen, et al., 2020, pp. 188-189)

So, UBI may, in fact, to lead to a higher level of social trust as well as confidence in future possibilities. The same survey also shows that "no significant employment effect was observed," which means that UBI recipients did not work any less (or any more) than the control group. (*ibid*., p. 188) Of course, being employed is only a rough proxy for social participation, but still a better indicator than none. Although the survey methodology of the Finnish study was not very rigorous, the results are at least suggestive, especially since similar results have been attained in other studies. In analysing the Canadian MINCOME experiment, Evelyn Forget (2011, p. 299) shows that "overall hospitalizations, and specifically hospitalizations for accidents and injuries and mental health diagnoses, declined for MINCOME subjects relative to the comparison group." Her follow-up paper (Forget, 2013, p. 928) concludes that MINCOME was "associated with a substantial and significant reduction in healthcare utilization." In their "scoping review" of the health effects of basic income (and basic income adjacent) experiments and pilots, Gibson, Hearty, & Craig (2020,

p. e173), finds "positive effects on child labour, health, and a wide range of structural determinants, as well as economic spill overs with multiplier effects in local economies." Furthermore, some studies report "modest to strong positive effects on a number of health outcomes, including low birthweight, infant obesity, adult and child mental health, service use, and nutrition. Some studies suggested mechanisms underlying these improvements, including reduced stress, improved parenting quality, and reduced financial strain." (Gibson, Hearty, & Craig, 2020, p. e173) These kinds of outcomes are only weak proxies for alienation, but there is surely some correlation between them. At least under experimental conditions, it does not seem that UBI leads to mass-scale alienation or isolation, and it may, in fact, protect *against* them through its capacity to dampen other risk factors such as income-related stress, bureaucracy-related stress, lack of confidence in the future, low level of social trust, and poor mental and physical health. The most contentious aspect of the basic income research is the effect of UBI on labour market participation. Although several studies have shown that the "common argument against basic income, that it will lead to *major* reductions in employment, is not supported by the evidence" (Gibson, Hearty, & Craig, 2020, p. e173; cf. also Kangas, Jauhiainen, et al., 2020, p. 188), *moderate* reductions in working hours are likely to be expected even with a modest level of basic income. (Widerquist, 2005, pp. 68-69; Browne & Immerwoll, 2017, p. 19) Overall, it seems like the labour market effects of a sufficiency-level UBI are likely to be moderate but negative. Depending on what people do when they are not working, a slightly higher rate of unemployment may contribute to alienation and social isolation. Other negative (or positive) effects of UBI *may*, of course, materialize in the long-term, since many long-term consequences are not measurable in short-term, small-scale, exogenously controlled experiments. More research is needed, as usual, to take the complexity approach seriously and study the effects of UBI on social alienation in a more direct fashion.

Example 2: Toxic networks. There is another worry that relates to UBI. If the previous worry was about the possible anti-social, anti-participatory, and anti-networking effect of UBI, the next worry is about the *wrong* kinds of socialization, participation, and networking. So, it is not enough that people merely engage in *any form* of social interactions; they also must engage in the *right kinds* of social interactions. This is where it gets tricky. It is difficult to know how to measure this. Historical examples of "unhealthy" types of social networks may

give us enough guidance. For example, we might worry about the development of *ideological purity networks* (such as cults or totalitarian ideologies) which are immune to revision and hostile to outgroups. Networks with such characteristics tend to stymie permissionless innovation in ideas. Cults, authoritarian political ideologies, and youth gangs may be examples of such networks. One might worry about anti-social behavior that arises, paradoxically, out of *excessive socialization* into crime gangs or other groups of misfits. As a result, the capacity of the society to bring people together to test out ideas, habits, and products may suffer if large numbers of people engage in self-enclosed networks that are hostile to outside people and new ideas. So, people who are highly *efficient* social networkers might come to embrace networks that break off the chains of the "Great Society," fracturing it into thousands of nodal silos of decentralized isolation, stagnation, and prejudice. So, since UBI allows people to set up their own religious communities or cultural groups, it is perfectly possible that these religious or cultural groups, instead of facilitating the generation of social diversity and experimentation, turn (also) into breeding grounds of deeply anti-innovative, illiberal, and anti-progressive ideas and habits. If people choose to spend their money, time, and resources in particularly narrow and rigid ways, they may not be able to escape the network hegemony or ideological dominance of their religious, cultural, or ideological groups. In such cases, the strength of the networks, and the strength of the social commitments that members make to them, become *obstacles*, not *aids*, to evolutionary learning. In lesser form, this problem also holds true if people cannot escape from other traps, such as the lure of advertisement, drugs, or video games (with the added assumption that such things are, indeed, bad for them, which is contested).

As these two examples have shown, since permissionless innovation combined with basic income gives people the freedom and the robust minimal resources to engage in highly risky economic or cultural activities, this kind of "excessive liberalism" might paradoxically lead to various antisocial, illiberal, and anti-innovative behaviours, ideologies, and networks. If people and communities choose to either *self-isolate* themselves or to "*network*" themselves into a corner (i.e., into some destructive behavioural or ideological bubble), they might not be able to contribute in meaningful ways to society or to pursue innovative social engagements. The permissionless innovation framework, although it sides with widespread freedom and experimentation, does not demand that society refrains from intervening in

exceptional cases. It also places explicit emphasis on the need to design, redesign, and continually tweak the basic rules of social interaction (the "rules of the game") to minimize the systemic risk of anti-innovation, anti-social, and illiberal outcomes.

In some policy contexts, some countries, or some cultural environments, it might be impossible to rely on permissionless innovation as a tool of increased social engagement. This is why it is important that political entrepreneurs draw upon the polycentric, mutually supporting resources of state, civil, and other institutional actors, who can all co-participate in the active construction and self-renewal of the permissionless innovation framework. (Ostrom, 1990, 2005) One of the major tasks of state, civil, and other institutional actors is to cultivate pro-social, pro-experimental, and pro-innovation attitudes in the population. I am not advocating for social "indoctrination" per se. However, the society's educational system (whether or not it is in private or public hands) should focus on building up *civic virtues* and other *complex adaptive competences* that lay the cultural groundwork for an active citizenry that is capable of supporting the permissionless innovation ecosystem. A pure *laissez faire* system, if it leads to the aforementioned issues, may not outperform a carefully regulated and cultivated permissionless innovation ecosystem.

I should clarify one thing. As I have stated before, aside from UBI itself, I am not directly advocating for any particular set of institutional responses as *necessary* complements to it. For one, it would be presumptuous of me to tell free people what they should do. Secondly, finding the right institutional response is a matter of detailed cultural and local knowledge, context-dependent discretionary judgement, and continuous evolutionary learning. The best institutional responses might have to be discovered through an institutional trial-and-error process on the level of competing polycentric institutions. Permissionless innovation should also be allowed to produce the self-renewal of governance frameworks.

My main takeaway of this discussion is simple: the optimal governance of the permissionless innovation framework does not involve standing back, or sitting down, passively, while the spontaneous order runs its natural course. It must do more than that. It must guard against evolutionary processes that unintentionally lead to the ecosystem-level dominance of anti-social, anti-freedom, and anti-innovation forces that spell its doom. It must pre-empt and regulate those kinds of innovations, and those kinds of freedoms, that threaten to undermine the PIUBI system from within. It must overcome, in a word, Popper's (1966)

"paradox of tolerance." However, just because the theoretical case for intervention is strong, it does not mean that this always holds in practice. Government needs to weigh the risk of action and inaction very carefully. Ideally, the government should only act a) when it is faced with the serious, clear, and present danger of some cancerous spontaneous order process that threatens to overtake the PIUBI framework and subjugate it to its own narrow ends, *and* b) when this bottom-up threat to the system appears significantly stronger than the ever-present top-down threat to the system caused by the serious, clear, and present danger of discretionary overreach by the government. Finding the policy balance between acting too much and acting too little is a matter of exceeding importance and adaptive significance, and yet also one of exceeding difficulty. But this is only to be expected. Improving our social institutions is as hard as it is rewarding. To quote Spinoza, "all things excellent are as difficult as they are rare." (Spinoza, 2002, p. 382)

7.3. The *Risk* Objection to UBI: Managing Risk in a Free Society

7.3.1. The Free Society as a Risk Society

Michel Foucault (2008, p. 66) analysed the link between liberalism and risk in the following terms:

> [W]e can say that the motto of liberalism is: (…) "Live dangerously," that is to say, individuals are constantly exposed to danger [and] conditioned to experience their situation, their life, their present, and their future as containing danger.

The liberal regime of Permissionless Innovation is a risk *tolerant*, even risk *loving*, institutional framework. It entails a willingness to sacrifice some degree of security in exchange for (expected) long-term, system-level welfare gains. In the case of the PIUBI framework, these long-term gains are modelled in terms of the discovery of solutions to human problems – or, what comes to the same thing, the birth of welfare-enhancing

innovations. Evolutionary theory, from Darwin to Schumpeter (and even going back to Lucretius [2001]), accepts continuous change as the *default* condition. Stability is exceptional and requires work to maintain. Normatively, neither stability nor change are "good" or "bad" as such. Agents, depending on their constitution, derive benefit from environmental stability in *some* contexts and environmental instability in *other* contexts. Stability (low risk strategy) entails a predictable stream of good and bad outcomes (what happened yesterday will happen tomorrow), while instability (high risk strategy) entails an uncertain stream of good and bad outcomes (what happened yesterday does not fully determine, to our best knowledge, what happens tomorrow). Avoidance of danger allows agents to exploit a given niche, or "mine" a fixed resource, with some (limited) predictability. The pursuit of danger, on the other hand, entails the ability to explore the environment beyond one's niche with the hopes of discovering greater welfare gains that can be exploited in the future. The downside of the exploratory spirit, of course, is the discovery of nothing, or, even worse, the discovery of death. In James G. March's (1991, p. 85) language: "The essence of exploitation is the refinement and extension of existing competences, technologies, and paradigms. Its returns are positive, proximate, and predictable. The essence of exploration is experimentation with new alternatives. Its returns are uncertain, distant, and often negative."

Achieving "a delicate trade-off between exploration and exploitation" (March, 1991, p. 85) depends upon the values assigned to the probabilities. This is made more difficult by the fact that not all variables can be assigned probabilities due to the presence of Knightean radical uncertainty. (Knight, 1921; Kay & King, 2020) At any rate, the exploration/exploitation tradeoff is an important marker of ideological divisions. The conservative impulse, which is often very useful, correlates with the strategy of cultivating the capacity to *continually exploit a given niche*. The progressive (and liberal) impulse, on the other hand, correlates with the strategy of cultivating the capacity to *continually explore the environment with the hope of making discoveries that lead to the capacity to exploit new and better niches and resources*. There exists a trade-off between the conservative longing for stability/continuity and the progressive longing for change/discontinuity. The PIUBI framework seeks to radically tilt the balance towards the exploratory, innovation-loving end of the spectrum. It does so, not because it disvalues the utility of the conservative impulse, but because it believes that

social evolution has reached a stage where the expected rewards of the exploratory impulse currently far exceed the expected rewards of continued niche exploitation. It argues that today's society, given the right institutional mechanisms in place, rewards aggressive exploration. In other words, whereas permissionless innovation, whether in cultural habits, social norms, or technical tools, may have been destructive in hunter-gatherer societies, it is today highly productive, especially when channeled into the right channels, like science, engineering, civil society, and the marketplace. After all, let us keep in mind that rapid technological innovation, moral progress, and exponential industrial development, which characterize modernity, were almost unheard of, and would have been practically impossible, or very marginal, until very recently. (Romer, 1986, 1990, 1994; Mokyr, 1990, 2016, 2018; McCloskey, 2006, 2010) Civilizational development has forced a sudden revaluation of the exploration/exploitation tradeoff as the expected rewards of exploration have experienced exponential, "hockey stick" growth as the predictable result of the complex adaptive ordering, or selective filtering, of increasing social diversity.

However, the claim that the tradeoff balance has shifted must come with the important caveat that, while the costs of zero exploitation are exorbitant, the costs of infinite exploration are also exorbitant, even infinite (due to the threat of rare but catastrophic discoveries that wipe out humanity); the conservative impulse must be implemented into the core of the ecostructural rules in the form of the weak version of the precautionary principle. Maintaining an attitude of "permission required" towards the threats of catastrophic and existential risks, some of which are upon us, like global warming and the Covid-19 crisis, ensures that the conservative impulse yields high expected returns if aimed at the right targets and kept outside of the realms where it does not belong.

What, then, are the dangers associated with the experimental method? The experimental method of socioeconomic evolution starts from the premise that not all experiments will succeed. It recognizes the fact that while we want as many experiments to succeed as is possible, the trial-and-error method produces error and waste. As long as we live under radical uncertainty, some plans will fail, and some expectations will be frustrated. This entails the generation of various categories of risk and uncertainty. The fundamental condition of a complex adaptive system is *radical uncertainty*, (Knight, 1921) which cannot

be quantified. However, some types of uncertainty can be treated as "risks" to the extent that our individual and collective choices can impact them. Since some risks need to be privatized to maintain sufficient incentives for responsible risk-taking, there is no way to prevent the disappointment of expectations on a massive scale. Indeed, error and waste play important epistemic roles in the social discovery process. As individuals diversify and deviate, they go into different directions in the hopes of success. In the technical jargon, they reach higher peaks in the adaptive landscape. Danger is the midwife of innovation. "No pain, no gain" captures this idea well, as does the Nietzschean phrase, "what does not kill me makes me stronger." Although danger should not be skirted or shunned since it is the only way to make great discoveries and solve great problems, the spontaneous order of permissionless innovation should not be allowed to have completely free reign in areas where the risks of existential disaster and civilizational collapse are dangerously high. In those realms, a weak form of the precautionary principle is needed to protect the system from self-destruction. Wherever existential risk is imminent, permissionless innovation cannot be granted as the default position. But this only applies to certain intolerable categories of risk. It is important to distinguish such *intolerable* risks from risks that should be *tolerated* in the name of innovation. Indeed, the risk landscape mostly consists of tolerable local, manageable, and short-term risks – what I shall call "ordinary" risks – which are necessary, although painful, features of innovation. In the next section, I will analyse their social function as part of the PIUBI framework.

