Was Günter Grass's Rat Right? Should Terrestrial Life Welcome the End of Humans?

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> Free from humans at last, the earth provides space. Again there will be plenty of fish in the sea. On the hills behind the city there will be dense forests. Birds will make use of the sky. New, undreamed-of animals will appear, among them mammalian bluebottles. (Grass, 1987: p. 357)

1. Are Humans Necessary?

The Russian/American engineer and writer, Dmitry Orlov in *Everything is Going According to Plan*, posed the question "Are Humans Even Necessary?" His answer:

> What a terrible question to even ask! Of course we are necessary! It is the function of the universe to serve our needs and wants… isn't it? Isn't that the point of everything—to provide for our well-being and security? Well, that's one way to look at it, and it is based on a certain assumption: that humans are in control. But a case can be made that we humans have been steadily relinquishing control—to machines—for a couple of centuries now, and by now the vast majority of us is unable to comprehend, never mind control, the machines, in all of their awesome complexity, on which our well-being and even our survival depends. A few highly placed specialists can still get at the levers that control some of the machines, but their function has been reduced to serving the ends of the machines themselves, not human needs. If these specialists were to decide that these machines are harmful and tried to shut them down, they would simply be fired. The assumption that humans are in control is starting to seem outlandish. (Orlov, 2017a: p. 205)

Orlov was writing about USA, where driverless cars are replacing those that require humans to steer them and where machines are displacing humans in work. All repetitive work in factories, currently outsourced to developing countries where workers often work 12 hours a day, 6 days a week, for a pittance, will in future be performed by robots. Almost all production will be automated. Even administrative functions are being automated. Highly educated people, including most lawyers, will be rendered redundant by more advanced software programs and computers. Orlov observed that already

> over 100 million able-bodied working-age adults in the US— close to a third of the population—are currently not working. A tiny percentage of this number is made up of the idle rich; the vast majority are the idle poor. (Orlov, 2017a: p.208)

USA is the country that has come closer than any other country in history to controlling the entire world, and it appears that in USA people are no longer in control and are being rendered redundant by machines.

The potential of Artificial Intelligence (AI) appears unlimited. With evolutionary computation, software programs are produced by providing the conditions for variation and then selection of those that best serve their purpose. Evolutionary computation generated evolutionary algorithms for performing such functions. These in turn led to the development of genetic algorithms which generate new outputs based on the data on which they have been trained. Unlike traditional AI systems that are designed to recognize patterns and make predictions, these can deploy a type of deep learning called generative adversarial networks (GANs) consisting of two neural networks: a generator that creates new data and a discriminator that evaluates the data to create new content. The generator and discriminator work together, with the generator improving its outputs based on the feedback it receives from the discriminator until it generates new content that is indistinguishable from real data, for instance, after scanning a number of faces, it can produce a realistic but entirely fictitious face. With such abilities, not only can most of the tasks performed by humans be performed by machines, including difficult intellectual work, but new possibilities can be explored. With AI able to produce programs that can predict what will happen next, it would appear that even scientists can be replaced by intelligent machines.

The consequences of this are predictable and some were predicted by the founder of cybernetics, Norbert Wiener. As he wrote in *The Human Use of Human Beings, Cybernetics and Society*:

> Let us remember that the automatic machine, whatever we think of any feelings it may have or may not have, is the precise economic equivalent of slave labor. Any labor which competes with slave labor must accept the economic conditions of slave labor. It is perfectly clear that this will produce an unemployment situation, in comparison with which the present recession and even the depression of the thirties will seem a pleasant joke. (Wiener, 1954: p.162)

The Great Depression was followed by a world war. A new world war utilizing AI-guided weapons with AI making decisions on when to fire them, including nuclear weapons, could make World War II also look like a pleasant joke.

With the highest skills and intellectual abilities of people being rendered redundant (apart from those required to use smart phones), education is being transformed. Universities are being transformed into transnational business corporations, redefining students as customers. With the exception of disciplines associated with technoscience or medicine, disciplines that in the past made demands

on students are being replaced by studies that are essentially entertainment. With the development of the internet, lectures can be and are being recorded so they can be replayed year after year. While in the past students outsourced essay writing, writing essays can be now produced by computer programs, most recently, ChatGPT, on virtually any topic. Computer programs can also be used to grade students. This means that there is no longer any need for anything but a skeleton staff of academics. These developments produce graduates, rendered passive by virtue of huge debt levels, suitable for a McDonaldized economy, where workers perform repetitive tasks with minimal intellectual input (Ritzer, 2000), or join the idle poor. McDonaldization facilitates the replacement of even these McDonaldized humans by robots, even in service industries, which will further swell the ranks of the idle poor.

At the same time automation has engendered increasing productive potential, generating a problem of what to do with that is being produced and what to do with the wastes (including greenhouse gases) generated by production. There is a need for consumers to buy what is produced. With real work being taken over by AI, this has generated a vastly expanded leisure class as characterized by Thorstein Veblen (Veblen, 1948), although most of these are what Orlov characterizes as the "idle poor." A great many of those who work are doing what David Graeber characterized as "bullshit jobs" (Graeber, 2018), while others have been retired or put on disability pensions where their main function is to consume. Since people are either no longer in employment, or fulfilment in work has been largely eliminated because work is now de-professionalized, rendered insecure, and highly stressful, and most work is actually in bullshit jobs anyway, people now define themselves and their significance through conspicuous consumption. This is the case even with most of the idle poor in affluent countries. They consume goods produced in other continents in ecologically inefficient industries that have to be transported great distances. As Hegel pointed out, the quest for recognition of one's significance through consumption can never be satisfactory because it is based on people defining themselves as superior to others who are also trying to define themselves as superior, and so consumption expands without limits (Hegel, 1820/1952: §253, pp.153-154). This generates huge amounts of waste.

A great many bullshit jobs are in management, advertising, and public relations where they do serve a minor function. Managers eliminate economic security and drive down the wages of those who are still doing genuinely productive work, and destroy any organized opposition to the managers who are doing everything they can to replace humans with machines. Their aim is to reduce labour costs, and they do this by rendering workers insecure and disoriented through incessant restructurings and downsizing, or outsourcing work to developing countries where wages are much lower. The advertising industry focuses on celebrating ways of living based on high levels of consumption and making people dissatisfied with what they currently have, encouraging the affluent to strive to redistribute even more income to themselves, and

for the poor to become more indebted to survive. Public relations is important not only for manufacturing consent, but more commonly nowadays, manufacturing disorientation, rendering the population docile and easy to manipulate. University managers play a major role here by eliminating those trans-disciplines that could enable the young to gain perspective and understand what is going on, such as philosophy, history and geography, where these still uphold their original ambitions, or by preventing more recent trans-disciplines, such as human ecology, from being established, while producing such an explosion of ultra-specialized, fragmented and shoddy research publications that whatever good work is being produced is drowned out.

There is still work essential to the existing order performed by humans in USA. Not all software development can be outsourced to India. At present not all manufacturing can be done in developing countries or by machines, particularly when it comes to the production of weapons. But more importantly, in the face of huge inequalities and injustices of all kinds and consequently, growing levels of discontent it is necessary to maintain this order, both nationally and internationally. It is necessary to maintain internal security. Such work now greatly augmented by the development of surveillance technology, but even this technology cannot be fully automated. More importantly, the military-industrial complex is required to maintain a world order to maintain access to cheap labour and cheap resources, particularly oil and gas, and to keep those populations located where labour is cheap, and more importantly, where there are resources to be had, under control or distracted by fighting each other. The importance of resources from outside USA increases as USA's own resources are depleted, with oil being the most obvious example. This military-industrial complex has now been expanded. Ray McGovern, who worked for the CIA for twenty-seven years, refers to the Military-Industrial-Counter-Intelligence-Media-Academia-Think Tank complex (or MICIMATT). This is important for effecting regime change or destroying governments of developing or resource rich countries in which rulers might strive to gain better returns for their exports or try to channel income and wealth to their own people. This would undermine the profitability of transnational corporations on which the functioning of the current structure of the world-economy depends. Despite the high-tech nature of modern weapons, this system also employs a great many people around the world in more than 850 foreign based US military bases and many more in USA, and also in armaments industries. Such people are important for their political commitment to maintaining this world order as well as for the work.

The problem with all this is that it involves exponential increases in the use of natural resources, increase in wastes and destruction of ecosystems, including the global ecosystem. As Michael Marder in *Dump Philosophy: A Phenomenology of Devastation*, argued, humanity is transforming the world into a dump. As he put it:

> Every day, scientific studies, media reports, and visceral experiences of the rapidly deteriorating state of the environment hit us with a growing and disconcerting force. In drinking water, microplastics abound, and, by 2050, the total mass of synthetic, human-made materials in the oceans is predicted to surpass that of fish biomass. Megalopolises on different continents languish under a stew of airborne toxins during the intensifying and protracted periods of extreme smog. Forest fires consume large swathes of wooded land, due to a combination of rising global temperatures, droughts, monoculture plantations, and meagre investments into (as well as the unwillingness to rely on local knowledges for) fire prevention. Topsoil degradation, threatening the health and fertility of the earth, entails acidification, sharp increases in salinity, and toxicity, coupled with diminishing nutrient capacity and oxygen availability to plant roots. (Marder, 2020: p. x)

Human generated pollutants, including CO_2 emissions, are bringing about a mass extinction event. Even writing and the production of knowledge has become a dump, were "the flood of information submerges perception and cognition alike" (p. xii). It is clear from aggregate figures, for instance, CO_2 emissions, that efforts to deal with this globally are tokenistic, with more than half of CO_2 emissions produced by humanity having been produced over the last thirty years (Wallace-Wells, 2019: p. 4). And emissions continue to rise every year. This is not only a threat to the current regime of the global ecosystem and to the future of humanity, or at least, of civilization, but could be a threat to the future of the technosphere and the artificial intelligence that now largely controls humanity.

If machines are now in control, perhaps aligned with finance capitalists who now control most of the world's wealth, what is their likely response to this situation? What should be done about the people who not only are no longer in control, but have no function to play in the economy apart from being consumers whose lifestyles have to be protected by a globalized MICIMATT? The problem is that these people still consume and pollute, and make enormous demands on resources and ecosystems. Having unproductive consumers exhausting resources, dumping their refuse and polluting the world, destroying whole ecosystems in the process, will come to be regarded by machines themselves as inefficient. As Orlov suggested,

> Perhaps the situation where the machines serve human needs is a transient one? Perhaps humans are just a legacy cost, to be eliminated in the next round of cost-cutting? (Orlov, 2017a: p.206)

This elimination could be achieved by engineering wars to control increasingly scarce resources.

2. The Roots of the Current Devaluation of Humans

Given the prevailing assumptions of modernity, Orlov's argument is impeccable. If what defines the superiority and value of humans is their control of the world, then if a superior intelligence emerges and takes control, reducing humans to passive recipients of the systems of which they are part, then these controlling intelligent machines are not only superior to humans, but human significance is reduced to whether they serve the ends of these superior beings. Furthermore, these superior beings might be better placed than humans to conserve resources and avoid ecological destruction to ensure their long-term future, and they might conclude that the best way to achieve this could be to eradicate all, or at least, the vast majority, of humans. Orlov's characterization of the current situation and where it is leading is logically perfectly coherent.

More and more academics are providing support for this conclusion, particularly those in the humanities. For instance, the post-humanists argue that it is elitist to claim that human intelligence is fundamentally different from artificial intelligence. Ray Kurzweil argues that there will be a singularity, a point at which artificial intelligence becomes superior to human intelligence. At this point, computers will be superior beings to humans. Even if such people do not argue that artificial intelligence should replace humans, or the vast majority of them, reducing the rest to their instruments, they do not provide any basis for opposing such a development or denying that this could be seen as progress. The real problem is that the assumptions dominating modernity make it difficult to challenge this conclusion. Orlov's book, which includes the chapter "Are Humans Even Necessary?" is titled *Everything is Going According to Plan*. He does not identify the source of this plan, but this is the plan that was put in place in the Seventeenth Century scientific revolution, with its characterization of nature as devoid of significance in itself, but able to be controlled and transformed to serve the purposes of those who control it.

Despite the work of various historians, philosophers of science, and critical social theorists, the full significance of this revolution is not generally appreciated. This revolution put in place a conception of the world that was later institutionalised and embodied in the concepts that mediated not only people's relation to nature but also their relations to each other and to their communities. The Frankfurt School social theorists Max Horkheimer and Theodor Adorno, in their book *Dialectic of Enlightenment,* took Francis Bacon's utopia in which "we should command nature in action," as the starting point for this revolution. Knowledge, in which, "the sovereignty of man" unquestionably lay hidden, was identified with power to control nature (Horkheimer and Adorno, 1947/2002: pp. 33-34). Nature was seen as devoid of significance apart from this control. As Horkheimer and Adorno argued, "[o]n their way toward modern science human beings have discarded meaning" (Horkheimer

and Adorno, 1947/2002: p.3). This, they argued, led to the triumph of instrumental rationality as the sole basis for making evaluative judgements, not only in developing control over nature but in every facet of life, including the relations between people. This was true of Nazi Germany and the Soviet Union, as well as USA. The consequences have enslaved rather than liberated humanity. As they argued:

> Enlightenment, understood in the widest sense as the advance of thought, has always aimed at liberating human beings from fear and installing them as masters. Yet the wholly enlightened earth is radiant with triumphant calamity. Enlightenment's program was the disenchantment of the world. It wanted to dispel myths, to overthrow fantasy with knowledge. Bacon, "the father of experimental philosophy," brought these motifs together. … [I]inventions as had been made—Bacon cites printing, artillery, and the compass—had been arrived at more by chance than by systematic enquiry into nature. Knowledge obtained through such enquiry would not only be exempt from the influence of wealth and power but would establish man as the master of nature. … What human beings seek to learn from nature is how to use it to dominate wholly both it and human beings. … Power and knowledge are synonymous. (Horkheimer and Adorno, 1947/2002: p.1)

Horkheimer, in *Eclipse of Reason*, showed how the development of such thinking has undermined all notions of objective reason, central to the thinking of the great philosophers of the past (and later to Idealists), through which ideals and critical perspectives on all this could be upheld (Horkheimer, 1974). From the perspective of subjective reason, it is no more rational to choose justice over injustice than it is to choose chocolate over ice-cream. In *One Dimensional Man*, Herbert Marcuse, summing up and developing the work of the Frankfurt School, including their critique of positivist social science and ordinary language Analytic philosophy, argued that we have now eliminated almost all possibility of achieving a critical perspective on this social order (Marcuse, 1964). There is no place left to argue against the trajectory of modern civilization.

However, the work of these theorists captured onlu an aspect of what was understood in the Seventeenth Century as the New Philosophy of the scientific revolution, and how the ways of thinking it developed came to dominate the world. They uncritically accepted the logical positivists' characterization of science, which virtually identified science with knowledge of how to predict and thereby control events and processes. The problem with this is that it does not provide any direction for challenging and replacing this way of thinking (despite Habermas's efforts). A fuller picture has been provided by, among others, Stephen Toulmin in his book *Cosmopolis: The Hidden Agenda of Modernity* (Toulmin, 1994).

Toulmin focussed on René Descartes (1596-1650), describing the intolerant intellectual environment in which he was working following the rise of Protestantism, how initially he was educated in the Renaissance tradition of the humanities, the form

of education begun by Petrarch as part of civic humanism of the Florentine Renaissance designed to inspire people and educate them to be able to govern themselves, and how he lost faith in the ability of the forms of thinking cultivated by the humanities to resolve conflicts, marked by the assassination of King Henri IV of France (Henry of Navarre). It was in reaction to the conflicts of the time, which included the Thirty Years War, largely between Protestants and Catholics which reduced the population of Germany by a third, and the failure of Renaissance thinking to avoid these conflicts, that he set about elaborating both a method of philosophizing and a new cosmology. Descartes presented this as a new conception of the world gained through a method based on mathematics, particularly analytic geometry which he had played a major role in developing, involving systematic doubt and only accepting as true propositions that could be grasped clearly and distinctly. With this method, traditions of thought from the past could be ignored. In his natural philosophy he was influenced by a number of other philosophers, including his lifelong friend, Marin Mersenne (1588-1648), who was attempting to revive atomism to oppose the Nature Enthusiasm of Renaissance natural philosopher, Giordano Bruno. Mersenne characterized Bruno as

> one of the wickedest men whom the earth has ever supported … who seems to have invented a new manner of philosophizing only in order to make underhand attacks on the Christian religion. (Mersenne, 1624/1974: p. 317).

This only touches on the complexity of what was involved, however, for as Toulmin put it,

> Descartes persuaded his fellow philosophers to renounce fields of study like ethnography, history, or poetry, which are rich in content and context, and to concentrate exclusively on abstract, decontextualized fields like geometry, dynamics, and epistemology. (Toulmin, 1994: p.x)

In *Discourse on Method*, Descartes claimed that in place of the speculative philosophy of the Schoolmen, his physics could provide a practical philosophy which would "make ourselves, as it were, the lords and masters of nature" (Descartes, 1985: pp.142-143). However, it was just as much directed against Bruno's Nature Enthusiasm as the philosophy of the Schoolmen. And Toulmin argued that Descartes was just as much concerned to make rulers of society lords and masters of people as well as lords and masters of nature.