7.3.2. Risk Category I: Ordinary Risks

Not all pathways yield expected rewards. Some experiments end in failure. Agents take personal and collective risks when they experimentally deviate, without having to ask anybody for permission, from the golden path (the best available exploitable practices, habits, customs, and values). The legitimate and indeed socially desirable exercise of agent freedom ("the right to innovate without permission") means that some agents will end badly off. There is a case for compensating people who suffer disproportionately, often due to no fault of their own, since permissionless innovation is primarily a public enterprise wherein

citizens are delegated certain "public liberties (…) through which individualism performs [the] social function" of facilitating polycentric experimentation. (Polanyi, 2002, p. 158) Since individualism is thereby "artificially" enforced with the hope of reaping the collective rewards of their private experiments, the society should also take responsibility for compensating for some of the failed experiments that are generated because of this enforced individualism. UBI, indeed, partially plays the role of an automatic compensation mechanism, whose main beneficiaries are the net losers of the creative destructive process of evolutionary competition/discovery. (This is what I have called the "cushion" function of UBI.) Additional social compensatory schemes can be optionally delivered on top, since 1) UBI only compensates up to a rather meagre sufficiency level, 2) UBI does not differentiate between unlucky, foolish, and reckless adventurers (because of the epistemic difficulties involved in making such distinctions), and 3) some social problems (failed experiments) may require targeted or in-kind aid on top of universal cash assistance. However, when designing such social compensatory schemes, extra care must be given to make sure that the new incentive structure retains sufficient incentives for innovation *while* discouraging the reckless endangerment of self or others. In addition, care must be given to make sure that the increase in discretionary political power that accompanies such additional safety measures does not undermine the rule of law or the system of public liberties. In such compensatory schemes, even if there is a case for softening the blows of fate and socializing some risks, there is no case for altogether eliminating *ordinary risks.*

The "risk society" (Beck, 1992), which is often associated with modern capitalism and its admitted tendency to generate creative destruction and economic insecurity (Schumpeter, 1944; Nelson & Winter, 1982; Standing, 2011, 2014) carries massive expected system-level benefits that justify tolerating a high (if not infinite) level of ordinary risk-taking. As callous as it may sound, a certain amount of human suffering and socioeconomic waste – the downside of ordinary risk-taking - are not only tolerable but positively beneficial for long-term social flourishing, although only up to a point. Since there does not exist a perfect scoring system where errors and waste can be wholly eliminated *ex ante*, there is a case for minimizing unnecessary suffering through social insurance schemes, targeted relief programs, and various other interventions. However, such schemes should not be used as an excuse to fundamentally undermine *the exploratory spirit of the society, especially with*

regard to the poor and the disadvantaged. To the extent that the long-term, large-scale, and system-level benefits outweigh the short-term, small-scale, and localized costs, even the saddest and most horrendous examples of permissionless innovation – from the creation of permanent disabilities to suicides, families broken, and lives ruined – do *not* seem to constitute sufficient, overriding reasons to abandon permissionless innovation, *unless they become systemic or existential problems* (above a certain – admittedly hazy – threshold of *extraordinary risk*). The welfare state cannot become a risk-free or risk-averse society if it wants to pretend to be a servant of the interests of the poor and the disadvantaged, since the latter are best served by a system that does *not* guarantee absolute security from risk. As Hayek (1960, p. 376) said, it is important to distinguish between "limited security which can be achieved for all and which is, therefore, no privilege, and absolute security, which in a free society cannot be achieved for all." The former can be implemented through UBI and some additional programs of social insurance. It is therefore possible to mitigate the social costs of ordinary harm through such curative measures that take care of the wounded while ensuring that enough intrepid adventurers are left to take (dangerous) risks.

7.3.3. Risk Category II: Extraordinary & Existential Risks

There is also another category of risk that poses a bigger problem for permissionless innovation. The next stage, therefore, is to define *extraordinary risk*. A risk is extraordinary when it meets one or more of the following criteria: 1) a systemic contamination or destruction of the Open Society (such as the rise of totalitarianism), 2) large-scale reduction in social diversity/competition (such as the rise of monopolistic markets), and/or 3) an *existential* danger to the survival or flourishing of human civilization (such as a deadly pandemic or a global nuclear war). The final criterion constitutes the most dangerous threat to socioeconomic diversity, so it is the one that I shall focus on here. It includes scenarios that involve system-level, evolutionary shocks and disruptions that involve the existential threat of extinction, civilizational collapse, or a major evolutionary setback. (Bostrom, 2002, 2014; Yudkowsky, 2008; Bostrom & Yudkowsky, 2014; Bostrom & Ćirković (Eds.), 2008; Torres, 2019; Bostrom, Dafoe, & Flynn, 2020; Ord, 2020) This category includes such

phenomena as out-of-control global warming, widespread nuclear war, deadly pathogens, and the birth of a super-intelligent A.I. Indeed, evolutionary theory is well poised to handle such phenomena, since it can explain the origins of disequilibrium shocks and "fat tail" risk scenarios that exhibit non-ergodicity and therefore cannot be predicted based on a linear, statistical time series. (Mandelbrot & Hudson, 2004; Taleb, 2007, 2012) Such extraordinary and existential threats are contemporaneously policy relevant, since tackling them allows society to better plan for pandemics even worse than the Covid-19 crisis. (Cirillo & Taleb, 2020; Norman, Bar-Yam & Taleb, 2020) At the same time, more attention needs to be placed on identifying emergent risk factors that are currently on the margins of the policy debate, such as malignant A.I., since they may pose the biggest single threat to human civilization today. (Yampolskiy & Fox, 2013; Bostrom, 2014; Sotala & Yampolskiy, 2015; Tegmark & Bostrom, 2005; Tegmark, 2017)

An extraordinary risk – especially in the form of an *existential* risk – is the only category of risks that, in my view, may constitute a sufficient reason to suspend the default assumption of permissionless innovation. In the realm of the welfare state, this justifies imposing some conditionalities and limits on the ways in which UBI and economic freedom can be used to explore the landscape of innovations. An existential catastrophe is an innovation extinction event *par excellence*. Since such an event would wipe out almost all the innovations made by civilization in recent centuries, there is a social imperative to prevent such scenarios from materializing. Risks become extraordinary if they undermine healthy socioeconomic diversity, causing "biodiversity loss" to the socioeconomic "ecosystem" in the favour of the hegemony of some cancerous "monoculture;" or, even worse, if they pose the risk of total or near-total civilizational collapse ("risk of ruin"). Even extraordinary risks that fall short of civilizational *collapse* but "merely" *stop* or *reverse* the trend of social progress are unacceptable from the innovation-fostering point of view. Since the PIUBI framework is justified based on its capacity to foster system-level diversity, competition, and innovation, it cannot be used to justify free and unregulated experimentation in high-risk innovations that have a significant potential to generate negative "Black Swan" events (Taleb, 2007) that undermine the Open Society and betray its promise of perpetual progress.

So, the PIUBI framework must protect against extraordinary risk. Diversity and competition

must be maintained at all costs. They are the oxygen of innovation. However, such risks should not be exaggerated or used as an excuse to slow down progress. It seems to me that most form of permissionless innovation, although prone to various types of errors, waste, and risks, rarely pose large-scale, extraordinary risks. Even some of the most controversial types of innovation, such as biotechnological experimentation or human enhancement, tends to operate within the *ordinary risk domain*. This is not to say that some fields of life are *completely* safe from positive feedback loops, fat-tailed risks, and other extraordinary risks. It only means that such risks are either so rare, or so beyond our ken and control, as to be of little concern to political institutional design. Industry-specific and risk-specific regulations in various domains can be used to soften the perceived threats from specific, isolated domains, such as A.I. research, germ research, experiments involving children or animals, etc. Such risks can be further kept at bay if society regulates itself under the appropriate ecostructural rules centred on UBI, strong private property rights, and the resulting division of socioeconomic powers based on decentralized decision making.

The encouragement of rapid technological development and other bottom-up processes may open the Pandora's box to various new types of risks, including existential ones. This is one of the main drawbacks of the permissionless innovation framework. However, the PIUBI process also contains various countervailing forces – let us call them *emergent risk dampeners* – that serve to provide bottom-up defences, often surprisingly robust ones, against extraordinary and existential risks. Before we automatically call for government help, we should remember that free markets and an open civil society may be able to produce a high degree of risk resilience through their spontaneous operation. This can take many forms, e.g., NGOs, industry self-regulation, consumer standards, private security measures, hacktivism, etc. So, the bottom-up PIUBI framework is productive of an unpredictable *arms race* between those innovations (such as nuclear fission and jingoism) that *increase* the threat of existential or civilizational collapse and those innovations (such as nuclear disarmament and pacifism) that *reduce* such threats. The net consequences of the spontaneous order processes remain unsure, so it may be unwise to rely *exclusively* on the bottom-up complex adaptive process with the hope that it gives births to sufficient, effective, timely, and robust safeguards against its own self-destructive potential. This seems like a risky alternative in the long run. Wherever extraordinary risks pose a major threat that

is best solved by stopping or limiting permissionless innovation, there is an undeniably strong theoretical case for instituting the appropriate governmental safeguards that limit liberty, competition, and innovation for the sake of protecting them. This is especially true since even a single psychopath or lunatic can cause major havoc to society. As Persson & Savulescu (2012, p. 134) write, "a turning point was passed at least some fifty years ago when humans acquired the means of causing Ultimate Harm by nuclear weapons (…) [And] because the human population is larger than ever, immoral actions occur more frequently today than ever, and with potentially more disastrous consequences because of the enormous number of agents and the means of modern technology."

So, the permissionless innovation process, while it can produce *self-destructive* innovations, can also produce its *self-correcting* and *self-healing* innovations that act as *bottom-up risk dampeners*. However, these may be too uncertain to rely upon, especially in cases where even a *single deviation from normalcy*, a single careless exercise of freedom, carries potentially extraordinary risks. For example, if people have the freedom to experiment with so-called "gain of function" research in virus labs (in the name of permissionless innovation), this may carry such massive risks that the activity cannot be tolerated. The next pandemic may come out of a lab. These risks are massive *ex ante* even if harm to others is punished rigorously *ex post*. In such cases, the default presumption in favour of PIUBI may legitimately be overridden in favour of *ex ante* top-down restrictions. Such restrictions carry their own risks, of course, and the government is unlikely to reach a socially optimal balance between freedom and regulation. Potential government failure must be balanced out against potential market (and civil society) failure. As critics of the precautionary principle like Aaron Wildawsky (2017, p. 20) have pointed out, "[the] difficulty, as usual, lies in reaching agreement about whether and when a catastrophe is coming. One side wants special reasons to stop experimentation, and the other wants special conditions to start. Which bias, the question is, is safest?" It is not obvious that even in areas like A.I. engineering or climate policy the correct solution is always to err on the side of caution, since erring on the side of caution may stifle the very processes that, through innovation, dampen the risk landscape, in addition to generating various other significant benefits in the long run. But even if accept a weak form of the precautionary principle in relation to some risks, this argument only applies to *extraordinary* risks that are on the order of pandemics, nuclear

winter, or the rise of totalitarianism. It does not apply to *ordinary* risks, and it does not justify limiting permissionless innovation in *most* risky things.

So, precautionary principle cannot be relied upon as the primary means of risk management. Bottom-up innovation is often the only way to generate lasting and sustainable "paradigm shifts" (Kuhn, 1962; Dosi, 1982) that reshape the socioeconomic possibility space in a way that dampens or even nullifies certain categories of extraordinary risk. This may justify "going beyond the precautionary principle" (Sunstein, 2005) or even relying on something like the "proactionary principle" (More, 2013; S. Fuller & Lipinska, 2014). The human mind, which Julian Simon (1997) called "the ultimate resource," may be capable of creating innovative remedies to the innovative risks that it elsewhere generates, especially when many minds can work together through the networked social intelligence of the rapidly evolving Open Society. In an evolutionary system, there exists an *evolutionary arms race* between innovations that *increase* risks and innovations that *reduce* risks; and it is hard to say which one will come on top. For example, the risk of global warming may yet be solved through a "green tech" revolution before governments can ever agree on sufficient, well-enforced, internationally binding greenhouse gas emission targets. Of course, such innovations are not guaranteed; but neither is the capacity of the government to exercise prudent managerial control over extraordinary risks. *Nothing* is guaranteed under radical uncertainty, which makes risk management such a tricky part of ecostructural governance. To know which risks are worth defending against, and how, is itself a complex problem that involves making difficult judgments about evolutionary developmental pathways that require confidence and predictive power. In fact, risk management is perhaps the riskiest enterprise of them all. After all, the failure to miscalculate risk one way or another can have catastrophic consequences for human welfare. The dangers of risk management may often outweigh the dangers of permissionless innovation, so it is often hard to know whether the preferred institutional response is to defer to the polycentric order or to hazard government mismanagement with the hope that a precautionary top-down strategy will pay off. Nor are national solutions enough, since many of the extraordinary threats discussed in this section are *global hazards* that "exhibit a tendency to globalization which spans production and reproduction as much as national borders." (Beck, 1992, p. 13) In today's world, most extraordinary risks cross national boundaries and solving them requires international, multi-

level, creative cooperation. They must be tackled on multiple levels of governance at once –
including the levels of the individual, the local community, the civil society, and the family.
Even solving a problem like global warming, which certainly classifies as an extraordinary risk
with potentially catastrophic consequences with global reach, may have to be ultimately
solved with the help of a "polycentric approach [that] encourages experimental efforts at
multiple levels (…). Building [collective policy] commitment, and the trust that others are
also taking responsibility, can be more effectively undertaken in small-to-medium scale
governance units that are linked through information networks and monitoring at all levels."
(Ostrom, 2009, p. 39) Such experimental, multi-level, polycentric processes can be used to
analyse, monitor, and solve various types of extraordinary and existential risks in conjunction
with well-known Hobbesian and Pigouvian top-down solutions. All levels of governance are
needed to produce the public good of "safety." In the words of Wildavsky (2017, p. 246):
"Safety results from a process of discovery. Attempting to short-circuit this competitive,
evolutionary, trial and error process by wishing the end—safety—without providing the
means—decentralized search—is bound to be self-defeating."

Overall, I have shown that ordinary risks, although they may cause serious and horrible
consequences, are an integral and inerasable part of the freedom and diversity that drive
competition under the PIUBI framework. As such, wasteful and failed experiments serve a
useful social function by allowing the society to explore the nooks and crannies of the
adaptive landscape. This viewpoint recommends a relatively high tolerance for locally
contained suffering and hardship caused by the unavoidable disappointment of
expectations. At the same time, since the normative purpose of the PIUBI framework is to
increase long-term social flourishing, every instance of suffering and hardship poses a
serious challenge to the institutional structure. Although hardships may be *tolerated* for the
sake of some higher welfare aims, they should not be *celebrated*. There is a strong case for
helping those whose expectations are seriously disappointed to get back on their feet (UBI
as a cushion) and back into adventuring (UBI as a platform). To minimize the welfare losses
and local hardships that are generated as the unavoidable byproduct in the creatively
destructive social discovery process, the government should expend some of its available
social resources that would otherwise be spent on furthering exploration (whose payoffs are
often far in the future) to provide a sufficient safety net and other support mechanisms to

those who suffer from hardships. At the heart of such efforts – and this is the main argument of my thesis – should be a permanent UBI scheme that acts as an automatic social insurance mechanism that simultaneously encourages local experimentation and protects people against some of the worst excesses of its creative destruction. Although UBI should form the core of the social insurance scheme, it may be combined with a handful of additional welfare stare measures, and the optimal solution is a mixed one.

To sum up, the PIUBI framework recommends that *in most cases involving ordinary risk*, even where clear and present harm, or expected future harm, can be sufficiently demonstrated, the regulative framework should *err on the side of permissiveness with a side dish of catastrophic social insurance*. The presumption of permissionless innovation, as the presumption of public liberty, appears to be a complex society's best hope of achieving robust evolutionary learning in an environment characterized by radical uncertainty. Ordinary risks should be tolerated while some of their worst effects should be collectively mitigated. Extraordinary risks, however, entail an exceptional category where the government has an additional legitimate role to play as the precautionary preventer of catastrophic (negative Black Swan) scenarios. Nonetheless, the exercise of centralized risk management must avoid the danger of extending the precautionary principle too far, and it must also leave room for multi-level, polycentric, governance solutions.

7.4. The Waste Objection to UBI: Separating the Wheat from the Chaff

A good institution needs to be efficient. Waste signals the absence of efficiency. Therefore, an efficient social program needs to minimise waste. Social programs are wasteful if they take in a lot of resources and produce little desirable output. But what is waste? Let me now analyse the ontology and social epistemology of "waste." In different systems, waste plays a different role. Different systems produce different kinds of waste. Society, too, produces ample waste as a result of its perfectly normal, healthy operation. The human body, no matter how efficient its operation, produces lots of daily waste. And natural selection is

infamously wasteful in the amount of "mistakes" that it generates. In a complex adaptive system – or really in *any* competitive, evolutionary system – waste accumulates as a byproduct of the spontaneous operation of various competitive processes. Indeed, waste production is one of the inevitable byproducts of the evolutionary process in a complex adaptive system. Similarly, the evolutionary liberal UBI system might appear wasteful. But the appropriate normative question is *aggregative* and *comparative*: does it produce *net* efficiency gains or losses? And how does it compare to alternative schemes?