Descartes portrayed nature as devoid of purpose, merely matter in motion, but argued that humans as thinking substances stand beyond the physical world and are able to understand and control it. Animals were characterized as automata, complex machines without feelings that could also be used for human purposes. Thomas Hobbes, an older contemporary of Descartes with whom he corresponded, also had

been educated in the humanities, but faced with the turmoil that led to the first English Revolution, attempted to develop a philosophy through which a stable social order could be achieved. Opposing Aristotle's natural philosophy with its explanations in terms of the four causes—material, formal, final and efficient—Hobbes argued for a "resolutive-compositive" approach, arguing that explanations are achieved by resolving bodies into their constituents and showing how these constituents could be put together to produce the behaviour of composed bodies, as one might explain a clock. Building on Galileo's notion of the conservation of motion, he argued that humans themselves are just complex machines, moved by appetites and aversions, which are really the effects of internal motions generated by external motions impacting on the body. He argued that sensations and thought are also generated by external motions producing internal motions. Reasoning was characterized by him in these terms, and seen as reducing to the manipulation of words, by adding and subtracting from what has been observed, in order to establish general rules or theorems and thereby proceeding from one consequence to another, conveying such reasoning through language to others (Hobbes, 1651/1981: p.p.112-113). This provided the basis for his political philosophy based on the idea that individuals, driven by their appetites and aversions, enter a contract with rulers to obey the covenants of society, providing that their right to life is recognized. In so doing, they then avoid a war of all against all in which life is solitary, poor, nasty, brutish and short. This philosophy was designed to oppose the neo-Roman Republicanism and Aristotelian political philosophy revived by Renaissance philosophers, as well as opposing feudalism.

The philosophies of Descartes and Hobbes should be understood as the counter-Renaissance, rejecting the ideals revived from Republican Rome and Ancient Athens that the Florentine Renaissance thinkers had sought to revive. The republicans argued for liberty, defined in opposition to slavery whereby people are subject to the will of others on whom they are dependent. Aristotle argued that proper constitutions, whether ruled by a monarchy, an aristocracy or the many, uphold the common good, creating the conditions for people to realize their potential to live the best form of life. Rejecting these doctrines, embracing nominalism, and attempting to transform language to make these ideals unintelligible, Hobbes argued that the components of society are individuals moved by appetites and aversions, and the only real motivation for their actions is to satisfy these appetites and avoid that to which they are averse, most importantly, death (Skinner, 2008). Rulers always rule in their own interests, and Hobbes claimed to show how they could best achieve this by recognizing an original contract in forming the social body to preserve life, recognizing the right to life, and rewarding and punishing subjects to compel them to obey the covenants of society. These covenants decreed by the ruler determine what is just and unjust; there is no natural law to which they must conform in order to be genuine laws. From the perspective of Renaissance thought, Hobbes was defending rule by an enlightened tyrant acting not for the common good but for his own interests,

enslaving his subjects, but in order to prevent rebellion, acknowledging their right to life and upholding to some extent their interests.

Cartesian dualism along with Hobbes's more consistently mechanistic view of the world are clearly opposed to each other to some degree, but they have been reconciled in practice with people oscillating between accepting that they themselves and those with power are thinking substances, while those they dominate are merely machines to be controlled. This has provided support for a social order increasingly dominated by commerce, with Venice rather than Florence being taken by Hobbes as the model to be emulated. This was not just a development of instrumental rationality. It was a world-orientation which developed and gave a major place to instrumental reason, as part of an agenda to achieve total control of nature and people in place of democratic republicanism, and was intimately connected to the rise of commerce and then with imperialism. As Val Dusek wrote:

> With the rise of economic individualism in early modern Europe, one finds a massive revival of atomistic philosophies. Descartes, Gassendi, and Boyle revived scientific atomism. Thomas Hobbes developed an atomistic materialism as well as a most ruthlessly selfish individualist philosophy of human nature. (Dusek, 1999: p. 190)

Isaac Newton and John Locke, with modifications, contributed to advancing this agenda. Most figures in this intellectual revolution were associated with the advance of imperialism, as Dusek pointed out, noting that "John Locke received much of his income from the slave trade, through involvement with the Royal Africa Company" (Dusek, 1999, p.191). Newton argued that matter is governed by immutable laws, so that the state of the universe at any time determines all future states of the universe, and in principle, these future states could be predicted. Using society governed by laws as a metaphor for nature then legitimated the social order with laws governing atomic individuals.

This inconsistent combination of Cartesian dualism and Hobbesian wholly mechanistic materialism has dominated modernity, although often in disguised form. Cartesian physics was largely replaced by Newtonian physics, upholding atomism but rejecting the idea that animals are nothing but machines without subjective experience. Hobbes's contractarian notion of rights was extended by John Locke to include rights to property based on what we have mixed our labour with, and his defence of enlightened tyranny was replaced by defence of enlightened oligarchy. And he argued for religious tolerance. Locke was concerned to defend the rising commercial classes not only against proponents of republican democracy but also against monarchy and the feudal aristocracy. Newton's natural philosophy, in supporting the "Latitudinarians," by portraying nature as "brute and stupid," was designed to support this political orientation—that people should accept life in this world has no value and live for the afterlife (Jacob, 1976). Newtonian cosmology and

Locke's social and political philosophy provided the core inspiration for what Jonathan Israel called the "Moderate Enlightenment," which dominated the Eighteenth Century. It promoted a society based on what C.B. MacPherson called 'possessive individualism' (MacPherson, 1962).

3. Industrial Capitalism, Finance Capitalism, and Cultural Dynamics

The commercial social order that developed on the basis of this philosophy provided the conditions for the industrialization of the economy, using first water mills and then coal driven steam engines. This was associated with the development of classical economic theory, assuming the right to property based on labour and focussed on markets, in place of Renaissance economics which had focussed on the cultivation of the arts and the development of people (Reinert, 2004). The major figures in the development of classical economics, beginning with Adam Smith, modelled their economic theory on Newtonian physics and assumed a conception of humans as simultaneously free subjects competing with each other for wealth through organizing people and controlling nature, and also Hobbesian mechanisms moved by appetites and aversions to be efficiently controlled to drive the economic machine. This theory extended the notion of commodity, which originally meant a convenient product of work, to labour itself, and then to the wealth required to buy the means of production, including land. Such commodification, legitimated by economic theory, led to industrialization, finding and using new technologies to reduce labour costs, which was defended by economists as progress achieved through competition in which the best survive and prevail, and the inefficient are eliminated. Commodification of land and then industrialization were associated with the formation of the working class, people who had lost access and control of the means of production and forced to work for those who owned the means of production, in order to survive. In Britain in the late 18th and early 19th centuries, such people lived in utter poverty with a life expectancy of working class people in Britain 1800 being 18. The development of commerce and then industrialization led to a new form of imperialism characterized by destruction or impoverishment of people colonized by Europeans.

These developments were characterized by Karl Polanyi as disembedding the market and then forcing people to conform to the logic of the market, with land, labour, and money treated as though they were commodities, along with what is produced, the real commodities (Polanyi, 1957). The logic of maximising profits under these circumstances, which involves constant efforts to reduce costs, inevitably blinds business enterprises and governments aligned with them or who are under their control to the natural and social conditions of the economic system, and the destructive effects of their economic activity on these conditions. Markets developed in many societies, but they were always embedded in communities. The consequence of this disembedding were recognized by Sismondi in *New Principles of Political*

Economy, originally published in 1819, as an entirely new social form which stimulated the development of technology as never before, but did so in a way that was beyond the control of its participants (Sismondi, 1991). This socio-economic form, driven by the quest for profit, had a logic of its own, and unless somehow brought under control, would continue to grow, and in the process, would become more and more oppressive and destructive. Karl Marx, strongly influenced by Sismondi, summed up the logic of this with his examination of the fetish of commodities, and noted that both the working class and the bourgeoisie, the owners of the means of production, were enslaved to this logic, albeit in different ways. The logic of the market advanced by extending commodification both intensively, commodifying more and more facets of life, and extensively, extending the commodity form around the globe. This involved reproducing the relations of production and the categories, defining them as forms of existence or forms of being. As I argued in *Nihilism Incorporated: European Civilization and Environmental Destruction*, in the terminology of the French sociologist, Pierre Bourdieu, these categories came to be embodied as people's *habituses*, their disposition to construe their every situation through these interpretative schemes (Gare, 1993). In this way, the concepts developed in the scientific revolution, already influenced by commercial society, were continuously reproduced and further developed, even in areas apparently independent of the market, such as science.

The development of economic theory along with the associated social transformations and modes of existence, in turn provided the means and impetus to reformulate the mechanistic view of nature as evolving through competition, with the fittest surviving and the less fit being eliminated. This was Charles Darwin's theory of evolution. As Karl Marx observed in relation to this in a letter to Engels in 1862,

> It is remarkable how Darwin recognizes among the beasts and plants his English society with its division of labour, competition, opening up of new markets, "inventions," and the Malthusian "struggle for existence." (Marx, 1979: p. 157)

Robert Young in *Darwin's Metaphor* elaborated on this observation, showing how Darwin's theory of evolution overcame a crisis in Victorian society, legitimating the poverty of the working class and also justifying imperialism and its consequences. The extermination of the original inhabitants of Argentina, witnessed by Darwin, could then be portrayed as unfortunate but necessary for the evolution of humanity. In Australia the elimination of the Aboriginal population was defended in these terms, and in in the late 19th century until the 1960s policies were implemented to take part European children from their Aboriginal parents to train them as domestics or farm labourers, assuming that full-blood Aboriginals as an inferior race would die out.