The experimental method is based on the toleration of ample waste. This is exemplified by the waste basket next to a novelist's (or scientist's) desk that is filled to the brim with discarded ideas. A trial-and-error process consists of the production of multiple experiments with multiple design parameters. Many experiments will inevitably fail. The failures will seem like a "waste" of time and money. If we knew beforehand which trials would be successful, we would not need the trial-and-error method in the first place. As fallible experimenters, in the absence of perfect foresight, we need to tolerate a certain range of error production (waste), since this is the only way to approximate success. In effect, "waste" is a necessary byproduct of the diversity production and its competitive sorting which are at the heart of the trial-and-error method that underlies the polycentricity approach. The experimental method is necessarily wasteful, whether in science, public administration, or welfare state governance. But the experimental method, if properly aligned with the stated goals of policy, and if used in conjunction with other policy methods, can perform, as it were, the alchemical function of turning waste into gold. So, the wasteful duplication of efforts (redundancy), the production of fruitless projects (entrepreneurial failures), and the seeming incentivization of vicious or undesirable types of behaviour (lifestyle failures), are important parts of any learning process. They cannot be deemed socially undesirable without properly evaluating the positive side of the equation, consisting of the social learning and experimental discoveries that are facilitated, in the long run, through the messy evolutionary process. Waste is required to run the trial-and-error mechanism where experimental search is performed by heterogeneous agents, knowledge gets produced, and better outcomes are allowed to emerge over the long term. This does *not* mean that waste should be *maximized*; it only means that waste should be placed in its proper context. The proper criterion for measuring the "adaptive efficiency" of a social

discovery procedure is the ratio between waste and discovery. We can express this as the ratio "W/D." It may be hard to mathematize such a ratio since we often do not have sufficient data to quantify the variables. This ratio is better seen as a heuristic device to understand the process of social discovery: it shows that having a low level of waste is not desirable *if* it leads to a significantly lower rate of social discovery; conversely, it shows that having a high level of waste may be desirable *if* it produces many discoveries.

Let us take the example of science. The number of scientific papers that argue false or misleading propositions, that contain glaring errors, that have been proven false, that contradict each other, that very few people have read, that run counter to common sense, or that violate basic scientific standards, is huge. There is a lot of waste in scientific research and scientific publications. And there can be certainly an element of institutional inflation, here, that explains a part of the waste production. Academic science may be overvalued culturally or overproduced politically. But even if we take out the wasteful scientific practices that derive from cultural overvaluation, rent-seeking, and wasteful public spending (which probably have little value), we should *still* want to encourage the production, up to some level, of fruitless projects and wasteful papers. For some of the greatest discoveries have come from seemingly fruitless projects and seemingly wasteful papers. The sheer *quantity* of experiments (especially if *qualitative diversity* is also encouraged), ensures that some of them will bear fruit. And science works by producing a diversity of arguments and a diversity of methodologies leading to a diversity of interpretations of data, which are then filtered through a diversity of institutional selection pressures. This is the method by which scientific knowledge evolves and produces applications for the rest of society. These selection pressures themselves can become too loose or too restrictive, so they themselves should be subjected to permissionless innovation. Selection pressures in science must always strike a balance between, on the one hand, having rigorous standards of selection, which can weed out good science from bad, and, on the other hand, having too rigid, ossified, or hegemonic standards, such as dominant scientific paradigms or dominant ethical research paradigms, that act as excessively strict filters on new ideas and experiments, thus serving to stamp out too much scientific diversity. The same applies for public policy and welfare state governance. There is an amount of waste that can and must be tolerated – and indeed sometimes even encouraged and subsidized – to produce enough diversity and

competitive pressures to fuel the trial-and-error process. Most failures will serve as reminders of experimental pathways that turned out to be fruitless; some of them can be repurposed to give birth to subsequent surprises, discoveries, and innovations. Poor people, like scientists or explorers, produce waste and encounter danger but can also make discoveries that help themselves, their friends, and whole communities.

The task of ecostructural welfare state governance is not so much to encourage diversity for its own sake, let alone to maximize its wastefulness (which would be sheer foolishness), but to encourage diversity production and experimentation under carefully designed ecostructural rules which generate the incentive structure in which diversity production, and its differential selection, gets channeled into socially productive uses. The solution cannot simply be to produce as much waste as possible because human action needs to be channeled, structured, and subjected to selection pressures. While waste is an unavoidable byproduct of innovation, society should try to minimise the negative impact of waste by ensuring that the waste/discovery (W/D) ratio is tolerable and that the socioeconomic filters (including exploration/exploitation incentives) are aligned with the public interest. Overall, social rules should be designed and tweaked to ensure that the social order can withstand an avalanche of trials, many of which will be socially wasteful. It is not possible to judge experiments as wasteful, vicious, undesirable, or wrongheaded *ex ante*, or *sub speciae aeternitatis*, before the experiment – and preferably multiple experiments – have been run, since this would be begging the question and prejudging the outcome. Errors, too, are discoveries, that emerge through the trial-and-error process. They are not meaningful outside this experimental context. The endogenous process of social discovery is the only process that makes error judgments meaningful. A proper evaluation of the consequences of the experimental method requires taking the long-term perspective, to discover whether, and in what ways, society has benefited from the wasteful process of bottom-up experimentation.

This naturally leads to the question of what the proper yardstick for the long-term evaluation of institutional rules should be. One heuristic is that political commitments to ecostructural rules should be "long-termist" to avoid short-sighted decision-making and to ensure that there is enough time to generate a healthy ecosystem. Time also brings with it the possibility of massive disruptions. One of the most important structural features of

complex adaptive evolutionary processes is the possibility of exponential payoffs ("Black Swans"). Exponential payoffs can be negative and positive, and both matter for policy. The most serious of negative exponential payoffs include the possibility of catastrophic and existential risks. I have already tackled that, so let me now focus on the positive side. The most important of positive exponential payoffs is the possibility of major breakthroughs in science, technology, business, politics, culture, or morality. Let us assume that waste is often linear (flat) while discoveries are often non-linear (exponential). Most waste is bad but almost no waste is *catastrophically* bad. If this is so, even a high amount of waste production appears relatively insignificant in comparison to a *single* significant discovery with exponential social utility. In other words, the negative value of the impressive "scrapheaps" of millions of unsuccessful social experiments, although significant, pales in comparison to the possibility of a single "Black Swan" – let alone a handful of them – whose discovery transforms the lives of people significantly for the better. In this sense, although waste is costly, getting rid of waste that transmutes into gold is infinitely costlier.

Take, again, the example of science. Even if 99% of scientific papers are trash, we can largely discount the huge waste involved if those remaining 1% of papers, or the remaining 1% scientific innovations, produce massive payoffs in terms of advances in social knowledge, technology, or quality of life. So, to generalize, *even if 99% of people, 99% of the time, perform wasteful activities, if the remaining 1% engage in activities with massive social payoffs, this is sufficient to justify the investment into a massively wasteful process.* Ideally, of course, one would like innovation to be inclusive of the whole society since there are many resources there to be tapped. And indeed, one of the takeaways of this thesis is that poor and disadvantaged people, both for their own sake and for the sake of everybody else, should be included into the innovation ecosystem. Of course, if it turns out that 100% of scientific papers or "experiments in living" are worthless, or that the rewards of exploration, while positive, are too low, the society should abandon its commitment to the PIUBI method.

Chapter 8: Challenges, Pt. 2: Alternative Welfare State and Growth Models

8.1. Introduction

In this chapter, I will look at some of the most popular and reasonable models that have been proposed as institutional alternatives to UBI. Some of them have also occasionally been offered as *complements* to UBI, but I will only discuss them as *(wholesale or partial) substitutes* to UBI. Since both UBI and the current system (or systems) have their own downsides, it will be useful to examine some alternative solutions. Could some of these prove to be an improvement over both UBI system *and* of the existing system? In **sections 8.2-8.4.** I look at three prominent families of proposals: *job guarantee*, *participation income*, and *universal basic services (UBS)*. I will show that these models, whatever their merits as optional complements, fail as *substitutes* to UBI. That said, UBI comes with its own problems too, so it is important to keep on looking for, and testing, various alternative models.

Then, I return to theoretical questions. First, in **section 8.5.,** I analyse Mariana Mazzucato's (2013) theory of the *entrepreneurial state,* which challenges the bottom-up view of permissionless innovation. I find it lacking as a substitute for the PIUBI model. Then, finally, in **section 8.6.,** I offer some comparisons between the neoclassical growth models of Solow-Swan and Romer and the evolutionary approach to innovation and growth.

8.2. Job Guarantee Programs

Labourism is the idea that one of the main tasks of welfare state governance is to maximize work contribution. To achieve this end, welfare states are increasingly turning to "workfare" programs that tie access to basic income support to various conditionalities. These commonly include the requirement to fill in some paperwork, actively look for work, be

ready to accept job offers, and take part in labour market activation measures. Failure to comply with these requirements and conditionalities will lead to penalties. I have already criticized the conditionalities attached to welfare benefits as being incompatible with permissionless innovation, so nothing more needs to be said of them here. However, many of the same values and ideals that motivate *workfare* schemes also motivate *job guarantee* schemes. A job guarantee program is one where the government acts as the "employer of last resort" (Colander, 2016, p. 666) or otherwise matches individuals with work in exchange for benefits and/or a wage. Purely voluntary or optional job guarantee programs are of no concern to my analysis. My concern is with those job guarantee programs that are presented as *alternatives* to UBI.

David Colander, whose ecostructural model of governance (Colander & Kupers, 2014) I have used as the blueprint for my PIUBI model, has proposed a "a minimum guaranteed jobs program" as a *superior alternative* to UBI. (Colander, 2016, 2019) Since Colander, who is extremely complexity-aware, supports a job guarantee program, it is worth taking seriously as a tool of ecostructural governance: "The best way to provide a safety net for people able to work in a market economy is for the government to act as the employer of last resort. (…) A minimum job program achieves the combined goals of a minimum wage and a minimum income program while avoiding serious problems with each." (Colander, 2016, p. 666) Let me first point out that his concerns about the high marginal tax rates and overall costs of UBI are valid enough to warrant the search for institutional alternatives. (Colander, 2019) Nonetheless, I think that his *positive* argument fails. For one, Colander mistakenly reduces the labour market function of UBI to an income cushion. This makes him unable to see the *innovation platform function*, and the *freedom-enhancing* function, that UBI can play in the society. A jobs guarantee program, which is based on top-down central planning by the government, seems incompatible with permissionless innovation and other forms of creative bottom-up agency. *The government cannot guarantee that which it does not know or control; and it does not know or control the labour market*. However, Colander acknowledges that "the goal of these activities is not to produce usable output for society (…). To the degree possible, these working experiences will provide training in skills and an introduction to customs and behavior useful in the real-world market jobs." (Colander, 2016, p. 667) But is such a program really an efficient way to "provide training" or instil good

"customs and behavior?" I think this argument overemphasizes the benefits of doing (unproductive) "work for work's sake." Perhaps some people will find having access to a job, however pointless, helpful. But many others will find it a waste of time and an affront to their dignity. What about people who lost their jobs because of automation, globalization, or a pandemic? What about people who are unemployed because of a pandemic lockdown? What about people who are doing valuable part-time work, housework, self-education, or other categories of "invisible" work? Why should people be forced to give up their free time, and autonomy, in the service of socially unproductive labour? Teaching people obedience through unproductive labour is a very perverse way to nudge people.

From the purely neoclassical economic point of view, the main problem with the job guarantee program, according to its critics like Paul Samuelson, is its inefficiency: a "program in which people simply turn up for work and go through the motions and receive income is no better than just receiving an income." (Samuelson & Hopkins, 1977, pp. 33-34) This is also one of the reasons why Samuelson, together with Tobin and Friedman, expressed his support for a negative income tax as a better "backbone" of a welfare state. The desirability of NIT as a policy substitute for a universal job guarantee program derives from the simple fact that "we do not know how to provide government jobs of last resort that will be reasonably fulfilling, reasonably useful, and reasonably priced." (ibid., p. 33) Many of these worries carry over from neoclassical discourse into the complexity discourse where they unfortunately only multiply, as new-found worries and concerns about epistemic and technocratic competence are added on top of old ones. If government lacks the institutional knowledge of what counts as fulfilling (or meaningful) work under non-complex conditions – i.e., conditions where human needs are understood to be rather stable, static, unidimensional, and homogenous – how much *more* difficulty will the Job Guarantee Authority face after we accept that human needs are in constant flux, dynamic, multidimensional, and heterogenous? Under such conditions, the probability that even a well-meaning and competent government will be able to create or allocate (personally and/or socially) "fulfilling" or "meaningful" work to its clientele approaches zero.

The same argument applies to the concepts of "reasonably useful" and "reasonably priced." I will tackle them in conjunction, since it seems to me that they are intimately related. What

does the word "useful" mean in the context of a government program like a job guarantee? The first question to ask is, useful *to whom*? To the labourer? To the employer? To the government? To the society at large? Some combination of the above? We must ask, "useful *to whom* and *at what cost?*" Indeed, "usefulness" and "pricing" are inseparable. The usefulness of any activity, including a job, is a function of the *opportunity cost* of an activity, which cannot be accurately measured until we know the full cost of that activity, in terms of resources, human capital, and hours lost in its production. It is therefore meaningless to speak about a "useful" job *simpliciter* without knowing the full cost of that job.

This leads me back, once more, to the question of pricing. The failure of central planners to achieve "reasonable pricing" flows directly from Hayek's lessons on the semiotic and communicative functions of the price system. Even after we acknowledge the widespread presence, in some markets, of informational asymmetries, externalities, and other market failures, the price system forms the only solid foundation for a continuous process of market adjustment. In this regard, regardless of whether one favours an extensive social liberal welfare state or a minimum state, scholars who take complexity theory seriously should accept what we might call *the post-Hayekian minimal consensus on socialist calculation*, according to which, as Geoffrey Hodgson (2019, p. vii) put it, "all large-scale complex economic systems must fall back on decentralized coordination mechanisms involving relatively autonomous mutual adjustments of some kind between local actors," mediated through "contracts and prices." What makes (most) job guarantee programs problematic is the explicit absence (or distorted presence) of such contract and price mechanisms. In the more evolutionary, long-term view, prices also perform the more entrepreneurial, dynamic, and speculative function of allowing both capital investments and labour efforts to flow into those jobs and industries where future rewards are (wisely or foolishly) expected, while protecting for a healthy diversity of job "niches" to the extent that people's desires, hopes, habits, values, skills, and expectations differ. This diversity of niches ensures the capacity of the system to produce job innovations that generate multiple (partially overlapping and partially divergent) job trajectories. A job guarantee program, to the extent that it stifles open competition, tends to lead to the reduction of the cybernetic requisite variety in the system, i.e., "monoculture." The type of decentralized experimentation that a healthy labour market requires will become weakened the more jobs are decided on the level of a welfare

state bureau. So, overall, it is unlikely that a government will be able to achieve sufficient epistemic competence to cater to the needs of a robust job guarantee program that can be considered "reasonably useful" and "reasonably priced." The combination of knowledge and competence required to cater to the personal and social needs of job seekers is unlikely to result in job programs that match both the subjective needs of the individuals and the intersubjective needs of the society. All of this, of course, relates to the permanent uncertainty surrounding the future of labour markets subject to technological innovation, automation, outsourcing, pandemics, and other disruptive shocks.

Moreover, the cultural and moral dimension of job seeking demands its own evolutionary analysis. All the positive and negative valences that people attach to having, supplying, or demanding various jobs reflect cultural values and habits that are simultaneously *products* of evolution and *producers* of further evolution. Cultural attitudes towards work, social participation, free time, and leisure cannot be taken as exogenously "given." The meaning and value of work in people's lives, and its functional role in society, are the products of bottom-up cultural evolution and permissionless innovation just like anything else. Of course, it is possible that the combination of Darwinian selection, cultural experimentation, and memetic drift will lead to socially undesirable consequences. For example, the cultural value attached to "contributing to society", "having a steady income" or "being self-reliant" might be prerequisites for a high level of economic growth. We do not know what the cultural values around "work ethic" will be in the future, but we know that they will emerge as people adapt and reorient their value system, from the bottom-up, subject to competitive pressures. The ecostructural role of the government, in such a scheme, lies in the generation of a) incentives for being productive and innovative (market competition) and b) incentives for bottom-up norm discovery (cultural competition).

So, even the notion of "personal fulfilment," or "meaningful activity," *emerges out of a social discovery procedure*. It does not exist in a Platonic realm of ideas from where it can be snatched and then socially allocated. It is a moving, dynamic target that must be continuously chased through bottom-up mutation, selection, and adaptation. In order for the discovery procedure to produce improved knowledge of how personal fulfilment can be achieved, what kind of job structures are consonant with it, and what kind of labour markets

are needed to match supply and demand, there has to be an open and free exchanges of ideas, habits, strategies, and resources. In other words, society should encourage *permissionless innovation* in the evolving interpretation of the personal and collective meaning of jobs, non-job tasks (such as unpaid housework and volunteer work), and leisure. A top-down job program, even a seemingly flexible and market-oriented one, tends to reduce the ecostructural diversity of the system, and it makes it harder for society to explore *experimental niches of personal and collective "meaningfulness," "fulfilment," "usefulness" and "right pricing"* that emerge when people have the freedom and the substantial resources to experiment with new arrangements.

There is also a further worrying dimension to this. Guy Standing (2020, p. 107) has coined the term "orchestrated alienation" to describe the expected sociological shock when a government attempts to guarantee a job, however purposeless, for people who do not want it. It is the state-led version of what David Graeber (2018) has called "bullshit jobs." And indeed, it seems to me that most "bullshit jobs" are either state-created *or* the result of people not having enough money to have the real "power to say no" to labour contracts that they do not value (this latter problem being solvable by UBI). If people are placed in a job that means nothing to them, that produces little social value, and they have little say over, they may feel alienated, and not just from that one job, but from the whole society. Instead of a job guarantee program, Standing suggests that policy makers should seek to "minimize the time we spend in stultifying and subordinated jobs, so that we can increase the time and energy for forms of work and leisure that are self-chosen and oriented to personal and community development." (Standing, 2020, p. 107) Even this is not quite right, however, since the "orientation" of labour market production should be allowed to emerge spontaneously from the evolving incentives, norms, technologies, and habits that autonomous people will choose to adopt. So, we should abstain from pre-judging what people "should" do in a free economy.

Let me summarize my main objections to conditional programs from the point of view of complexity theory. The epistemic flaw in all such programs, despite the many differences in the details of implementation, is the same: the program managers will have to determine, in the absence of sufficient knowledge, whether a present job (or social contribution) is

socially productive or not, and what kinds of actions are conducive to making such a contribution in the future. This they cannot do reliably in the absence of a market mechanism. Of course, the managers of the program can decide that the social productivity of the job is of secondary importance compared to the simple task of simply putting people to work regardless of the inherent productivity of the job itself. But even this requires assuming that putting people to work – to *any* work – is an improvement over whatever else the people (and the government) might be doing instead. This is based either on the assumption that work is inherently a good thing (regardless of its social productivity or meaningfulness), or that full employment is a socially desirable and achievable task that should be pursued coercively. This also assumes that people are incapable of finding suitable activities for themselves when left on their own devices subject to the right set of market incentives. Most importantly, such programs completely stifle the bottom-up agency of the people themselves, which is their greatest asset for social productivity.

At best, top-down job programs might make sense as *limited*, *optional supplements* to a free labour market buttressed by an unconditional UBI, as long as they are tied to the achievement of specific social tasks that can be justified as corrections of some market failures, such as a) vocational training for the long-term unemployed, b) prisoner rehabilitation into the work force, or c) the pursuit of well-grounded public works, such as infrastructural projects and other clearly delineated, cost-effective public goods. So, *complementary* job guarantee programs cannot be ruled out in principle; however, they should not be seen as *substitutes* to UBI. The context-sensitive prudence of such programs – their costs and benefits – will have to be evaluated through open and free public debate. There is nothing more that can be said, or needs to be said, about the matter *ex ante*. A triple appeal to *policy subsidiarity, historical situatedness,* and *institutional path-dependence* is required instead. Historically situated communities will have to decide for themselves whether a particular constellation of workfare or job guarantee programs may benefit them. But what even historically situated political collectives *cannot* do is simply to "decide" for themselves to ignore the vital and necessary cybernetic function that a freely fluctuating price system on a free and open labour market plays. In a market system with maximally internalized externalities, the decentralized price system, in interaction with the evolving norms, habits, and values of individuals, determines – or rather, *discovers* – whether a

particular job is worth doing, who should do it, when, and at what price.

UBI can theoretically contribute to making today's labour markets more inclusive of the interest of the poor. The biggest price-distorting market failure in labour markets remains the lack of purchasing power of poor people. This translates into a lack of bargaining power. This means that many wages tend not to reflect the uncoerced preferences of low-income workers. This can be largely corrected by UBI, which improves the bargaining power of poor people (up to some sufficientarian margin) by giving them guaranteed access to a minimum income. This way, people can choose to work because they want to have a higher income, pursue their passion, or simply try out something new, and not because they will otherwise starve or face humiliating bureaucratic sanctions. At the same time, UBI of course performs its *own* price-distorting effects. UBI, just like any income cushion program, acts as a partial disincentive for work. However, the question is not whether UBI is perfect but whether it is better than its alternatives. As Milton Friedman (1962, p. 158) already pointed out in: "Like any other measures to alleviate poverty, [NIT] reduces the incentives of those helped to help themselves, but it does not eliminate that incentive entirely (…). An extra dollar earned always means more money available for expenditure." So, even with its price-distortionary effects, UBI is more compatible with the cybernetic signaling that takes place in free and open markets than most its competitors, including workfare and job guarantee programs. A liberal UBI scheme not only preserve the integrity of the price system as the mediator of knowledge and incentives, but it also preserves the power of marginal adaptation, marginal innovation, and marginal experimentation, which are the most important powers that the society can foster (if it cares about evolutionary learning). So, UBI does not have good, feasible substitutes in the family of proposals that have been falsely advertised as combining the advantages of work and welfare. In fact, such programs often fall short of offering *either*. In the worst case, the "work" they offer is unproductive and meaningless, while the "welfare" they offer is undignified and freedom-crushing.

8.3. Participation Income

Participation income is perhaps the most interesting of all the alternatives to UBI. It is one of the few proposed programs that strongly competes with UBI. It attempts to combine the best parts of, on the one hand, conditional welfare schemes and, on the other hand, unconditional and universal schemes like UBI/NIT. Superficially, the participation income is a better fit for the complexity framework than the existing panoply of welfare state measures. The reasons are as follows: 1) it explicitly recognizes *diversity* as an important feature of the labour force; 2) it gives more *freedom* and *agency* to the poor to decide for themselves what is the best way in which they can participate in society; and 3) it *seeks to limit bureaucratic overreach* by making the eligibility criteria lax and relatively easy to fulfil. For these reasons, the participation income holds theoretical promise over the existing system. On the level of theory, it may even be an improvement over a pure UBI itself, since it provides a new solution the "lazy surfer" (or, its modern equivalent, the "lazy gamer") objection. It demands that "lazy" people (or people who are perceived by society as lazy) prove, or at least declare, that their chosen activity somehow contributes to social production, but it also gives them a lot of leeway to fulfil this obligation in a way that suits them.

Participation Income was first proposed by the economist Anthony Atkinson (1996a). Atkinson had previously proposed a UBI + flat tax model. (1995) He has recently sought to combine participation income with a progressive tax scheme. (Atkinson, 2015) The participation income model deviated from basic income by attempting to combine *select* features of UBI (or NIT) with *select* features of conditional welfare models. It is worth noting that the scheme was intended as a pragmatic means of achieving the "reduction in dependence on means-tested benefits." He thought that it "offers the only realistic way in which governments may be persuaded that citizen's income offers a better route forward than the dead end of means-tested assistance." (Atkinson, 1996a, p. 69) The model works by loosening the eligibility criteria attached to traditional income support schemes. Without tipping over into UBI's full unconditionality, it allows for a wide range of participation measures to satisfy the benefit conditionalities. The model shares with UBI the idea that basic income support should be given to pretty much the whole population, at least in principle. But it shares with the bureaucratic and conditional welfare models the insight that access to this basic income support should *not* be wholly unconditional. To have access to

the participation income, people have to show that they are "participating" in some way in various eligible socially productive activities.

Of course, depending on how the term participation is *interpreted*, access to basic income may become very hard or very easy indeed, or anything in between. This is why participation income has the chance to be applied in a variety of different ways for a variety of different purposes. In Atkinson's own version of the scheme, he wanted the bureaucratic overreach over the individual citizen to be minimal. In addition to labour market participation, proven sickness, or unemployment, people could fulfil the participation requirement by showing that they are "engaging in approved forms of education or training, caring for young, elderly or disabled dependants or undertaking approved forms of voluntary work, etc." (Aktinson, 1996a, pp. 68-69). I have two major worries about the participation income system, however. The first one is a kind of *slippery slope* argument. It argues that the participation income system is subject to a kind of *hermeneutical spiral* which might lead to the erosion of the original intended meaning of "social participation." Defining and monitoring "social participation" is burdensome since the category is broad and subject to interpretation. The lack of clarity in the rules of the system, caused by the very open-endedness and diversity-sensitivity that makes the system so promising in the first place, threatens to lead the system down a never-ending spiral of arbitrary bureaucratic discretion or political struggle over the "correct" meaning of social participation.

It is possible to imagine *Government A* defining "social participation" in one way, at year 1, and *Government B* defining "social participation" in another way, at year 2, *without the law changing at all*. After all, since the system is subject to discretion, the stability of the statute does not guarantee stability of its (oral or written) interpretation. New reinterpretations of what counts as acceptable social participation are not only tolerated but also encouraged by the very vagueness and open-endedness of the rules of the system. Without sufficient institutional safeguards, the participation income scheme is unsustainable. The only way to make it institutionally sustainable would be to make its rules and meta-rules clearly set in stone. This would involve not only insisting on a clear definition of "social participation" (one that might make the scheme lose its original flexibility) but also making its basic rules and interpretative guidelines very clear, fixed, and difficult to modify, i.e., not subject to constant reformulation, drift, and discretion. Since the complexity perspective recognizes

that *everything is subject to constant mutation and reinterpretation even without the added confusion brought about by vaguely formulated human laws*, the participation income is extraordinarily vulnerable to hermeneutical mutation, drift, and self-immolation.

There is also a second worry, one that may be even harder to overcome, namely, that participation income is built on a misleading definition of participation. It assumes that it is possible to delineate some group or category of socially meaningful and beneficial activities and separate these from activities that are *not* socially meaningful or beneficial. Complexity does not make it easy for managers and technocrats to be able to discern such categorical distinctions. It might be necessary, and more accurate, to conceive of "social participation" as a kind of unknown and unknowable process whereby people take part in socially productive activities in ways that are often unknown and unknowable. For example, the discovery of penicillin was a great social contribution, even though it was the result of a pure accident. There was no way for the state to predict it. This means that even if "social participation" is interpreted in a very permissive way, this interpretation will almost certainly be partial and biased guesswork. The presence of widespread discretionary interpretative powers leads to the mismanagement of the system in major ways, either by being *too inclusive* or *too exclusive* about what counts as social participation. Of course, the PIUBI model "eliminates" this problem by *ignoring* it. It does not pretend to know which activities, mutations, deviations, innovations, or experiments are socially productive. It does not ask "which permissions are useful?"; it simply grants all citizens universal permission (to deviate, experiment, innovate, and have access to basic resources) by default. It assumes that most people can make a net social contribution when given freedom and the right incentives. It therefore focuses on tweaking the rules of the game to (re)shape the incentive structure of society to increase the (long-term, society-wide) rewards of innovation.

Let me sum up. The participation income scheme, despite its appeal, not only perpetuates some common technocratic and epistemic fallacies that have plagued existing welfare schemes, but it also generates its own set of problems. It entrenches a false definition of "social participation" into the public consciousness that encourages hubristic debate about what counts as "good" or "productive" or "meaningful" activity. So, the participation income, although it might be superior to some existing social benefit systems, is hard to

recommend over UBI. The downsides of a non-ideal UBI, while serious, appear more tolerable than the downsides of a non-ideal participation income system.

8.4. Universal Basic Services (UBS)

The idea of *Universal Basic Services (UBS)* has recently been proposed by several authors, mostly in the U.K. context. (Portes, Reed & Percy, 2017; Gough, 2020; Coote & Percy, 2020; Coote, 2021) It has also been subjected to increasing criticism by both basic income activists and classical liberals. (Standing, 2020, pp. 108-114; Davies, 2019, pp. 20-21) The name UBS is a direct allusion to Universal Basic *Income*, to which UBS seeks to provide an institutional alternative.[40] On one level, UBS seems like a novel proposal. On another level, it feels like an old proposal indeed, since it defends an updated version of the established U.K. model of social democratic governance. (Beveridge, 1942)

What is UBS? In the original 2017 report, where the idea originated, the authors argue against the idea that more cash transfers are needed to lift people out of poverty. Instead, they argue for UBS: "Focusing on basic services, such as housing, food, communications and transport, is, we conclude, far more effective at driving down the cost of living than spending the same money on existing services, or on redistribution." As a result, "[e]ven if income levels remain static, it will make accessible a life that includes *participation*, builds *belonging* and *common purpose* and potentially strengthens the *cohesion of society* as a whole." (Portes, Reed, & Percy, 2017, p. 6, my italics) In a later paper, Gough (2020, p. 1) explains that the UBS model has two interrelated goals: 1) it "shifts the focus from transfers to public services."; 2) it seeks "to safeguard and develop existing public services and to extend this model of provision into new areas." In other words, UBS challenges the transfer-centric, redistributive model of the welfare state, especially in response to the perceived threat of UBI and other cash-centric proposals, by arguing in favour of *existing* and *extended* public services. It thus seeks to re-defend, re-entrench, and re-form the institutional legacy going back to William Beveridge's (1942) influential eponymous report, which laid the foundations

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[40] "We have been inspired by experiments in universal basic income (UBI) around the world, and by a series of discussions about how to rethink economies, both local and global." (Portes, Reed, & Percy, 2017, p. 5)

of the British welfare state. UBS appears half-conservative (in the sense of preserving the Beveridgean tradition) and half-progressive (in the sense of seeking to rejuvenate that tradition). The Labour Party of United Kingdom (2018) has recently published a report on UBS and incorporated the idea into its party platform.

UBS is conceived not only as a substitute to UBI but also to many existing cash transfer benefits: "Universally available public services have the potential to provide the flexible, need specific, and responsive support that could affordably replace much of the current conditional benefits system." (Portes, Reed, & Percy, 2017, p. 10) They argue for UBS in the same comprehensive and universal terms that UBI is often argued for: "A modern economy needs a social safety net that is just as modern, and one that is more flexible and effective than the conditional benefits system we have inherited." (p. 9) They believe that UBS can be such a comprehensive "safety net" that is modern, flexible, and effective. This argument is rather striking considering how many different needs poor people have and how many different services would be required to even attempt to provide for them all in lieu of access to reliable cash transfers. As things stand, much of food and housing today is provided through private markets. With cash transfers, poor people can buy food and housing that suits their needs and circumstances, assuming that markets in those areas are relatively free from both overregulation and market failures, which, of course, is not always the case. For cash benefits to be generally effective, we do not need to assume that poor people make perfectly informed or rational choices; only that there exists some statistically significant correlation between market choices and welfare-enhancing outcomes. Without cash transfers, for the government to deliver to poor people robust access to the same quality and variety of food and housing choices as are available on an open and free market seems hard to achieve. At the very least, it would require an exquisitely broad-ranging, flexible, and competent government initiative. And this all assumes that such top-down interventions, in the best of times, could even *theoretically* offer a feasible alternative to private market calculation in the first place – which we have Hayekian reasons to doubt. A truly comprehensive and sufficientarian UBS scheme, one that would be a true *substitute* for UBI (or similar cash transfers), would, in effect, require the establishment of a constantly alert and adaptive cybernetic governor on the model of the Platonic philosopher king – a model that is unworkable in a complex market economy whose problems are predominantly

polycentric.