More recent developments of this culture are associated with the triumph of neo-classical economics modelled on late 19th physics (Mirowski, 1989), the synthetic theory of evolution based on conceiving DNA as encoded information, the

development of scientific management, the growth of managerialism, the dominance of the economy by the financial sector, the development of the concept of information and cybernetics and the rapid development of information technology. This technology embodies the logical atomism of the early logical empiricists and reproduces logical atomism in social life. These developments have facilitated further advances in the mechanistic world view, with organisms conceived of as "cyborgs" or "cybernetic organisms" operating to reproduce the information encoded in their DNA. And major efforts have been made through cybernetics and information theory to "mechanize the mind," that is, to conceive the brain as an information processing organ. These developments have facilitated further developments in economic theory, conceiving economic actors as cyborgs.

The development of the mechanistic world view from Descartes and Hobbes to the present shows that the dynamics of the culture of European civilization is little different from that of most traditional societies in which, as the French Marxist anthropologist, Maurice Godelier, showed:

> Spontaneously, by systematically covering all the possible analogous parallels between Nature and Culture, thought constructs a gigantic mirror effect, where the reciprocal image of man and the world is reflected *ad infinitum*, perpetually decomposing and recomposing in the prism of Nature-Culture relations... By analogy the whole world makes sense, everything is significant, everything can be explained within the symbolic order, where all the positive known facts...may take their place with all their rich abundance of detail. (Godelier, 1977: p. 213)

The reformulation and revival of neoclassical economics on this basis, which has been associated with neo-liberalism, essentially a revival of Lockean political philosophy, the proletarianization of the previously privileged professional class of workers and other members of the salariat, is a further development of this dynamic. It is associated with the globalization of the economy and the continued rise of the managerial class and the financial sector of the economy, now forming a global corporatocracy, which through the promotion of consumerism fostered by advertising and more efficient use of public relations (the mind control industries) has successfully corrupted most the institutions of democracy, particularly those that had been put in place and developed from the end of the 19th century to the third quarter of the 20th century. The consequence of these developments is that the state of culture as one dimensional which appeared as exaggerated when Marcuse published *One Dimensional Man* (Marcuse, 1964), now reads like a bland description. It is not only that people are understood by reductionist science and by managers as complex machines, as information processing cyborgs; to a considerable extent they now simulate information processing cyborgs without deep emotions and most fundamentally, without imagination, as Richard Kearney has shown in *The Wake of Imagination* (Kearney, 1988). And there has been a massive concentration of income, wealth and

power, unravelling all the achievements of the welfare state. And there is a global ecological crisis which is clearly not being effectively addressed.

Understanding this history it becomes clear that Orlov in claiming that the next stage in the development of this system could involve the removal of humans themselves from society and nature, except perhaps for some billionaires and their millionaire servants whose wealth is now is based mainly on control of financial institutions and rent extraction (Hudson, 2022), he is simply spelling out the inexorable logic of this culture, which, with variations, has been embodied in technology, institutions, forms of life, and modes of living. These are continually reproduced as human forms of life are taken as metaphors for natural processes which are in turn used to interpret and legitimate existing social relations. This culture which permeates people's lives and largely controls their destiny now dominates the entire world. There is no logical basis from within the mainstream of this culture for opposing its logic, although individuals might appeal to sentiment, as did those who opposed the elimination of inferior races or the destruction of wilderness areas.

However, it also reveals that this conclusion is based on assumptions that, while having come to dominate the culture of modernity, were developed at a particular time in history. Revealing this is the first stage of questioning these assumptions and revealing the possibility of replacing them. As Cliff Hooker argued,

> societies themselves are artifacts, and not least our "scientised" society. Cultures are experiments—simultaneous experiments in survival strategies and in what it is to be human. (1982, p.19) (Hooker, 1982: p.19)

This in fact is what historians of culture and historically oriented philosophers of science have been revealing, and in doing so, they have also shown that this culture could be replaced and have revealed a counter-tradition of thought that has not been entirely suppressed and eliminated which could serve to replace the dominant culture.

The very idea that we are cultural beings, formed by our culture with the capacity to question and modify it, is a central component of this alternative tradition. Toulmin suggested that we could be entering a postmodern phase of culture associated with developments in science that supersede the Newtonian paradigm of what counts as science, leaving behind the culture of modernity. However, so-called postmodern ideas about nature and society, as opposed to the postmodern condition which a symptom of the failure of the culture of modernity, have deep roots in European civilization. They have their roots in the Renaissance, which was a revival of Greek and Roman thought. These ideas were never entirely suppressed and were revived and developed with a burst of creativity in the German Renaissance of the late 18th and early 19th centuries, and now are central to most creative developments within the sciences. This alternative tradition has been characterized first by Margaret

Jacob and Jonathan Israel as the "Radical Enlightenment," with very different notions of what are humans, what counts as progress, and what is the place of humanity within it (Israel, 2002; Jacob, 2003).

4. The Radical Enlightenment and the Possibility of its Renaissance

The term "Radical Enlightenment" was first coined by Jacob before it was taken up by Israel. However, they did not entirely agree on its meaning. Israel identified and defined the "Moderate Enlightenment," enabling the Radical Enlightenment to be defined and identified as a tradition of thought in opposition to it. He took Newton and Locke to be the most influential figures among proponents of the Moderate Enlightenment. Jacob's work is important for identifying a tradition of thought largely suppressed in the early 18th century, continuing the concerns of Renaissance natural philosophers, and providing an alternative to the Cartesian/Newtonian tradition of science and to its political implications. She showed that the Nature Enthusiasm of Giordano Bruno was a point of departure for this tradition, and politically it was associated with defence of a democratic form of republicanism as developed and defended in the Florentine Renaissance. Israel argued that Spinoza was the original inspiring figure of the Radical Enlightenment, but he did not acknowledge the influence of Bruno on Spinoza, or that "Spinozism," which was prominent in the late 18th and early 19th centuries, particularly in Germany, was really Spinoza's ideas reformulated under the influence of Leibniz, rejecting Spinoza's mechanistic tendencies and reviving ideas closer to those of Bruno. Once this is recognized, it is possible to trace a tradition of natural philosophy challenging the Cartesian and Newtonian traditions of thought, seeing nature as irreducibly creative, advancing the radical Renaissance tradition of natural philosophy and upholding the Renaissance notion of liberty.

Natural philosophy was only one branch of opposition to the New Philosophy of the 17th century. The other is associated with the defence of the humanities, with the most important figure in the early 18th being Giambattista Vico (1668-1744). To understand the Radical Enlightenment, its continuity and influence and opposition to the Moderate Enlightenment, it is first of all necessary to understand the development of the humanities. However, the weakness of the humanities in confrontation with mainstream science is something that has to be overcome. The Radical Enlightenment could challenge the Moderate Enlightenment only when ideas from the humanities were shown to resonate with, and then were integrated with, the Radical Enlightenment tradition of natural philosophy.

Even then, it is much more difficult to trace the development of the Radical Enlightenment than the Moderate Enlightenment. Because it is the oppositional tradition, it tends to be actively or passively suppressed and so is more fragmented

than the dominant tradition. Those who discover it often have to struggle to recover past insights and advances that have been partially forgotten, misrepresented or misinterpreted. To simplify matters, it is easiest to identify particular themes developed in reaction to the dominant tradition of atomistic, reductionist thought. To begin with, it should be seen as a reaction against the relatively simplistic, asocial account of the human mind and mechanistic view of organisms that makes it impossible to account for the enterprise of science itself. This is the case with both Cartesian dualism, in which given the way Descartes had defined the mind and physical existence, such that any relation between them was unintelligible, and in the Hobbesian mechanistic account of the mind whereby the mind, spatially enclosed within the body and defined as the effect of physical impacts on the body, could have anything like sensations or any way of knowing the external world. The most advanced form of this mechanistic conception of humans, in which humans are characterized as information processing cyborgs and scientific progress is characterized as accumulation of knowledge and an evolution of such processing, organizing information more efficiently in the struggle for survival and domination, simply cannot account for all that is involved in the scientific enterprise, most importantly, socially organized conscious humans striving with the help of their imaginations to understand the world and making judgements about how best to do this.