However, the report also argues, a bit later, that UBS and UBI are, in fact, "complimentary [sic] components of a sustainable future for social welfare" (Portes, Reed, & Percy, 2017, p. 13) with the qualification that "while some version of a basic income may be a useful complement to ambitious reforms of the welfare system, expecting basic income on its own to be 'the answer' is neither realistic nor desirable." (ibid., p. 22) This version of their argument seems to backpedal on their previous claim that UBS is a workable *substitute for* UBI. In this form, the argument seems more plausible, but also approaches the trivial conclusion that cash transfers probably cannot solve all the problems of poverty, so the government should also provide some in-kind public services on the side. When the argument is stated in this form, very few UBI scholars would disagree with it. The most prominent progressive proponents of UBI, such as Philippe van Parijs (1995) and Guy Standing (2020), explicitly support a mutually complementary combination of UBI and UBS-type public services. As an example of such progressive "fusionist" thinking on this topic, the U.K. Labour Party, in its report on UBS, cautiously embraced a fusion of UBS and some other cash transfer programs, including potentially UBI: "We believe there is a role for both universal basic services and universal and targeted cash payments in a progressive welfare system, and consider universal basic income and social security in parallel strands of policy work." (Labour Party, 2018, p. 11) Nor is this mixed approach limited to socialists. Despite his well-known skepticism towards the welfare state and the pursuit of social justice, even Hayek frequently and clearly acknowledged the public need for several types of open-ended public services, such as public education, roads and railways, information gathering, sanitation services, safety standard regulation, etc., next to his famous guaranteed minimum income scheme. (Hayek, 1960, pp. 340, 374-375, 381, 406; Lehto, 2015, pp. 64-71) Even Charles Murray (2016), who gets closest to the completely "welfare state abolitionist" end of the libertarian spectrum, argues that a portion of the UBI payment should be devoted, by law, to a type of UBS – namely, a compulsory minimum health insurance scheme.

The basic argument I wish to make is that UBI, embedded into the rule of law framework, should provide the "main backbone" of the welfare state. (Samuelson & Hopkins, 1977, p. 33) On top, there are several areas where government regulations and services can be

tolerated, and occasionally fruitfully *encouraged*, to accelerate or enhance the permissionless innovation framework, to set collective goals for the competitive discovery procedure, and to diffuse its costs and benefits in a fair and efficient manner. Among in-kind government services, truly universal basic services are generally preferable to non-universal and non-basic services, since they approximate the principles of generality, nondiscrimination, and the rule of law. At the same time, there is also room for other kinds of public works and infrastructure programs that are not always, and do not need to be, truly universal for them to be (context-sensitively) justifiable on public benefit grounds. Such additional government programs may include, for example, support for disabled people, children, regional infrastructure projects, investments in universities and R&D, or even investments in space exploration, just to give a few plausible examples.

The evolutionary perspective highlights a few key questions that any robust UBS should be able to answer in the affirmative: 1) Does the proposed service leave sufficient room for alternative, creative, and innovative solutions from the bottom-up? 2) Does the service (after we calculate its opportunity costs) strengthen or weaken the quality of social networks and innovation ecosystems? 3) Does the service act as an autonomy-enhancing platform for exploration in the polycentric landscape? 4) Does the service contribute to a diverse welfare state ecosystem instead of a monoculture? 5) Does the service recognize the dynamic, heterogenous, mutating, and radically uncertain nature of social "needs" and "problems" that it attempts to solve? 6) Does the service leave the discovery of new solutions (at least partially) open-ended, undetermined, and "emergent"? 7) Does the service harness positive Black Swan ("fat tail") events while sufficiently protecting against negative Black Swan ("fat tail") events? 8) Does the service contribute to the health and prosperity of a broader, evolving Open Society, to which it endogenously, and humbly, belongs?

Overall, there is no *principled* objection to provision of *some limited* Universal Basic Services that can be levelled from the evolutionary liberal point of view. As it stands, however, several of the proposed UBS models are not particularly sensitive – to say the least - to the values of competition, diversity, experimentation, and innovation. This makes them extremely vulnerable to the risks of government failure that accompany welfare states that lacks epistemic humility in the face of uncertainty. Top-down, "monocultural" models of UBS

that fail to embody sufficient adaptive efficiency, or evolutionary learning capacity, are extremely vulnerable to endogenous and exogenous shocks and disruptions. For example, it is unclear whether a UBS network built around existing norms, values, and habits, would be sufficiently flexible to be able to incorporate *new* and *better* norms, values, and habits into its operation (especially if these norms, values, and habits initially appear in the form of weak, local, or tacit signals). Just imagine that some new technological or sociological innovation emerges in the economy that challenges existing services by transforming the meaning of "good housing," "good food," or "good education." Would the society be able to incorporate the new knowledge and change its structures to take such mutating conceptions into account? For example, if Human Enhancement Technologies carry great potential for helping the lives of the poor, should we expect the UBS system to be sensitive enough to incorporate them into its services? Or should we expect such innovation to come from bottom-up experimental communities in HETs? The latter option seems likelier.

Incipient cultural improvements and innovations, to the extent that they emerge in dispersed and often inchoate form, are often hard to even notice from the position of the "commanding heights" of the economy, let alone to decipher, interpret, and apply in decision-making. The UBS system would have to work hard to build in adaptive competences and information gathering tools that allow it to be sensitive to such shocks and disturbances. Furthermore, the society would be unwise to rely on the democratic and scientific expertise alone. Solving the challenge of institutional adaptability and responsiveness to new situations, local demands, and decentralized needs requires a truly polycentric order where adaptation does not entirely depend upon the internal flexibility and learning capacity of a centrally placed monopolistic organization (or a limit set of such organizations). In a complex adaptive society, the social intelligence of the whole competitive order is, almost by definition, higher than the social intelligence of any standalone organization. This includes the state. A single organization, or even a local network of organizations, is unlikely to exhibit sufficient emergent, system-level intelligence to outmatch the emergent, system-level intelligence of the whole polycentric order of the Open Society. Indeed, the intelligence of the complex adaptive system interacts across multiple levels at once, which can be categorized, following Dopfer, Foster, & Potts (2004), as the *micro-*, *meso-*, and *macro-*domains*. The UBS perspective ignores at its peril the *meso* domain as the mediator of

evolutionary competition dynamics, "processes, populations, connections, variety, interactions, knowledge, institutions, and capabilities." (*ibid.*, 2004, p. 278)

Some of the proponents of USB are vaguely aware of this worry. Against the obvious criticism that UBS necessarily "augments the size and power of the centralized state," Coote (2021, p. 43) argues that "decentralization, local control, and citizen/user engagement are fundamental to the UBS framework." Her hope is that UBS can be used to "create a sustainable social infrastructure that can enable all citizens and residents to participate and flourish." (ibid.) This sounds similar to the ecostructural approach to permissionless innovation. I have no qualms about this proposal *on the level of theory*, but firstly, it is left unclear *how in practice* the aim of a co-participatory, decentralized UBS infrastructure is to be realized; and secondly, the claim that social decentralization is "fundamental" to the UBS framework seems like a *post-hoc* rationalization to me, given that the *original* UBS model was explicitly conceived as building upon, and expanding, the model of the centralized Beveridgean state. This does not mean that it cannot be *transformed towards* decentralization, subsidiarity, and local co-participation; but transforming it into one requires as much effort as transforming a Model-T Ford into an F-16 fighter plane.

How does the framework of complex adaptation fit into this discussion about UBS? Let me go back to the disctintion, introduced in **Chapter 2**, between "Type-1" adaptation and "Type-2" (complex) adaptation. This can be mapped onto the distinction between "paradigmatic" and "trajectorial" technological change (Dosi, 1982; Dosi & Nelson, 2010) – which itself traces back to Kuhn's (1962) distinction between "paradigmatic" and "normal" science. Here, I will rely on Cordasco, Gherhes, Brooks, & Vorley's definition (2021, p. 7):

1) **Trajectorial innovations** involve "incremental changes in the adopter's ability to solve already selected problems by means of improving already existing practices, routines and heuristics, in a context of already internalized pieces of knowledge." ("Type-1" adaptation, aka., Schumpeter's "adaptive response")

2) **Paradigmatic innovations**, "on the other hand, are characterized as innovations that substantively alter existing practices, routines and heuristics and that offer better

solutions to both already selected and newly identified problems, and that require new pieces of knowledge in order to be successfully deployed." ("Type-2" adaptation, aka., Schumpeter's "creative response.")

This distinction can be used to explain the nature and scope of the adaptive strategies available to organizations, including UBS and UBI organizations (welfare states and their appendages). Differences in the "adoption rate" of paradigmatic innovations may turn out to be crucial determinants of the adaptive efficiency of national innovation systems. (Downs & Mohr, 1974) An adaptively efficient UBS scheme that seeks be take full advantage of both trajectorial and paradigmatic innovations, and that seeks to achieve the status of a decentralized and co-participatory "social infrastructure that can enable all citizens and residents to participate and flourish" (Coote, 2021, p. 43), has to overcome two key institutional challenges: a) its Beveridgean tendency towards excessive centralization and b) its own entrenched institutional expectations, values, and habits that threaten to excessively routinize and standardize the operation of its service portfolio. Both of those tendencies work together to weaken the government's polycentric capacity to learn and adapt in the face of new environmental challenges, i.e., to adopt innovations (especially "paradigmatic" ones) that go against established practices, norms, and standards. Minimizing these tendencies becomes an institutional necessity if UBS-type services are intended to become the predominant (or only) means of poverty relief, and *full substitutes* for UBI.

The mixed model, where UBS is combined with a robust UBI scheme, seems more complexity-aware due to the added protection that UBI and the presence of competing service providers bring to the poor. Relying predominantly on UBS with the hope that it will be capable of polycentric self-rejuvenation and adaptation to changing circumstances is a long-shot strategy at best. Facilitating evolvability in public services cannot be solved by maximizing intra-organizational learning capacity. It needs to be solved by facilitating the trans-organizational processes of creative destruction, which entails (quasi-Darwinian) selection pressures between competing routines and strategies. There is no feasible alternative to the competitive method of generating innovations. But if it is *not* feasible to implement concrete subsidiarity, decentralization, and facilitated competition within the provision of UBS services, the second-best solution may be to encourage the adoption of

permissionless innovation as an official strategy or social norm within the system, and to "focus on weakening professional norms against the adoption of innovations, in an effort to foster technological experimentation." (Cordasco, Gherhes, et al., 2021, p. 10)

However, innovation cannot be willed into existence from the top. It comes about as "the product of many minds and many generations of designers, each working somewhat myopically, with later generations building on the achievements and learning from the mistakes of earlier ones." (Dosi & Nelson, 2010, p. 54) How can such trial-and-error learning be facilitated within a top-down model of the welfare state? It cannot without some decentralization. The most important thing the state can do is to *guarantee spheres of autonomous action and interaction where polycentric intelligence that generate innovations from the bottom-up*. In addition, the government can optionally invest substantial resources into boosting polycentric intelligence through various social infrastructure projects, human capital building, innovation ecosystems, etc. For example, investments into public transportation, health care, and public education, depending on the details of the model and the expected outcomes, may count as investments into bottom-up creativity and innovation capacity. Despite some important gesturing in that direction by Anna Coote (2021), a decentralized, bottom-up, innovation-focused approach to UBS that takes innovation, experimentation, and freedom seriously still does not exist.

Despite my criticisms, let me emphasise that the discussion around UBS vs. UBI is very welcome, since it provides a new way to conceptualize the old debate about such distinctions as "in-kind" vs. "cash," "universal" vs. "targeted," and "top-down" vs. "bottom-up." That said, more clarity is needed in the debate. The proponents of UBS need to clarify their message around at least the following topics: 1) What is *new* in the UBS model that makes it different from the existing welfare state conceptions? 2) Is UBS primarily intended as a *substitute* or *complement* to UBI? 3) How can the model of a centralized, top-down provision of UBS be best made compatible with the ideals of widespread citizen participation, bottom-up feedback, locally context-sensitive implementation, and rapid adaptability to new and changing circumstances? 4) How can the UBS system made responsive to the adoption of "innovations that substantively alter existing practices, routines and heuristics," i.e., paradigmatic innovations?

As it stands, UBS fails as a coherent and robust *alternative* to UBI. At best, it provides an optional *complement* to it. Malleson & Calnitsky (2021, p. 125) may be right that "without a welfare state background, services and regulations are generally preferable for most vulnerable groups. However, as the welfare state develops, into a neoliberal or a social democratic context, basic income becomes a generally superior option." At any rate, the debate around UBS and other in-kind measures provides an important reminder that "welfare universalism" does not necessarily end with UBI. Indeed, although I think that more resources should be spent on (universal) cash transfers and facilitating the competitive order rather than (universal or targeted) in-kind transfers, ecostructural welfare state governance is certainly *compatible with*, and may *benefit from*, a type of "Social Democracy 2.0" that comprises a broad palette of social investments that are intended to strengthen agent capacities and facilitate innovation networks. What Steve Hughes (2004) called "Democratic Transhumanism" might wish to take advantage of UBS to offer various enhancement services to the people, such as clinics where people can go to inject themselves with gene therapies. One thing is clear, however: the PIUBI perspective recommends a shift towards those kinds of public investments (and public services) that enable bottom-up forces rather than routinizing them; that support competition rather than establish new monopolies; that facilitate horizontal learning networks rather than vertical hierarchies of expertise; and that treat the discovery of new solutions as more important than the exploitation of old ones.

8.5. Mazzucato's "Entrepreneurial State"

Mariana Mazzucato's theory of the "Entrepreneurial State" (Mazzucato, 2013; cf. also Lazonick & Mazzucato, 2013), which takes advantage of some of the insights of the evolutionary economics literature, flips the narrative about the dynamic and innovative private sector on its head. Heavily influenced by Block's (2008) work on the "developmental state" and Ruttan's (2006) work on the U.S. military-industrial complex, Mazzucato argues for a state-centric view on innovation that provides an important challenge to the present

thesis.[41] Contrary to the liberal innovation theorists in the Neo-Hayekian and Neo-Schumpeterian schools, Mazzucato makes the case for a strong and proactive government involvement in the shaping of the evolutionary trajectory of innovation. Unsurprisingly, Mazzucato has been subjected to criticism from the Neo-Austrian and Neo-Schumpeterian camps. While Karlson, Sandström, & Wennberg (2021) content themselves with defending an alternative theoretical framework based on Hayekian and Schumpeterian insights, Mingardi (2015) offers an empirical criticism of Mazzucato's historical claims. However, I am not especially interested in assessing the (in)accuracy of her historical account of industrial policy. Instead, I will take her views as an occasion to engage with the objection that the PIUBI view neglects the important role that the government should play not only in *facilitating* or *steering* innovations but also in *financing* and *producing* them.

Mazzucato accepts the premise of Nelson & Winter (1982) that "'systems' of innovation are needed so that new knowledge and innovation can diffuse throughout the economy" but she thinks that "it is naïve to expect venture capital to lead in the early and most risky stage of any new economic sector." (Mazzucato, 2013, p. 31) There is therefore a legitimate and crucial role for "the entrepreneurial state" to lead the way to innovation - not only in funding basic research and supporting an open and free marketplace, but in nurturing new and innovative industries. The government's task is "to engage in risk taking and the creation of a new vision" for the future of capitalism. (Mazzucato, 2013, p. 31) At its best, government investment can open up a "radically new trajectory based on genuine risk-loving, disruptive technologies and a 'mad' science attitude." (ibid., p. 118) Her model thus provides a direct challenge to the models of evolutionary development (including mine) that rely predominantly on spontaneous bottom-up innovations that are nurtured, cultivated, and facilitated by prudent rule-enforcement and evolutionary gardening:

> The State's role is not just to create knowledge through national labs and
> universities, but also to mobilize resources that allow knowledge and innovations to
> diffuse broadly across sectors of the economy. It does this by rallying existing
> innovation networks or by facilitating the development of new ones that bring

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[41] For related research, see also: 1) Dani Rodrik (2004) for a cautious but nonetheless positive defence of active industrial policy; 2) Friedrich List (1841) for the classic case for active industrial policy; and 3) Ha-Joon Chang (2002) for a historical survey of the importance of the state in guiding industrial development.

together a diverse group of stakeholders. However, having a national system of innovation that is rich in horizontal and vertical networks is not sufficient. The State must also lead the process of industrial development, by developing strategies for technological advance in priority areas. (ibid., pp. 42-43)

This constitutes a major challenge to the liberal interpretation of the innovation literature, where the state is conceived as the facilitator of permissionless innovation. Instead of laissez-faire governance moderated by some welfare state measures, the state should forcefully and consciously "choos[e] particular sectors" of the economy for targeted, top-down investment. (p. 35) For Mazzucato, an "innovation ecosystem" can benefit from active government involvement as an entrepreneurial force: "when organized effectively, the State's hand is firm but not heavy, providing the vision and the dynamic *push* (...) to make things happen that otherwise would not have." This viewpoint sees "the State acting as a force for innovation and change, (...) boldly leading the way, with a clear and courageous vision" (p. 17). The state can push for "radical ideas" (p. 120) that kickstart wholesale industrial revolutions which, in turn, open up new profit opportunities for private businesses.

The view that private markets may underinvest in innovation finds some support from the economic literature. As some neoclassical scholars have shown (Bloom, Schankerman, & Van Reenen, 2013, p. 36) there may be market failures that cause private companies to underinvest in R&D. Indeed, even though strategic entrepreneurs are constantly discovering new ways of internalizing the externalities of their knowledge investments (Agarwal, Audretsch, & Sarkar, 2007, 2010), some of these "knowledge spillovers" cannot be privatized and have the quality of public goods. However, this fact does not offer *any* support for Mazzucato's claims. In fact, Mazzucato's thesis is *incompatible* with the idea that government should primarily focus on correcting for such market failures, since that would go against the government's preferred role as a visionary entrepreneur.

The ecostructural approach to innovation, which I favour, is perfectly compatible with government investment in scientific and technological research. In a few areas, such as investments into infrastructure projects, it might act as the "chooser" of concrete projects, but otherwise it would abstain from acting as the "chooser" of bold new "trajectories" or "visions." In the absence of competition, and in the absence of the cybernetic feedback

mechanisms that trial-and-error learning provides, there is no way of knowing whether a particular "trajectory" is worth pursuing. The real problem with such visionary leadership is the hidden opportunity cost: it leaves less resources available for permissionless innovation. Of course, sometimes pursuing real competition from the bottom up is not an option. In those circumstances, "bold" and "visionary" choices may have to be made in the absence of effective price signals and competitive pressures. But in most fields, competitive forces either already exist or can be fortified and generated from scratch. So, the government would do better to focus on taking advantage of existing and incipient competitive arenas, rather than crowding them out through its bold and visionary actions. Indeed, my PIUBI model is example of this kind of a "hands-off" innovation investment that treats all agents as deserving of some basic level of "R&D funding" but otherwise leaves the emergence of outcomes entirely up to the spontaneous forces of the economy; it combines the negative freedom to explore with some basic capital to finance the exploration.

Although Mazzucato's view of the entrepreneurial state is a valuable contribution to the evolutionary literature, it suffers from a few fundamental problems. Her framework of innovation relies on an incoherent notion of entrepreneurship devoid of effective competition. However much good the state may be assumed to be capable of doing, it cannot be an "entrepreneur" in the same sense that a business firm is; not because private businesses are necessarily more efficient, bold, or risk-loving, but simply because the state cannot fail or go bankrupt, so it lacks feedback mechanisms that allow it to measure, tweak, and refine its strategies through competitive semiotic signals. Pursuing entrepreneurship requires markets, competition, trial-and-error learning, and the right-to-fail. Of course, politicians face re-election worries, so they are somewhat responsive to democratic decisions, but this is only a weak and unreliable signal in average elections.

As a result, although a full rebuttal would be beyond this paper, she fails to disprove the Neo-Schumpeterian thesis that the *primary* and *most important* way in which the government can "create" markets is to facilitate a system of permissionless innovation and to encourage networks of decentralized self-governance. In fact, in making her case for a government-led, "entrepreneurial" innovation drive, she obscures and ignores some of the most important roles in which the government *can* play a productive role in the innovation economy, such as funding scientific research and supporting, in various ways, "garage

tinkering", entrepreneurship, and the free agency of the poor. Overall, the "entrepreneurial state" suffers from several theoretical shortcomings. None of this is to suggest that the state can *never* play an active or constructive role in the innovation space. But it does mean that the state must overcome the problem of insufficient cybernetic feedback and the lack of real competition in order to thwart the persistent threat of government failure.

It is easy to agree with Mazzucato that the government can play a useful role in providing R&D funding for the sciences and technologies, finance critical infrastructure programs, and provide innovation-fostering educational opportunities and public services for its citizens. In addition, it may optionally leverage its capital assets (including tax revenue) to finance some strategically chosen top-down programs, such as space exploration or AIDS research, which may be hard to privately monetize in the early stages of business and technological development. Once we factor in the need for authentic competition and permissionless innovation, Mazzucato's perspective can play an important role in guiding public policy discussion going forward. Her view needs to be attenuated, however, with a more nuanced recognition of the pitfalls of government "visionary leadership" as an obstacle to real competition, experimentalism, and creativity. It seems to me that the PIUBI framework exhibits a more promising candidate for "bold" and "visionary" government funding for innovation because it relies on the "bold" actions of the people themselves. Of course, these approaches are not necessarily in conflict, so more research is needed to determine the optimal mix of Mazzucato-type and Schumpeterian-type industrial policies.

8.6. Neoclassical Growth Models: Solow-Swan and Romer

Neoclassical growth models do not fully capture some distinct aspects of evolutionary processes, despite their great utility in modelling certain developmental processes. To briefly illustrate this, without any pretence of engaging in a thorough critique, I will highlight the role that evolution and innovation play in two prominent models – the Solow-Swan growth model (Solow, 1956; Swan, 1956) and the Romer growth model (Romer, 1986, 1990, 1994) – and explain where my PIUBI model diverges from them. The choice of the two models is justified by the prominent place given to them as representative examples of

"exogenous" and "endogenous" growth theory in much of the contemporary literature on growth. (Cf. Acemoglu, 2008; Cowen, 2018).

In the **Solow-Swan model**, which is highly stylized and simplified, growth (increased economic output), is explained as an increase in "total factor productivity" (TFP) arising from the accumulation of capital (K), labour (L), and technology (T). (Solow, 1956; Swan, 1956) The model measures economic growth as the output of a Cobb–Douglas production function $Y = A(t)K^{1-\beta}L^{\beta}$, where "Y denotes net national product, K denotes the stock of capital, L denotes the stock of labor, and A denotes the level of technology." (Romer, 1994, p. 4) One of the central themes of this neoclassical growth model was to emphasize "the connexion between capital accumulation and the growth of the productive labour force." (Swan, 1956, p. 334) Most interestingly, the model contains the famous "Solow residual," which refers to the unexplained "something" that must be accounted for to explain that part of economic growth that is not reducible to increased capital accumulation. The Solow residual is commonly interpreted as technological development. And since technological development is seen by evolutionary economics one of the major drivers of innovation and evolutionary development, the Solow residual captures imperfectly at least one part of what is meant by evolutionary development. The Solow model suggests that, in the long run, only technological development, understood as an exogenous variable, can increase TFP and contribute to economic growth. The reason is that capital accumulation and labour investment are subject to diminishing marginal returns. In the absence of technological innovation, high growth gives way to slow growth, which ultimately gives way to zero growth. The Solow-Swan model celebrates the role of innovation without providing any model of how innovation comes about.

By contrast, in the **Romer model** (Romer, 1986, 1990, 1994; see also Jones, 2019), technological innovation is included among the *endogenous drivers of growth*, together with capital and labour, that can and should be explained within the model itself. However, the definition and explanation of innovation remains rooted in neoclassical theory. In short, Romer argues that technological development is the result of investments in ideas (knowledge) that increase the productivity of labour and capital. This includes investments in universities, knowledge work, intellectual property, etc. In the model, ideas are seen as nonrivalrous goods that can be copied and "consumed" at (near) zero marginal cost by non-

producers. For this reason, the economic incentives for knowledge production can be increased with a robust framework of IP rights and investments in the knowledge economy. Despite the differences between the two models, Romer saw his own model as a "follow-up" to the Solow-Swan model that "unpacked the [S]olow residual by exploring technology as a nonrival good." (Romer 2015, unpaged) By contrast to the Solow-Swan growth model, which treats technological development as exogenously predetermined, the endogenous growth model "tries instead to uncover the private and public sector choices that cause the rate of growth of the [Solow] residual to vary across countries." (Romer, 1994, p. 3) It suggests that "technological change is the result of efforts by researchers and entrepreneurs who respond to economic incentives. Anything that affects their efforts, such as tax policy, basic research funding, and education, for example, can potentially influence the long-run prospects of the economy." (Jones, 2019, p. 359) This opens up the question of institutional design and public policy in a way that is sensitive to social complexity, situated network effects, and the heterogeneity of knowledge.

One of the most complexity-aware consequences of the Romer model is that choices related to population growth and marginal investments in human capital may not be subject to *diminishing returns*, as the Solow model assumed, but to *increasing returns* (in some margins). The key consequence is that "growth rates can be increasing over time, the effects of small disturbances can be amplified by the actions of private agents, and large countries may always grow faster than small countries." (Romer, 1986, p. 1002) So, although poor and underdeveloped countries can (in theory) take better advantage of Solow-type "catch-up" growth, rich countries can (in theory) take better advantage of Romer-type "technological frontier" growth. Developed, urbanized, and populous countries that invest in the exchange and marketization of ideas are better equipped to achieve Solow growth than countries with slow population growth, limited exchange of ideas, a poor protection of IP rights, and various institutional impediments the division of labour and the densification of social network complexity. In Tyler Cowen's (2018, unpaged) succinct words, "growth begets more growth." Indeed, this phenomenon of increasing returns, sometimes called "the Matthew Effect," is much studied in sociology and complexity theory. (Merton, 1968, 1988; Arthur, 1994; Rigney, 2010) It is called the Matthew effect after the famous words in the Gospel of St. Matthew 25:29 (according to the New International Version): "For whoever has will be

given more, and they will have an abundance. Whoever does not have, even what they have will be taken from them." It can be used to explain such *increasing returns* phenomena as the expansion of market opportunities due to division of labour (Smith, 1776; Young, 1928; Chandra, 2004), the "winner-take-all" economy where the rich get richer and the poorer get poorer (Frank, 2011), and other exponential/Paretian "power law" distributions. (Taleb, 2007, 2012)

Romer's growth model, with its emphasis on human creativity and increasing returns to human capital, provides a valuable perspective on *qualitative* changes in the economy that makes it possible to talk about "evolution" and "progress" without wincing. Romer's work makes it easier to conceptualize the social function of intellectual work, social networking, and human capital accumulation as drivers of growth, the capacity of technological developments and other increasing returns processes to generate self-perpetuating growth, and the power of dense cities as distributed networks of knowledge. In this sense, Romer's growth model – whatever its empirical validity – is one of the most complexity-sensitive models in neoclassical economics, right next to Smith's (1776), Young's (1928), and Schumpeter's (1934, 1942) endogenous growth models. However, although it is clear that the Romer model is more complexity-sensitive than most neoclassical growth models due its focus on increasing returns, sensitivity to initial conditions, the power of ideas, and civilizational complexity, it is still deeply wedded to the neoclassical framework: "The model presented here is essentially the [Solow] one-sector neoclassical model with technological change, augmented to give an endogenous explanation of the source of the technological change." (Romer 1990, p. S99) Indeed, Romer's "competitive equilibrium model with endogenous technological change" (Romer 1986, p. 1002) is *still* a competitive equilibrium model. As such, it has trouble modelling certain disequilibrium processes, such as changing habits, non-fixed preferences, and entrepreneurial innovation. In particular, Romer does not take cognizance of the Schumpeterian processes of creative destruction, the Darwinian processes of variation, selection, and retention, or the Lamarckian processes of selective imitation, that underlie much of the growth dynamics of the innovation economy. None of this is to deny the significant contributions that Romer's papers (1986, 1990, 1994) have made to growth theory, developmental theory, and innovation theory. Romer's theory helps to understand, as Tyler Cowen (2018, unpaged) points out, that pursuing sustainable growth

should mean "preoccupation with ideas, a preoccupation with cultivating human reason, and a preoccupation with the notion that man should realize, perfect, and extend his nature as a generator of powerful ideas that can change the world." So, Romer's theory helps to model the importance of knowledge for development, but complexity theory is needed to better explain the distributed, tacit, mutating, and cybernetic nature of this knowledge.

From the evolutionary point of view, neoclassical models, whatever their merits (and they are not in dispute), contain excessively restrictive and often downright false assumptions about certain socioeconomic processes. In neoclassical models, some important evolutionary phenomena, such as adaptation, innovation, creativity, emergence, disequilibria, technological development, trial-and-error learning, or shifts in preferences – which we know to be important for socioeconomic development – play, at best, very minor or understudied roles. Neoclassical theory has been subjected to several important self-critiques, such as those of Robert Lucas (1983, 1988) and Amartya Sen (1977), but its basic assumptions rarely yield to disequilibrium-based evolutionary modelling. Neoclassical economics and evolutionary theory remain, in the words of Alex Rosenberg (1992), "strange bedfellows."

As I have shown, Romer's endogenous growth theory is perhaps the most innovation-sensitive, disruption-sensitive, and complexity sensitive of all the neoclassical growth models. Romer was concerned with complexity and growth, and the deeply evolutionary dimension of his work is clear from the fact that he titled his Nobel prize lecture "On the Possibility of Progress." (Romer, 2018) Very few neoclassical economists dare speak about civilizational progress. Nonetheless, even the Romer model is still wedded to various simplifying (and partially false) neoclassical assumptions about the nature of social evolution. Of course, as Milton Friedman (1966, p. 14) famously argued in his case for methodological positivism, it may be less important whether the models are "true" in some Platonic sense than whether they predict phenomena accurately: "Truly important and significant hypotheses will be found to have 'assumptions' that are wildly inaccurate descriptive representations of reality, and, in general, the more significant the theory, the more unrealistic the assumptions (in this sense)." In this sense, whether neoclassical models accurately *reflect* or *mirror* complex reality is irrelevant for their scientific rigour. Solow (1956, p. 65) is admirably self-conscious about the methodological simplifications that his

theory entails: "All theory depends on assumptions which are not quite true. That is what makes it theory." He confesses: "I have been deliberately as neoclassical as you can get," so that several analytical complications, such as uncertainty, real-life deviations from competitive equilibria, and policy implications "have been brushed aside throughout this essay." (pp. 93-94) The map is not the territory. Stylized, simplified models have their uses. Peter Stewart (2001, p. 353) has provocatively argued that complexity theory models have limited applicability in the real world *precisely because the world is so complex*: "Social processes and phenomena are far too complex for complexity theory to deal with, or profoundly elucidate" on their own. Simple models are sometimes required to extract good data from the environment and to make useful predictions on it. So, neoclassical models do not need to be altogether jettisoned, but they should be supplemented by more explicitly evolutionary models. This makes for a more comprehensive theoretical tool kit.