A good starting point is the defence of imagination and history by Vico. It is difficult to trace Vico's influence, or to show that he influenced later thinkers who developed similar ideas. However, by confronting the New Philosophy of the 17th century scientific revolution at an early stage of its development, building on the work of Renaissance thinkers, he brought into sharp focus the crucial issues that later philosophers had to grapple with. Vico argued that we can understand history because we as humans created it. We can gain some knowledge of nature through experiments in which we participate in creating what is observed, but this is a very limited knowledge. Only God, who created nature, can fully understand nature. Vico proposed a "genetic" approach to knowledge, arguing that the validity of all true knowledge, even that of mathematics and logic, can only be demonstrated by showing how it has been created, i.e., by retracing its genesis through historical narrative. He did not deny the achievements of Descartes. Where he was critical of Descartes was firstly, in Descartes's interpretation of his own achievements, but more fundamentally, his failure to understand the preconditions for these achievements and what is required to go beyond them. These preconditions, historical and in each individual, are imagination and memory, and the capacity to deploy metaphors. That is, he was reacting to the dismissal of imagination by Descartes, and also the truncated version of imagination held by Hobbes and his followers. He rejected Descartes's claim that his analytic approach to mathematics associated with his analytic geometry was superior to the synthetic method exemplified by Euclidean geometry. More fundamentally, he rejected Descartes's characterization of human intellect in

abstraction from human fantasy, passion, emotion and imagination and its social and historical context. As Donald Verene, the leading Anglophone interpreter of Vico, noted, "this is the barbarism of reflective thought, of the intellect that has lost its connection with the imagination of the whole, which is the flower of wisdom" (Verene, 1981: p. 28). Verene continued:

> Such barbarism indicates a loss of the human's image of itself, the inability of the thinker to reflect his own wholeness into the products and divisions of his own thought. This barbarism of thought is a reflection of the barbarism of technological life, the life of procedures of action and social organization which give increasing definiteness to human experience without cultural center or perspectives of mind. (Verene, 1981: pp. 28-29)

Vico was concerned to show that people in the ancient world were very different from the people of his own time. In doing so, he was defending a number of ideas at odds with the core ideas of the Moderate Enlightenment. First, he argued that humans largely create themselves, not so much as individuals but as members of societies or civilizations. That is, he was rejecting the atomistic view of society developed by Hobbes and Locke, upholding what nowadays is characterized as communitarianism. In doing so, he was deploying a holistic form of inquiry whereby individuals cannot be treated in complete abstraction from the wholes of which they are part, thereby revealing the limitations of Descartes's analytic method and Hobbes's resolutive-compositive method of inquiry. As Verene pointed out, "wisdom is the spirit of the whole which pervades and informs all the parts of true knowledge" (Verene, 1981: p. 20). Second, he conceived humans as essentially historical beings in whom poetic wisdom, the product of imagination developed through the use of metaphors, is of central importance to their lives, whether in the form of myths, religion, or institutions. The development of mathematics and science were understood by Vico as also the historical products of the imagination. Understanding history in this way involved a situational notion of rationality, showing how societies evolve through people responding to the largely human created situations they find themselves within. Lastly, and most importantly, he showed how comprehending this was possible. It involves granting a central role to imagination (or "*fantasia*") in historical inquiry. Imagination was seen as central to people's self-creation, and to our ability to achieve knowledge of this self-creation; that is, he saw it as the defining feature of what it is to be human (Verene, 1981: p. 33). It is because humans are beings with imagination who can create themselves, central to their having at least a minimal historical memory in whatever form, that through imagination their historical creation can be understood.

As James Engell has shown, the development of the notion of the imagination became a major concern of those opposed to the mechanistic view of the world, including the human mind, and the implications of this view (Engell, 1981). A major

development of the notion of imagination and its importance was undertaken by Immanuel Kant who saw it as essential to understanding and reason and to the experience of beauty and the "feeling of life" ((Makkreel, 1990; Kneller, 2007). Like Vico, Kant argued that what we know is what we have constructed, although we can also achieve a form of knowledge of the a priori conditions of possible experience. In fact, this was the basis for his argument that metaphysics could now be put on a solid foundation, just as the Ancient Greeks had put mathematics on a solid foundation and Bacon and Galileo had put natural science on a solid foundation. While forms of intuition and the categories of the understanding are central to this construction, the sensory manifold has to be organized by the empirical or reflective imagination to bond sensible intuitions and concepts, while productive imagination is involved in transcendental apperception and reflective judgement and is the spontaneous source of all synthesis. While Kant did not invoke imagination in his practical philosophy, what he was providing by means of according a place to the constructive activity of the ego, was a place for moral autonomy based on reflection and self-determination, rejecting the idea that we are just machines. The importance accorded imagination by Kant was a point of departure for those Kant influenced, most importantly Herder, Fichte, Hegel, and Schelling.

For understanding the Radical Enlightenment, Johann Gottfried von Herder is particularly important for defining its direction. While only having learned of the work of Vico later in life, his ideas are very close to Vico's, but in some ways provided a better focus. He did this first by building on Kant's early work on philosophical anthropology, explicitly advancing a conception of humans very much in line with Vico's work, but more directly challenging the Cartesian/Hobbesian conception of humans underpinning the whole tradition of the Moderate Enlightenment. He did not follow Kant's Critical philosophy, but developed the idea of *Bildungstrieb*, used as a synonym for the imagination, as a divine creative power of nature that humans imitate and in which they participate, in order to shape a new and higher world. In developing his philosophical anthropology in relation to this, Herder developed the notion of "culture," granting a place to different cultures both historically and contemporary. As with Vico, understanding these was seen to require imagination to feel oneself (*einfüllen*) into the worlds of others in very different cultures. The most important component of cultures, Herder argued, is language. In language dwells a nation's "entire world of tradition, history, religion, principles of existence; its whole heart and soul" (Berlin, 1980: p.165). While recognizing a great diversity of cultures, both in the past and in the present, Herder argued there was a general tendency in history towards greater humanity, which involves the ability to understand these diverse cultures. In opposition to an ethical and political philosophy based on rights and maximising pleasure and minimizing pain, Herder developed an ethical and political philosophy focussed on self-expression and self-realization, that is, on people discovering and realizing their unique potential and expressing themselves in their speech, actions and works, and providing the conditions for other people to do this.

Such self-realization was defined in relation to being formed by one's culture and participating in realizing the unique potential of this culture.

Fichte, a later student of Kant, taking his Critical philosophy as a starting point, reformulated Kant's philosophy into a form of subjective idealism, rejecting Kant's postulation of the noumenal realm, but claiming to be able gain knowledge of how the mind develops. He described the action of imagination as that which binds and unites the "I" and the "not-I"—the self and the outside world—thereby unifying the contradictory (Engell, p.227), and argued that it is possible to explain the development of the categories by seeing them as generated through active engagement in nature, the "not-I," which is felt as a resistance to our will. In doing so, the imagination was seen to function as a catalyst in a dialectical process, which Fichte characterized as moving from a thesis to an antithesis, then to a synthesis which generates another antithesis. On this basis he equated humanity's spirit with its imagination, identifying humanity's searching spirit through which all great accomplishments emerge with the creative imagination. This was not conceived merely an intellectual process, but as involving a struggle. In grappling with the problem of how the "I" could become conscious of itself, Fichte argued that this is possible only through the "I" viewing itself from the perspective of another "I," recognized as free and who recognizes oneself as free. "No Thou, no I: no I, no Thou," he proclaimed (Fichte, 1982: p.259). This provided an essentially ethical and social dimension to this dialectical struggle, now conceived as a struggle for mutual recognition rather than just a struggle to subordinate the "not I" to the "I." On this basis Fichte reformulated Kant's ethics, stressing above all that by not treating others as mere means, but always as free agents who are ends in themselves, involves limiting oneself. Since this mutual recognition is the condition for achieving self-hood, this provided a strong motivation for limiting oneself in this way. Politically, the problem was conceived as a struggle to create a social order in which people are properly recognized as free on the basis of their capacity to act and limit themselves on the basis of such principles. This development was conceived as a dialectical progression in which imagination plays an essential role.

Hegel and Schelling integrated the work of Herder and Fichte, and extended their work on imagination. As Jennifer Ann Bates has shown, imagination was central to Hegel's notion of dialectics. As she argued:

> [T]he imagination in Hegel is the key to how we represent what we take to be real. The process of thinking the imagination through reveals how when we do not fully grasp its activity, we go astray or are limited in our reasoning, and our reality is also thereby limited. The developmental story of an individual or community thinking the imagination through in increasing depth and complexity reveals the forms of Reason in consciousness and Spirit. Over the ages, that story is the history of nations; their culture, ethics, art, religion, and philosophy. So, while Hume was reluctant to give the imagination such an important task as the creation of a rational system, and while Kant

> placed the imagination inside of and in the service of a rational system, Hegel shows it to be the heart of rationality, outside of which there is no system of reality to be known. (Bates, 2004: p. xxvii)

In his early work, Hegel used Fichte's notion of the struggle for recognition to explain the historical progress of cultures towards greater humanity, characterizing this as the process as the evolution of the world spirit or *Geist*. In his early work, he argued that in this development, three interdependent but irreducible dialectical processes involved, the dialectic of representation which operates through the medium of language, the dialectic of labour which operates through the medium of the tool, the dialectic of recognition which operates through the medium of moral relations. Developing Fichte's Subjective Idealism into a form of Absolute Idealism, Hegel built on this early work to develop a general theory of history, including a political philosophy. He argued that these dialectical patterns advance as forms of Objective Spirit, the institutions of the State which progress by recognizing more fulling the dignity and freedom of people, and as Absolute Spirit, whereby Spirit becomes conscious of itself and its significance and goals through art, religion and philosophy. A place was also accorded to Subjective Spirit whereby humans become responsible individuals by being socialised into the projects of Objective and Absolute Spirit, participating in each of the three dialectical patterns. Objective Spirit consists of family relations, the relations of civil society associated with markets and "corporations," that is, trade unions and professional bodies through which people's significance and contribution to the economy is recognized, and the government, including educational and legal institutions, which insures that the market serves the common good of the State understood in the broader sense of the national community. As Axel Honneth argued, this philosophy involves three forms of recognition: love based primarily in the family, rights acknowledged in civil society, and solidarity achieved through recognizing people's contribution to the common good (Honneth, 1996: ch. 5). Nature was conceived as the Other of Spirit, with its origin in Spirit revealed by displaying its rationality through science. This was the weakest part of Hegel's philosophy.

Schelling, who began his philosophical career as a disciple of Fichte, but worked closely with Hegel and Hölderlin and was later mentored by Goethe. As his philosophy developed, he departed from Hegel in several crucial ways. First, he accorded far greater significance to art than Hegel, seeing it as a more immediate way of cognizing the Absolute than philosophy. Second, Hegel's political philosophy was developed in relation to what we now call the nation-state; Schelling largely accepted this, but departed from Hegel in a second way by proposing something like the United Nations to maintain peace between nation-states (Schelling, 1800/1978: p.198). Third, Schelling was much more concerned than Hegel with the freedom of the individual, writing a major work on freedom, acknowledging the possibility that people might choose to be evil (Schelling, 1809/1936). His work in this area inspired the

existentialists. Fourth, and most importantly, although Schelling is usually characterized as an Idealist, he actually subordinated his work on Transcendental Idealism to his Philosophy of Nature and argued against Idealism (Gare, 2011). Schelling accepted Hölderlin's argument that not even mutual recognition could account for self-consciousness of the "I." Consciousness and its object presuppose a whole of which subject and object are parts. Hölderlin characterized this as "Being." In his later work, Schelling characterized this as the 'Unprethinkable Being' (*Das unvordenkliche Seyn*), presupposed by all thought and irreducible to thought (Schelling1842-1843/2007).

Schelling's final position, rejecting Hegel's panlogism and giving a place to the irrational, was actually closer to Vico's philosophy than to Hegel's. However, he circumvented Vico's claim that we cannot know nature except in a limited way through experiments because we did not create it, by claiming that we are participants in the creativity of nature, the beings through which nature is coming to its fullest consciousness of itself. Just as we can trace the development of cognition in children, we can trace the developments in nature that gave rise to human cognition. Schelling was concerned not only to show the cognitive conditions for objective knowledge, but the nature of the world that enables it to be known objectively, and to produce beings which could achieve objective knowledge of it, and of themselves. This argument is essentially a "naturalization of the transcendental," postulating a conception of nature such that the enterprise of science is intelligible. In developing these ideas, Schelling developed a form of dialectics that requires thought to confront the causal influences of what exists as well as to draw inferences. Thought is inherently synthetic, he argued, and begins with genuine opposition either between thought and something opposing it, or other factors within thought. This necessitates a new synthetic moment that can be treated as a product or factor in the next level of development. Building on Kant's ascription of a central place to imagination in synthesis and on the important role Kant had accorded to the "feeling of life" in the *Critique of Judgement*, Schelling's dialectic involves a reflective and imaginative experimentation and reconstruction of the sequence of forms produced by a procreative causality of the Unconditioned. However, he acknowledged that this knowledge will never be complete. In this quest, philosophical systems necessarily succeed each other, with later systems overcoming the limitations of preceding philosophical systems.

In carrying out this argument Schelling was much more concerned than Kant, Fichte, or Hegel to challenge existing science, although Kant was moving in the same direction in his *Critique of Judgment* and his last, unpublished work, the *Opus Posthumum* (Gare, 2011). Inspired by Kant's defence of his dynamic conception of matter and his work on biology, Goethe's Spinozist natural philosophy, and ideas from the pre-Socratics, Schelling called for a philosophical physics that could support an evolutionary cosmology to replace the Newtonian cosmology, arguing for a conception of nature as self-organizing process from which humans capable of

developing science could have evolved (Schelling, 2004). He also argued for the development of a new mathematics that is adequate to such a dynamic world. In developing this philosophical physics, Schelling postulated an underlying activity, later characterized as energy, which develops by being limited, with the basal unit of existence being an "actant"—essentially, a quantum of energy. Through such limiting, opposing forces were generated which can then account for the emergence of space and time, inanimate matter characterized by a balance of opposing forces, as in crystals, and then living organisms that must maintain their forms through interacting with their environments. In doing so, he argued that living organisms constitute their environments as their worlds. He attacked Fichte for treating nature and living beings in particular as a mere instruments to be dominated by humans, defending the intrinsic value of all life.

5. The Radical Enlightenment After Schelling

Schelling's philosophy inspired the modern tradition of process metaphysics associated with such figures as C.S. Peirce, William James, Henri Bergson, Alexander Bogdanov, George Herbert Mead, and A.N. Whitehead, and those they influenced (Gare, 2011). Work in the humanities, defending the value of art along with the development of hermeneutics inspired by Vico and Herder (although further developed by Wilhelm von Humboldt, Schleiermacher, Dilthey, Heidegger, Gadamer and Ricoeur), is still at the centre of the humanities, particularly among those who are trying to defend the humanities. Philosophical anthropology survives, along with philosophical biology, with the ideas of Kant and Herder having been further developed by Schelling, Hegel, pragmatists such as George Herbert Mead, neo-Kantians such as Ernst Cassirer, phenomenologists such as Max Scheler, Helmuth Plessner, Arnold Gehlen, and Maurice Merleau-Ponty, and by neo-Marxists such as Axel Honneth and Hans Joas. These philosophers have continued to uphold and develop a conception of humans as creative, social beings in opposition to the Hobbesian tradition of thought. What are referred to as the "humanistic approaches" in the human sciences, that is, approaches aligned with the humanities, such as humanistic psychology, symbolic interactionism strongly influenced by George Herbert Mead, humanist Marxism and reflexive sociology building on the work of Pierre Bourdieu, and most of anthropology (where the notion of culture is still central), are still being advanced.

However, the humanities have to a considerable extent been marginalized by "scientism," the doctrine originally defended by the rationalist Descartes, and then later, by the empiricist David Hume, that only claims to knowledge in mathematics and experimental science have any validity. As Hume famously put it:

> If we cake in our hand any volume … let us ask, *Does it contain any abstract reasoning concerning quantity of number?* No. *Does it contain any experimental reasoning concerning*

> *matter of fact and existence?* No. Commit it then to the flames, for it can contain nothing but sophistry and illusion. (Hume, 1758/1952: p.73)

Hume's scientism was closely associated with the rejection of metaphysics and speculative natural philosophy. In the 20th century, such scientism gained support from the development of symbolic logic: the deployment of algebraic techniques to study deductive inferences, and efforts to demonstrate that all claims to mathematical and scientific knowledge must ultimately be validated through the analysis of the logical structure of arguments, and/or by appeals to observation. This scientism was associated in particular with logical positivism, but more broadly with logical empiricism, a school of thought that ruled out any role for synoptic or synthetic thinking in philosophy, as pointed out by an early opponent of Analytic philosophy, C.D. Broad (Broad, 1927).

This scientism is exactly what Kant's philosophy, along with those influenced by it, was designed to challenge. Correspondingly and most importantly, the Kant-inspired tradition of Radical Enlightenment has been intimately associated with characterizations of science that have exposed the illusions of scientism. Schelling's characterization of science, and of dialectical thinking, radicalizing Kant's philosophy by granting not only a place to conceptual frameworks, but also to the elaboration of new conceptual frameworks to overcome the limitations of prevailing conceptual frameworks, largely anticipated the ideas of the later philosophers who attacked positivism and later philosophers of science who attacked logical positivism. The basis for the later attack on logical positivism were laid by C.S. Peirce and A.N. Whitehead, major figures in the development of symbolic logic who, opposing positivism, defended speculative thinking in different but complementary ways, developed and defended different forms of process metaphysics, and recognized a major role for imagination in science. Peirce and Whitehead influenced the philosophers of science in the 1950s and 60s who effectively demolished logical positivism.

Peirce, who explicitly characterized himself as a "Schellingian of some stripe," characterized logic as part of semiotics, the production and interpretation of signs of "objects," only recognized as such through signs. He gave a place in reasoning to *abduction*, the speculative formulation of hypotheses, along with deduction and induction. This triadic conception of reasoning, from signs of objects to interpretants, which in turn become signs, and then abduction, deduction, and induction, is really a form of dialectical thinking that allows for rational progress even despite denying the claims to finding the absolute foundations for knowledge. Abduction above all requires imagination. As Peirce put it:

> When a man desires ardently to know the truth, his first effort will be to imagine what that truth can be. He cannot prosecute his pursuit long without finding that imagination unbridled is sure to carry him off the track. Yet nevertheless, it remains

> true that there is, after all, nothing but imagination that can ever supply him an inkling of the truth. He can stare stupidly at phenomena; but in the absence of imagination they will not connect themselves together in any rational way. (Peirce, 1931/1978: vol. 1, §2.46)

Specific hypotheses are components of more general hypotheses, with metaphysics being the most general. All inquiry has metaphysical assumptions that can be unconsciously presupposed or reflected upon, consciously developed, and chosen. "Find a scientific man who proposes to get along without metaphysics," Peirce wrote, "and you have found one whose doctrines are thoroughly vitiated by the crude and uncriticized metaphysics with which they are packed" (Peirce, 1931/1978: vol. 1, p. 129). Peirce characterized logic as one of the normative sciences, concerned with how we should think, which is thus a component of ethics, how we should live. This in turn is grounded in aesthetics, concerned with what we should admire; that is, with habits of feeling. Each of these normative sciences is associated with communities. And as Bernardo Andrade pointed out, "[a]ny logical or ethical community requires a shared imaginative repertoire of ideal ends" (Andrade, 1922: p.1). Scientific inquiry involves imagination, whether associated with particular observations as intepretants of particular signs, or appreciation of all the communities in which one is participating, ranging from the communities of those engaged in scientific research of a particular discipline, to the broader scientific communities of which these communities are part, to the broader ethical community of which the scientific community is part, and then finally to the aesthetical community of which the ethical community is part. In each case, through imagination, there must be an appreciation of the ideal ends of these communities.