Chapter 9: Conclusion

9.1. Back to the Beginning

I began my thesis by posing the following research questions:

> **"Can UBI be an adaptive governance solution to the evolutionary challenges posed by a rapidly evolving market society?"**

I have argued that UBI can, indeed, in theory, be a tool of *adaptive governance*. It can do so to the extent that it is a tool of *freedom* that decentralizes decision-making to free individuals and communities. At the same time, I have argued that its implementation criteria matter a lot for the consequences that that can be expected to flow from it. Ideally, UBI needs to be implemented in an "ecostructural" way into the fundamental rule structure of the social order (such as the constitution), where it is protected from day-to-day political pressures. This offers a new interpretation of liberalism – which I have called "evolutionary

liberalism" – which explains the interrelationship between *freedom*, *adaptation*, and *innovation* in generating solutions to social problems. I have offered a normative model of liberal governance, called the PIUBI model, which combines *the right to basic income* with *the right to innovate*. It provides an updated and reformed model of classical liberal political economy building on the shared insights of the Neo-Hayekian, Neo-Schumpeterian, and Santa Fe schools of evolutionary economics. It explains how UBI, when implemented on the "ecostructural" or "rule of law" model, although it entails a high fiscal burden, is unique among proposed welfare state models in supporting and facilitating the autonomous capacity of agents to pursue bottom-up innovations, deviations, and trial-and-error learning not only in the economic but also in the cultural realm. At the same time, the model recognizes the special importance of the management of catastrophic and existential risks (such as global warming, pandemics, and artificial intelligence). It also recognizes the productive but bounded power of welfare state governance, when properly channeled, to improve the lives of the poor, through public services and limited regulations.

In this concluding chapter, I only wish to recapitulate my argument briefly. Beyond that, I want to focus on the question of how, if at all, the PIUBI framework could be implemented. Governing complexity is like trying to stop a river with your hand. One soon finds out who is in charge. But a brief discussion of what is possible may hopefully illuminate some of the avenues open to political entrepreneurs in approaching welfare state reform.

9.2. Complexity-Aware Public Policy

The popularity of UBI has reached new heights in recent years. In this debate, evolutionary economists of have unique insights that can contribute to the comparative institutional analysis of alternative proposals. They can assess the merits and demerits of UBI proposals from the point of view of how good they are at solving social problems through decentralized experimentation and permissionless innovation. The central lesson of the analysis is that one of the primary duties of the government is *to nourish and nurture complex adaptation by allowing individuals and communities, including poor and*

disadvantaged communities, to self-organize, bottom-up, via permissionless innovation.
Showing how Hayekians, Schumpeterians, Santa Fe researchers, and other evolutionary political economists can make a joint contribution to the UBI debate will hopefully incentivize other scholars to explore unsettled questions about the wrought relationship between the welfare state, complex adaptation, innovation, progress, and evolutionary learning. Focusing on the shared similarities between them, despite their many differences, will also hopefully enable the different schools to talk to each other, and even to exchange some "DNA" with the other branches of the shared family tree. Although the different schools of evolutionary political economy often operate under slightly different methodological assumptions, concepts, and research agendas, intellectual crosspollination between them is conducive of scientific progress and creative serendipity.

To that effect, I have outlined the institutional requirements of a complexity approach to institutional design based on the shared insights of the Neo-Austrian, Neo-Schumpeterian, and Santa Fe schools and their contemporary synthesizers such as Eric Beinhocker (2006, 2011), Colander & Kupers (2014), and Geoffrey Hodgson (2018, 2019). I have suggested that complexity theorists should approach the topic of UBI in an open-minded but cautious fashion. *Liberal* complexity theorists, in particular, should examine the potential of the liberal UBI models to entrench the liberal *right to innovate* (and deviate, mutate, and experiment) into the basic rule structure of the welfare state. UBI, especially when instituted in a truly unconditional way that approximates libertarianism, may facilitate complex adaptation and permissionless innovation better than existing welfare state structures. However, in order to get the most of it, and to safeguard it against the threat of erosion, it ought to be implemented with robust checks and balances. Hayek's (1982) and Polanyi's (2002) emphasis on the interrelationship between the rule of law and the spontaneous or polycentric order provides the general blueprint for the kinds of constraints that need to be in place for a guaranteed minimum income scheme to be protective of the regime of freedom. James Buchanan's *Demogrant* and Milton Friedman's *Negative Income Tax* are plausible, concrete models how to institutionalize the principles of generality and nondiscrimination into the redistributive state. The PIUBI model is best seen as a minimal blueprint whose two interrelated rights are *necessary* but not *sufficient* preconditions for a comprehensive adaptive governance framework. So, the PIUBI model is compatible, in the

"progressive" extreme, with a robust welfare state (that provides, e.g., universal health care, public schooling, public parks, a space program, etc.); it is also compatible, in the "libertarian" extreme, with a minimal welfare state (that only guarantees basic income and nothing else); but it is *not* compatible with an anarcho-capitalist society (in which there is not government safety net), nor with a socialistic, paternalistic welfare state (that suppresses risky or unproven bottom-up innovations and experiments). It is compatible with *only* those (and *all* those) regimes in which permissionless innovation flourishes.

At any rate, any constitutional system of checks and balances, whose purpose is to constrain the fiscal state under the rule of law and to secure the crucial ecostructural "dual rights" of the *right to innovate* and the *right to basic income*, will face severe implementation challenges. These rights will be extremely hard to implement, secure in place, and sustain over long periods of time. Secondly, the success of the evolutionary liberal PIUBI model is dependent upon the path-dependent institutional history of different countries. The model is likely to work in certain countries, policy contexts, and time periods, but fail in others. For this reason, there is no single blueprint that will work in all circumstances, but the basic model probably needs to be adapted to local circumstances, local traditions, and local values. For example, using Esping-Andersen's (1990) model of the *Three Worlds of Welfare Capitalism*, "liberal" welfare states, "conservative" welfare states, and "social democratic" welfare states are likely to have their own resistances to the PIUBI model presented in this chapter, and successfully "selling" the model to each of them so that it gets implemented there (something which is the task of political entrepreneurs and not scholars) will likely require unique regional concessions. As it stands, I do not know which one of the three type of welfare states analysed by Esping-Andersen is most suitable to the PIUBI framework; even though the most obvious answer might be the "liberal" model, I am not so sure, since the social democratic model, while more sceptical towards market liberalism, is more open to universal social insurance. At any rate, the evolutionary perspective suggests that, although institutional path dependence matters, no institutional structures, cultural attitudes, or political ideologies are eternal, and there is no reason to think that countries are doomed to eternally trod on the same path. The history of welfare states like Sweden showcases how rapidly countries can adapt their models to new circumstances, and how wrong it would be to assume that such evolution will not continue. So, the model presented

here is emphatically *not* intended as a region-specific model suitable only to particular set of countries; it is intended as an institutional innovation that is potentially applicable internationally.

Furthermore, the details of the implementation and the chosen model matter a lot. As Brian Barry (2000) has famously argued, "Asking about the pros and cons of basic income as such is rather like asking about the pros and cons of keeping a feline as a pet without distinguishing between a tiger and a tabby." UBI has different characteristics depending on how it is implemented. Specificity is a virtue and even a requirement, since "the devil is in the details." (Bidadanure, 2019, p. 498) In the context of evolutionary governance, the same ambiguity exists, since UBI is not only a potential servant of a spontaneous order (which is what I have argued), but also a potential servant of a centrally planned economy (which some critics have argued). It is too early to tell which tendency will win out or whether appropriate design criteria can be agreed upon. However, with the knowledge of the challenges ahead, complexity-aware philosophers and political economists can hopefully formulate adequate responses to the potential pitfalls of the implementation of UBI.

At this stage, when no country in the world has yet implemented UBI, scepticism towards the untested claims of its proponents, including the claims made in this thesis, is not only justified but positively desirable. After all, as I have emphasized throughout, the free and open exchange of ideas, the development of alternative UBI models, and their competitive testing in various real-world arenas, is the right way forward on the path to Popperian "piecemeal" experimentation. (Popper, 1966) Even if the theoretical model is sound *in theory* (where all of the details of local governance have been abstracted away), this does not mean that it is well-adapted, in practice, to the local needs of a particular society or cultural context. Indeed, it would be self-contradictory for a model that emphasizes the public benefits of evolutionary contestation, competition, and experimentation to wish to isolate itself from similar evolutionary pressures in the world of ideas! Although ideal conditions of "falsifiability," (Popper, 1966) such as those associated with formalized science, cannot be achieved in the messy and uncertain world of institutional learning, the fallibilistic conjectures-and-refutations model, based on the continuous Popperian refinement of our Bayesian assumptions, remains the (never-fully-realizable) gold standard

of practical politics. The PIUBI model therefore not only tolerates but recommends its own competitive testing.

My suggestion to those scholars who remain sceptical of UBI models in general, but who agree with the proposition that the welfare state *should* and *could* serve bottom-up innovation, is to propose reasonable rule-bound alternatives to UBI that overcome its theoretical shortcomings without reintroducing the faults of existing welfare schemes. Existing conditional and means-tested benefit schemes, even in the best case when they are run by benevolent and competent people, are incapable of offering a flexible and robust solution to the permanent uncertainty of modern life, either in the form of a "welfare cushion" or in the form an innovation "platform," since they rely on unrealistic technocratic assumptions about the capacity of welfare bureaucracies to collect data about the needs, skills, and desires of their citizens. This leads to the persistent failure of governments to provide flexible and adaptive governance that is sensitive to the diversity and complexity of their own "precarious" citizenry in an era characterized by rapid advances in technologies, habits, and values. (Standing, 2011, 2014) The same mismatch between the inflexibilities of top-down governance and the flexibilities of bottom-up evolutionary processes leads to the failure of many governments to abide by their constitutional and international human rights commitments to securing the dignity and basic economic security of their citizens. (Sepúlveda & Nyst, 2012; Sepúlveda, 2014; Lehto, 2023, forthcoming) The commitment to the discretionary method of ascertaining "need" and "dessert" (which is what all conditional benefit schemes involves) is wholly incongruous with the evolutionary liberal insight that "need" and "dessert" are, themselves, emergent properties of an Open Society. They need to be *discovered*. Unfortunately, most proposed alternative solutions lack the capacity to remedy these problems either. In the previous chapters, I have argued that many of the proposed alternative solutions, such as minimum wage laws, workfare schemes, participation income schemes, job guarantee programs, Universal Basic Service schemes, etc., have severe flaws from the point of view evolutionary governance, at least if conceived as *substitutes* (and not *complements*) to the right to basic income. Any robust alternative to UBI should avoid making the libertarian mistake of assuming that the wholesale abolition of the welfare states is in the cards for the foreseeable future, but also avoid falling back, as the default position, on existing welfare states and their well-known shortcomings.

At any rate, the foregone analysis makes it clear that evolutionary philosophers and political economists should not dismiss UBI out of hand. Discretionary and targeted welfare schemes that provide support to special categories of people, be it farmers or urban developers, young people or old people, sick people or healthy people, small businesses or big businesses, people who hold traditional values or people who hold non-traditional values, people who protect the environment or people who contribute to industrialization, etc., whatever their merits as *optional complements* to the PIUBI framework, are poor *substitutes* to a general and nondiscriminatory scheme that focuses on providing a minimum income floor and protecting individual rights. UBI has several features – including its compatibility with the Open Society and the rule of abstract and general laws – that make it appealing from the ecostructural point of view. Furthermore, even those critics of the welfare state whose long-term aim is to abolish the welfare state altogether (which is a possibility that I have not seriously entertained in this thesis) should entertain pragmatic midway solutions that have the potential to increase the freedom of poor people and constrain the welfare state under strict ecostructural rules. So, the ecostructural PIUBI scheme has some *prima facie* plausibility, but its assumptions and implications need to be interrogated with the full knowledge that UBI, like *any* set of ecostructural rules, will have plenty of unintended consequences and ambiguous effects on social flourishing and the adaptive efficiency of the society. There is no quick panacea. (Ostrom, Janssen, & Anderies, 2007) Small-scale, short-lived RCT experiments do not scale well to national institutions spanning several centuries. Indeed, many evolutionary effects will make themselves known only after many decades. The uncertainties involved in the implementation and maintenance of constitutional UBI schemes, compounded by the uncertainties involved in the unpredictable and disequilibrating nature of social evolution itself, ensure that no Archimedean point of "optimal" governance *has* been found, nor *can* be found. Policymakers need to abandon "the illusion of control." (Meadows, 2009, p. 169). Recent applications of complexity theory into evidence-based policymaking suggest that the experimental policy landscape is uncertain and complex. (Sanderson, 2009; Room, 2013, 2017) Even the PIUBI model is, therefore, at best, a kind of ideal institutional model around which policy makers can gather, like bees around honey, and around which robust institutional practices can be developed, tested, and evolved. As I have argued elsewhere (Lehto, 2021, p. 133), the

formal PIUBI model is only the beginning of the hard work that is required to apply the insights of the evolutionary model into real-world policy:

> "None of this suggests that the UBI system is the end of the road. Firstly, UBI is at best only a necessary but insufficient part of a more comprehensive [problem solving] framework that requires a broad commitment to the rule of law, private property rights, open markets, and respect for individual rights. Secondly, UBI will almost certainly have to be supplemented with other tax-and-transfer programs and emergency regulations whose desirability and appropriateness will have to be evaluated separately in each circumstance by appropriate authorities. Thirdly, the UBI system itself will have to be adapted to changing circumstances with the help of meta-rules that specify the scope and nature of its flexibility. Fourthly, even if UBI is accepted as the common basis for permanent [welfare state governance], scholars, politicians, and ordinary citizens will have to decide which *particular* UBI model, or quasi-UBI model, strikes the best compromise between various policy aims. Finally, the current climate may not be hospitable to a full-blown UBI. Governments seem eager to adopt *some* features of the UBI, such as its simplicity and minimal bureaucratic oversight, while rejecting other aspects of it, such as its "excessively" rigid reliance on rules, unconditionality, and generosity towards the poor. It may be a long while before people find the political will, and the moral discipline, to bind themselves to a set of rules that deprives them of the illusion that they have effective control over a complex system whose creative springs they are."

9.3. Implementing UBI Reform: Four Recommendations

Evolutionary liberalism, and the *permissionless innovation* model that it recommends, are unlikely to dominate the policy debate any time soon. It is therefore incumbent to think about *scalable*, *transferrable*, and *limitable* solutions that can help in the pragmatic application of the model in non-ideal, contested settings. This may allow policymakers and scientists to grapple with these issues with a more fine-grained approach.

There are obviously many reasons why policymakers may wish to be cautious in their application of the permissionless innovation framework or why they miss may wish to leave certain areas or domains of life or policy making outside of the application of the permissionless innovation system. In those cases, let me give three policy recommendations that stem from the traditional spirit of liberalism: *encouraging public debate, encouraging domain specific applicability, and encouraging piecemeal experimentation.*

The **1st recommendation** is to encourage *public debate* about the real costs and benefits of the permissionless innovation framework in various domains. This would entail looking at the easy-to-miss characteristics (and weighing the relative importance) of how innovation works in different domains of public policy. This also would entail coming up with ways of popularising the insights of complexity theory to the voting public and to the political class in order to facilitate a better-informed public debate. At the moment, despite some areas where the discussion has been ongoing for a while (such as science and technology), there is as of yet little well-informed public debate about the potential risks and benefits of long-term evolutionary development, or of the potential risks and benefits of facilitating decentralized social intelligence through the evolutionary method. Policy making is therefore often uninformed about some of the key challenges that it faces, and voters are uninformed about which policies best serve their interests (whatever their interests happen to be). Only after this knowledge gap is sufficiently bridged – assuming that it even *can* be – will there be a truly informed public debate that can properly weigh the comparative costs and benefits of applying the experimental method to solving different social problems.