Whitehead largely concurred with Schelling and Peirce on the nature of metaphysics and the inseparability of metaphysics and science, but also provided a fuller defence of metaphysics and its relation to science, characterizing what science is and what it aspires to, while providing a history of modernity showing the impact of scientific work on metaphysics. Every claim to knowledge, Whitehead argued, takes for granted a background of assumptions open to further questioning. The ultimate assumptions are metaphysical assumptions, but these can be questioned and replaced because of incoherence, or because specialized sciences have revealed the limitations of these assumptions. Whitehead used the term "understanding" rather than "knowledge" in discussing the aim of inquiry (Whitehead, 1938: p.43). In describing what is involved in the quest for understanding, Whitehead wrote:

> My point is that understanding is never a completed static state of mind. It always bears the character of a process of penetration, incomplete and partial. (Whitehead, 1938: p.43)

That is, Whitehead was defending a dialectical epistemology, much like Schelling's and in accord with Peirce's characterization of logic. He characterized the goal of speculative philosophy as

> the endeavour to frame a coherent, logical, necessary system of general ideas in terms of which every element of our experience can be interpreted. (Whitehead,1929/1978: p.3).

Metaphysical categories are "tentative formulations of the ultimate generalities" (Whitehead, 1929/1978: p.8). In this, coherence is more important than logical consistency, coherence being "the great preservative of rationalistic sanity" (Whitehead, 1929/1978: p.6). Such speculation, as with the construction of any hypothesis, involves the "free play of the imagination, controlled by the requirements of coherence and logic" (ibid.). Conclusions based on this will be tentative. As he put it in *Process and Reality*:

> Philosophers can never hope finally to formulate these metaphysical first principles. Weakness of insight and deficiencies of language stand in the way inexorably. Words and phrases must be stretched towards a generality foreign to their ordinary usage; and however such elements of language be stabilized as technicalities, they remain metaphors mutely appealing for an imaginative leap. (Whitehead, 1929/1978: p.5)

Being concerned with all aspects of experience, Whitehead wrote works on the history of science and civilization, first, examining the scientific revolution of the 17th century, showing that scientific materialism as it emerged to dominate science at that time was the product of a metaphysical revolution, and the impact and problems it generated (in *Science and the Modern World*). Second, and later, he wrote on the role of philosophy in European civilization (in *Adventures of Ideas*). By means of these histories, he showed both the achievements and the limitations of past work in philosophy, most importantly, the achievements and the limitations of scientific materialism, showing thereby why it is necessary for scientific materialism to be challenged and replaced.

The historically-oriented philosophers of science who challenged logical positivism clarified various aspects of the dialectical epistemologies of Schelling, Peirce, and Whitehead, in doing so, vindicating these philosophers rather than rejecting them. Moreover, they offered three major advances: one associated with work on analogies and metaphors; another associated with the influence of Gestalt psychology; and another associated with work on narratives, also products of the creative imagination. While Schelling, Peirce, and Whitehead all acknowledged the importance of metaphors, more recent work on metaphors, particularly the work of Mark Johnson (1987) and George Lakoff & Rafael Núñez (2000), has provided support for the claims of Vico and Herder, showing that metaphors are fundamental to language, inquiry, natural science, and mathematics. At the same time, this reveals the

centrality of imagination to natural and formal science. Gestalt psychology demonstrated the role of imagination in all experience, while narratologists showed the constitutive role of stories in human self-creation, both collective and individual. Gestalt psychologists were invoked by philosophers of science like Norwood Russell Hansen and Thomas Kuhn to show there could not be absolute foundations to knowledge in the given of experience, and to show how important metaphors are to developing new ways of thinking and experiencing the world (Suppe, 1977). Metaphors facilitate Gestalt switches.

The most radical claims about how knowledge should be understood when the insights of Gestalt psychologists are taken into account were made by Michael Polanyi (Polanyi, 1958). He argued that all knowledge has a personal dimension and involves tacit knowledge. Referring to the hermeneutic philosopher, Wilhelm Dilthey, who had argued that the human sciences aim at understanding while the natural sciences aim at explanation, Polanyi argued that all science aims at understanding. This involves "indwelling" in theories as a means to "indwell" in that which is to be understood, just as we "indwell" in a sentence to understand its meaning, and the meaning of each word in the context of the sentence. Becoming a scientist involves acquiring tacit knowledge associated with such indwelling that enables people to make judgements about what paths of scientific research are likely to prove fruitful. This supports Peirce's claim that science is a communal affair, in which the community is held together by their commitment to ideals. It is also compatible with recognizing in the case of living beings the intrinsic value of what is being investigated, just as Herder recognized the intrinsic value of people in very different cultures by feeling himself into their worlds. Science does not commit people to seeing the world as devoid of intrinsic significance, and there is no basis for the view that mechanistic metaphors of nature that deny it any intrinsic value are thereby more scientific than those that reveal such intrinsic value.

Supporters of logical positivism argued against such work that without acknowledging absolute foundations to knowledge, we are condemned to relativism. Countering this argument, Alasdair MacIntyre pointed to the role of narratives in the scientific project. In being inducted into traditions of research, scientists are inducted into a story about what has been done in the past, what are the achievements, and what are the problems scientists are facing. Dealing with such problems can lead to scientific revolutions, as these were portrayed by Thomas Kuhn. The problem with these is that such revolutions can change the criteria of scientific progress, and even change the meaning of science itself. How can such radical changes by defended? MacIntyre argued that it is through casting coherent narratives from the perspective provided these revolutions that their superiority can be judged (MacIntyre, 1977). As he put it:

> Wherein lies the superiority of Galileo to his predecessors? The answer is that he, for the first time, enables the work of all his predecessors to be evaluated by a common set of standards. The contributions of Plato, Aristotle, the scholars at Merton College, Oxford and Padua, the work of Copernicus himself at last all fall into place. Or to put matters in another and equivalent way: the history of late medieval science can finally be cast into a coherent narrative.... What the scientific genius, such as Galileo, achieves in his transitions, then, is not only a new way of understanding nature, but also and inseparably a new way of understanding the old sciences way of understanding... It is from the stand-point of the new science that the continuities of narrative history are reestablished. (MacIntyre, 1977: p. 467)

Once it is recognized that advances in science, and even mathematics, can be judged in this way, there is no basis for claiming that such narrative arguments in other domains, such as metaphysics, ethics, or art, can be denied their claims to validity.

While such work should be seen as vindicating Schelling's extension of dialectics to claims for metaphysics in the natural sciences, perhaps more importantly, Schelling's speculative metaphysics and work in natural philosophy, further developed by philosophers such as Peirce and Whitehead, proved to be of major importance for the advance of both science and mathematics. Schelling's work inspired the development of thermodynamics, field theories in physics, the development of chemistry based on the notion of balances of opposing forces, later characterized in terms of valency, and systems approaches in biology, along with new forms of mathematics adequate to these theories (Esposito, 1977; Heuser-Kessler, 1986; Gare, 2011). More recent developments of this tradition include the work of C.H. Waddington on biofields, largely inspired by Whitehead, Ilya Prigogine's study of dissipative structures generated by far-from-equilibrium thermodynamic systems which then feed off negative entropy and dissipate entropy, various developments in complexity theory, including the work of Howard Pattee, Timothy Allen, and Stan Salthe on hierarchy theory, showing how emergence of new processes is generated by the interpolation of new constraints, Robert Rosen's work on anticipatory systems, and the new discipline of biosemiotics, largely inspired by Jacob von Uexküll and Peirce. Von Uexküll argued to that to understand organisms, it is necessary to see them as defining their environments as meaningful worlds (*Umwelten*) to which they respond accordingly. Combined with Peirce's theory of semiotics, this facilitated a naturalistic defence of Herder's and Hegel's philosophical anthropology, with human culture having evolved from, while building on, more primitive forms of semiosis (Gare, 2009; Kull, 2009). All such work can be seen as developments of *Naturphilosophie* inspired by Schelling, and it has all contributed to making intelligible sentient life and humans with all the attributes traditionally claimed for them within the humanities. The notion of constraints developed in hierarchy theory appears not to have been influenced by Schelling, but concurs with his notion of individuation through limiting

activity, which in turn is likely to have been influenced by Anaximander's cosmology in which the cosmos emerges and evolves through limiting the unlimited.