The **2nd recommendation** is to encourage *domain specific applicability*. This entails exploring areas where evolutionary learning is either most lacking or underutilised or where evolutionary learning is liable to produce the most/biggest benefits. This might entail focusing first on those areas where the risks of decentralized methods are deemed to be the highest (or, what comes to the same thing, where the risks of centralised methods are deemed to be the lowest). This might simply entail isolating those areas or domains of policy where sufficient consensus or political will can be attained at this moment to reach a temporary decision in favour of the experimental method. Or it might entail focusing on those policy areas where existing problems are deemed pressing enough, and existing solutions unsatisfactory enough, so that permissionless innovation might be deemed worth

a try. For example, to give one hypothetical example, the electorate may come to think that poor people might benefit from improved access to more freedom in the choice of the education of their children, so that we may wish to the decentralise more decision-making to them in the realm of education. (This approach is similar to Milton Friedman's school voucher idea.) Alternatively, if people come to think that the future of young people should *not* be subjected to the whims of their parents, there are sufficient paternalistic grounds to assume that the government should make such choices, *and* there are sufficient institutional grounds to assume that the government is *capable* of making such choices, they may be persuaded that the PIUBI method is appropriate only for *adult* education (but not for children). In that case, the government could choose to provide basic income or voucher programs for adults to encourage free choice in educational and training opportunities, while forcing children to attend government-backed schools.

The **3rd recommendation**, which closely relates to the second one, is to encourage *piecemeal experimentation*. This might entail randomised control trials (RCTs), regional experiments, short lived trial periods, and, in line with the previous recommendation, domain specific, and policy specific, experimental programs. The UBI debate has a long history of piecemeal experimentation, arguably up to a fault. Several waves of randomised control trials on UBI have been conducted in many countries over a long period of time. Furthermore, beyond the pure UBI model (but sufficiently related to it to be scientifically relevant), several conditional and unconditional cash transfer programmes (CCTs and UCTs) have been tried and this trend may well be continued. From these experiments, social scientists have learned about both the context-specific and the universally generalizable impact of different types of cash transfer programmes on various social indicators such as educational attainment, health outcomes, capital accumulation, entrepreneurial activity, community engagement, family composition, etc. At the same time, these experiments have multiple inherent limitations and flaws. Randomised control trials are useful but limited tools whose results often do not replicate, transfer, or scale up. So, policymakers should look for alternative sources of piecemeal experimentation as well. This may entail, for example, implementing non-universal and conditional cash transfer and voucher programmes which are focused on achieving specific policy outcomes and empowering poor

people in various areas of life without committing the society to permissionless innovation in *all* areas of life.

Overall, I believe that the evidence shows that piecemeal experimentation in policy making has some inherent limitations, whether in the form of randomised control trials, voucher programmes, or other regional experiments. The final **4th recommendation** would therefore be to explore the possibility of *large-scale experimentation in whole countries and regions.* This would allow for comparative evaluation of outcomes between countries, and also for a comparative evaluation of outcomes in the same country across time. Large-scale experimentation would naturally be a more dangerous strategy, and the opposite of the strategy of "piecemeal social engineering" that liberals like Popper (1966) generally favour. Some people might even deny the label of "experiment" when applied to such large-scale policies, since they think that there is nothing experimental about a whole society moving "tectonically" towards a new policy equilibrium. But nation states are often the best available scale on which to experiment with ideas and institutions that are too big for regional politics and too small for global politics. The Bismarckian social insurance scheme, the New Deal, and the post war European reconstruction were all rather successful examples of wholescale large scale countrywide experimentation (at least in the eyes of some). Indeed, throughout modern history, the biggest social innovations have come about as a result of daring and bold a leadership in institutional innovation. As a result of such multitudinous experiments, countries have learned from each other, imitated each other, and drawn lessons from each other's successes and failures. Yes, communist regimes have used this strategy to spread their influence, but so have liberal democratic regimes. There is no reason why welfare state reforms could not spread this way.

Finally, let me summarise my four recommendations: 1) Encourage the dissemination of accurate information and informed public debate so that matters of complexity and evolutionary learning can be properly placed in the appropriate policy context and in relation to the other policy goals, social values, and normative commitments that people as voters hold. 2) Encourage the modelling of domain specific applicability of UBI, "quasi-UBI," and "UBI-lite" models as a second-best alternative to the wholesale commitment to the PIUBI model. This kind of pragmatic approach can be used to encourage thinking about ways of targeting for example basic income transfers to specific groups of people, specific

industries, specific regions, and other specific purposes, wherever a truly universal and unconditional UBI model is hard to fathom, recommend, or implement. 3) Encourage piecemeal experimentation and tinkering with the use of existing policy tools (such as RCTs) and encourage the development of new experimental tools with better metrics. Policymakers need experimentalism that is not afraid to think outside the box. 4) And finally, recommend wholesale and large-scale experimentation on the level of whole countries, regions, or political federations. Such large-scale experiments, although dangerous and hard to reverse, are needed in order to measure effects that only occur upon a sufficiently large experimental scale and a sufficiently extended time horizon. And societies need better measurements of the large-scale, long-term, and holistic effects of various UBI models, since no country has yet implemented a UBI model. In the absence of robust experimental benchmarks, there are outstanding worries with the stability of implementation, vacillating public support, and potential rent seeking problems. (Berggren, 2000; De Wispelaere & Stirton, 2004; Birnbaum & De Wispelaere, 2011; De Wispelaere, 2015, 2016; Boettke & Martin, 2012; Chrisp, Pulkka, & Garcia, 2020) To focus only on one example, the current interest in "Emergency Basic Income" (EBI) (see, e.g., Government of Canada, 2021) is, at best, a double-edged sword. While it can motivate nationwide experiments with diverse cash transfer programs (Gentilini, Almenfi, & Dale, 2020), it can also undermine the long-term institutional (and constitutional) commitment to permanent programs, and to other aspects of rule of law governance, in "normal" times. (De Wispelaere & Morales, 2020; Lehto, 2021a) Ideally, the complexity approach recommends deep structural reforms, on the level of the basic legal structure of the society, in non-crisis times. More generally, institutional sustainability requires paying close attention to the "architecture of basic income." (Fleischer & Hemel, 2020) The data from nationwide experiments could be used to explore the role that path dependency plays in determining socioeconomic outcomes, to showcase what leadership is capable of, and to provide hope that countries can make a break with history. They could also provide credible and sustainable models of welfare state governance that other countries, and future historians, can learn from, study, imitate, and replicate – or have a good look at and reject.

These recommendations, therefore, serve a double purpose: 1) Provide social scientists and philosophers ways of thinking about the applicability of ideal models in the context of the

pragmatic reality of messy and contested policy making; 2) Provide voters and policy entrepreneurs ways of contextualizing and applying the academic discourse in a way that takes seriously the pragmatic demands of the policymaking process: in particular, the demands of *scalability*, *domain specific applicability*, and *transferability*.

9.4. A Fallibilistic Approach to Governance under Radical Uncertainty

The rules of UBI cannot be implemented overnight. As Claus Offe (2009, p. 75) has put it:

> "Any approximation to the normative ideal of a tax-financed, unconditional, citizenship-based, and subsistence level basic income is highly unlikely to come as a 'big bang' (as some of the less realistic enthusiasts of basic income sometimes imply), but in a gradualist manner that extrapolates currently observable trends towards numerous legislative alterations and supplements of incomes earned in labor markets."

Indeed, even if UBI *could* be implemented overnight, it is not obvious whether it *should* be done. The creation and maintenance of an "ecostructure conducive to allow people the institutional space to self-organize" (Colander & Kupers, 2014, p. 276) requires a lot of learning-by-doing and trial-and-error on the level of the institutions and the institutional actors. It is not enough to device an ideal model if such a model cannot be implemented in practice. Innovation-fostering institutional rules are path-dependent and subject to adaptive revision. Some rules are better in the sense that they have structural features which make them liable to produce (quasi-)permanent innovation. However, there is no guarantee that any framework of permanent innovation will be truly permanent. Some innovation researchers have argued that "it is probably impossible to find an institutional system, that would permanently guarantee an innovative economy. Institutions which stimulate innovations in one period may retard them in a later one." (Johnson, in Lundvall et al., 2010, p. 43)

Since unguided evolution lacks direction, ecostructural governance is necessary. However, exercising conscious control over the evolutionary process, if taken too literally, goes against the central insights of complexity theory that governance should be guided by epistemic and technocratic humility. For this reason, the goals pursued through evolutionary methods have to carefully articulated and allowed to evolve. Even clearly defined and achievable social goals (such as "increased life expectancy") may be hard to pursue through direct ecostructural means. Where is the Archimedean point of governance? Even if the government abstains from intervening in concrete cases, there is a high risk that it will fail in the setting, tweaking, and monitoring of the abstract rules of the game. This can manifest itself as unintended consequences, systematic disruptions, uncontrollable variables, emergent novelties, and other unpredictable phenomena which lead to disappointed expectations. As Colander & Kupers (2014, p. 25) note: "The problem with an ecostructure metapolicy is that as the system evolves, the ecostructure requires changing. Doing so is not easy, and requires enormous moral strength in government to ensure that the long-run general benefit of society, not the short-run specific benefit of one group or another, guides the change." Designing a fitness function that is minimally disruptive of the free operation of markets and civil society *and* net beneficial in its expected social effects, requires a level of competence and fortitude that may be hard, if not impossible, to achieve.

Another reason to be sceptical of the goal of implementing UBI as one "ideal" policy is that our current social norms and goals are rooted in the past and clouded in uncertainty. After all, even our *goals* may be maladaptive, outdated, or simply misguided. Therefore, we should be sceptical about our ability to consciously design a good fitness function that is adaptive in the long run. Even *if* we could guide evolution into intended directions (which is not likely), we should be careful what we wish for, since there is a high chance that climbing a local peak will have prevented us from exploring *even higher* peaks. After all, "[e]volutionary thinking complicates policy evaluation as it shows that norms and values themselves are evolving." (van den Bergh & Kallis, 2013, p. 299) This can be expressed in the problem of the "dancing landscape" where the fitness conditions are constantly changing under our feet. (2011, pp. 93-94) Donella Meadows (2009, p. 165) expresses the challenge of governing a dancing landscape with humility and adaptability in striking terms:

"Magical leverage points are not easily accessible, even if we know where they are and which direction to push on them. There are no cheap tickets to mastery. You have to work hard at it, whether that means rigorously analyzing a system or rigorously casting off your own paradigms and throwing yourself into the humility of not-knowing. In the end, it seems that mastery has less to do with pushing leverage points than it does with strategically, profoundly, madly, letting go and dancing with the system."

Recognizing the fact that our values are evolving and changing easily leads to normative paralysis: "The insight that subjectively held norms and values are the result of earlier learning usually leads to a strong norm-relativism." (Witt, 2003, p. 92) Such relativism makes it more difficult to embrace or recommend strong normative commitments. At the very least, one must recognize the context-sensitivity, cultural situatedness, fallibility, and mutability of all normative commitments. For this reason, as Colander & Kupers (2014, p. 239) emphasize, "[t]he goal in the complexity frame is not to foster any specific ecostructure, but to let the ecostructure emerge, adapt, and evolve, and that includes changing government itself." For their recognition of norm-evolvability, the evolutionary liberal cultural theories of Hume (Hume, 1777; Whelan, 1980), Spencer (1851, 1896), Sumner (1992), and Hayek (1982) can be charged with relativism, with some truth and accuracy.

Of all the evolutionary liberals and neo-Hayekians, Gerald Gaus has developed perhaps the most far reaching and consistently relativistic moral theory which he calls the "New Diversity Theory" (Gaus, 2018a, p. 677), according to which "the social contract cannot identify the best rules of justice; and even if it could identify a common vision of the just society, it cannot identify the institutional scheme that would secure it." So, Gaus argues, it is impossible for the social contract (or the ecostructure) to identify the *optimal targets* for social policy (the maximand of the *fitness function*), let alone to identify the *best institutional scheme* (ecostructural rules) to secure them. If this is so, it becomes exceedingly hard to know what, if anything, should be done. This recommends subjecting values themselves to experimental learning. In the most polycentric version of "bottom-up policy, the social goal emerges from the process. People are free to choose both their individual and collective goals, and are also free to choose how to achieve those goals."

(Colander & Kupers, 2014, p. 42) The problem with Gaus's extreme form of scepticism, as with Colander & Kupers's endogenous norm-evolution, is that it becomes hard to motivate oneself to act to change the system if our knowledge of the world is so very limited. One might even be tempted to embrace some form of institutional relativism.

One potential way to resolve this deadlock is to understand that *changing the rules of the ecostructure* should not be interpreted as an attempt at *controlling the society*, since "[w]ithin a complex evolving system, control is impossible—the best one can hope for is influence. Simply acknowledging that control of an interconnected society is not possible is a major step." (Colander & Kupers, 2014, p. 26) There is therefore a weak "impossibility theorem" attached to the cybernetic governance of a complex adaptive system, which precludes political entrepreneurs – even Hayekian ones – from having confidence in their schemes. This lends itself to a cynical interpretation of the social order as a nihilistic playground for chaotic, self-replicating ideologies, memes, and "simulacra." Such a view resembles the nihilistic end of postmodernism. (Baudrillard, 1993, 1995) But this conclusion is not warranted by complexity theory. The appropriately sceptical attitude does not preclude – and indeed sometimes requires – a willingness to engage in humble, careful, adaptive, and piecemeal reforms of the ecostructure. Some prudent combination of Popperian "piecemeal engineering" (on the level of public policy) and Hayekian ecostructural "mechanism design" (on the level of constitutional rules) provides a (partial) exit out of the potentially relativistic quagmire. Prudent rule-reformism should be pursued, not because it is *easy*, but because it is *necessary*. After all, human beings are parts of the complex system, and they must play their part(s) in it. This includes playing the occasional part of pursuing endogenous system-change through political and legal reforms, even with all the risks and uncertainties that such engagement entails: "The essential difference between self-organization in social systems, as compared to natural systems, is that actors in the social system can consciously influence the rules. In essence, that is what policy is—an attempt to tweak the evolutionary process." (Colander & Kupers, 2014, p. 59) This way, we can play our modest part in the "game of life."

9.5. A Coda

I would like to finish off with a brief reflection on the moral dimension of the PIUBI framework. Since the discourse in evolutionary economics is often focused on material goods and services, business strategies, technological innovations, and the like, it is too easy to forget about the cultural, moral, and even "spiritual" dimension of evolution. And yet it is precisely in the intangible opportunities for cultural, moral, and spiritual progress that socioeconomic evolution provides that it might have its strongest justification. Perhaps no other innovation will serve humankind more than the chance of discovering new ideas and habits on how to live a good life – except the ability to pass that knowledge on to future generations. Exploring the possibility space of ideas, habits, and values in search of such illusive ideas may yet be the most important task of polycentric social intelligence.

Perhaps humankind is best served by offering our species ways of recognizing, and outgrowing, its maladaptive traits, whether material, technological, moral, or spiritual. Initiating the poor and the disadvantaged as full-fledged members of the "Society of Explorers" – the privileged club to which none of us signed for but all of us belong – is a great service, not only to them, but also the rest of the society. It entails embracing the polymorphous dance of evolutionary forms that comes with the evolving territory. Paraphrasing Donella Meadows, Scott Page, and the other complexity theorists, the only way to survive *on* the dancing evolutionary landscape is to dance *with* it.

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