Some of the most important work has been undertaken in ecology, which combines all these advances in post-reductionist and post-mechanistic science, including non-equilibrium thermodynamics, hierarchy theory, and biosemiotics (or ecosemiotics), exemplified by the work of Stan Salthe (Salthe, 2005). There has been a tendency to disregard work in ecology because it was not seen as a rigorous science, that is, a science conforming to the Newtonian paradigm of what counts as science. However, as science has advanced to grapple with more complex aspects of nature, this paradigm is proving to be obsolete, and, as Robert Ulanowicz argued in *Ecology, The Ascendent Perspective*,

> [e]cology occupies the propitious middle ground. … Indeed ecology may well provide a *preferred* theatre in which to search for principles that might offer very broad implications for science in general. If we loosen the grip of our prejudice in favour of mechanism as the general principle, we see in this thought the first inkling that ecology, the sick discipline, could in fact become the key to a radical leap in scientific thought. A new perspective on how things happen in the ecological world might conceivably break the conceptual logjams that currently hinder progress in understanding evolutionary phenomena, development biology, the rest of the life sciences, and, conceivably, even physics. (Ulanowicz, 1997: p. 6)

When understood in relation to ecology, evolution focuses on new kinds and levels of cooperation rather than competition. Organisms themselves are characterized as highly integrated ecosystems (Depew and Weber, 1996: p. 474-475), and as Lynn Margulis argued, we are all symbionts. Kalevi Kull, defending and advancing ecosemiotics, argued that the bonds in ecosystems are semiotic bonds (Kull, 2010). Along with James Lovelock, Margulis argued that the Earth is alive as a self-regulating global ecosystem, which Lovelock christened "Gaia." The potential of ecology is greatly expanded by incorporating into it biosemiotics as ecosemiotics (Maran, 2020). What this involves is illustrated by the relation between flowering plants, bees, and humans. Flowers exemplify vegetative semiosis, being signs to bees that there is nectar to be had. The bees collect the nectar and then dance in their hives to indicate to other bees where the flowers can be found. This is animal semiosis. Humans who use the bees to collect honey learn about bees and how to facilitate their flourishing, and communicate what they have learnt using language, which is symbolic semiosis. Such semiosis cannot be reduced to simply information processing (Gare, 2020). Ecology provides the basis for rethinking the human sciences as aspects of human ecology, where the cultural aspects of humans, facilitating unparalleled possibilities for cooperation, can be characterized as highly developed forms of semiosis. Semiosis at this level can be logical deductions using symbols, but also narratives, art forms and science.

6. Does the Radical Enlightenment Justify Saving Humanity?

At the beginning of this essay, I suggested that in view of prevailing beliefs and values, those who believe that, given the rise of artificial intelligence taking over more and more power to control events, and the disastrous effect of humans on other terrestrial life forms, humans are in a very weak position to justify their continued existence, that is, to show that they are worth saving from the twin threats of advanced AI and global ecological destruction. They can present arguments, but the culture of mainstream modernity has embedded assumptions into almost every aspect of modern life which make any such arguments appear at best, weak. Perhaps some place can be accorded to sentiment, as people might invoke sentiment to preserve old buildings, even if they are not very attractive. Advanced AI, programmed for control, is likely to conclude that it is best for their own and life's future to just eliminate humans, or get them to eliminate themselves, to ensure that they can continue to control events in the future. AI is the next stage of evolution that has advanced through the struggle for survival with the fittest surviving, and it looks as though humans will soon be replaced by a fitter form of intelligence. Furthermore, while being in control, humans have transformed the world into a dump, severely damaging other life forms, and are paving the way for their own destruction anyway by effectively fouling their own nests. Surely it is best to eliminate such a self-destructive form of being. How could such a conclusion be challenged? Does identifying the Radical Enlightenment as a developing tradition of thought, constructing a narrative that calls for the supersession of the whole worldview and the metaphysical assumptions on which it is based, that made these conclusions appear so difficult to question, and then defending the role of narratives in reasoning, in culture and in nature, provide the basis for showing that humans should be saved? What was the point of this long narrative of the development of mainstream culture and then of an alternative tradition of thought with its roots in the Renaissance?

To begin, with, it was a defence of the narrative imagination, and imagination generally. I have argued, following MacIntye and others, that far from narrative imagination, normally understood as central to the humanities, being just a form of amusement, as Hobbes argued, it is central to dialectical reasoning. Dialectical reasoning is both broader and more fundamental than and the condition for applying the deductive and inductive reasoning focused upon by logicians and analytic philosophers, and the condition for appreciating where deductive and inductive reasoning can be utilized. It is through narratives that it becomes possible to judge between radically different ideas and ways of thinking, and the metaphors on which these are based. This is true in science, but the argument based on showing that it is true in science can be extended to the arts and humanities and also to the relationship between very different cultures. Most importantly, it can also be extended to

metaphysics, as the quest for a coherent conception of the world. To be coherent, this should include making intelligible the existence of those who develop such conceptions of the world and their place within in it, and of their efforts to do so. This was the core of Schelling's philosophy. It is in terms of this coherence, along with the forms of life they facilitate, that metaphysical theories can be judged and the basis for defending some version of process metaphysics can be justified.

Metaphysics, it was argued by these philosophers, not only underpins science and other forms of knowledge, but also underpins the broader culture of societies and civilizations, the way they live, the social forms and institutions they develop, and what they aspire to. Metaphysical theories can be judged through narratives not only on the advances in the sciences they facilitate, but what advances in civilization they facilitate. This was shown by Joseph Needham's massive, multi-volumed work, *Science and Civilisation in China*. With their development situated through narratives that orient people towards action, the validity of a metaphysical theory is demonstrated not only through research in various specialized disciplines of science, but also through the quest to incorporate the concepts and ideals formulated in terms of it into the institutions and organization of societies and civilizations and into the way people live. As Karl Marx put in the second of the *Theses on Feuerbach*:

> The question whether objective truth can be attributed to human thinking is not a question of theory but is a *practical* question. Man must prove the truth, that is, the reality and power, the this-sidedness of his thinking, in practice. (Marx, 1945/1978: p. 144)

The narrative I have presented is not calling for a total break with the civilization of modernity. It is an attempt to reveal the coherence and power of the rival world-orientation to the mainstream culture of modernity, a world-orientation developed in the Florentine Renaissance based on the culture of Republican Rome and Ancient Athens, and greatly advanced in the German Renaissance of the late 18th and early 19th Centuries. This tradition has continued to be developed in a subordinate position up to the present despite efforts to neutralize it. The narrative is designed to point out that there has always been an oppositional culture upholding a different conception of humans and nature. Although this has often been fragmented, it has actually inspired some of the most important achievements of modernity, although it has seldom been recognized for these achievements. The tradition of process metaphysics associated with the Radical Enlightenment not only has provided the basis for overcoming the incoherencies of the Newtonian paradigm of science—most importantly, the impossibility of making intelligible sentient life and human consciousness—but also has inspired some of the most important advances in the natural sciences. As a grand research program for science, it is progressing rapidly. Process metaphysics provides a conception of nature that enables first life, then humans as socio-cultural beings, to be understood. As Ilya Prigogine and Isabelle

Stengers argued, spelling out the implications for developments in non-equilibrium thermodynamics inspired by process metaphysics, there is now the basis for an alliance between science and the humanities (Prigogine and Stengers, 1984). This means that the importance of imagination in the form of metaphors and narratives, defended on epistemological grounds, can now be understood and defended on ontological grounds as central to the self-creation of humans as emergent forms and processes within nature as highly developed forms of semiosis.

This also provides justification for the tradition of ethics and political philosophy based in the humanities, the tradition opposed to the Cartesian/ Hobbesian/Lockean/Newtonian tradition. It is the tradition committed to developing people so they are able to govern themselves, that is, the tradition committed to achieving democracy. It is important to appreciate that the possessive individualism of the Moderate Enlightenment did not support but instead opposed the development of democracy. Its reformulation as neoliberalism was developed to reverse the advances in democracy. Von Mises and Von Hayek were quite explicit about this, although they formulated their opposition as opposition to empowerment of the masses, and more recent neoliberals do not advertise their opposition to democracy. To the extent that democracy was defended, as it was by Rousseau and Herder, it was defended as part of the Radical Enlightenment, sometimes by going back to ancient Greek, Roman Republican, or Florentine Renaissance traditions of thought. The USA, which began as a slave owning, genocidal society organized for the benefit of its wealthy elites, was founded on ideas of the Moderate Enlightenment, but was also influenced by ideas from Ancient Greece, Republican Rome, and the Florentine Renaissance (Pocock, 1989: ch.3; Sandel, 1996). This was the basis for John Adam's and Thomas Jefferson's commitment to democracy. The quest for democracy intensified during the second half of the 19th century and into the 20th century in Britain, continental Europe, and the USA, leading to the abolition of slavery, legalizing of trade-unions, the extension of the franchise to workers and then, in the 20th century, to women, and efforts to provide all people with education and economic security as the condition for being able to function as citizens of a democracy. All this was associated with growing respect for other cultures and the development of what Mikhail Epstein, a Russian philosopher living in Britain and inspired by the work of Mikhail Bakhtin, called "transculturalism" whereby cultures engage with each other. "[T]he fundamental principle of transcultural thinking and existence," Epstein argued, is the "[l]iberation from culture through culture itself," generating a "transcultural world which lies not apart from, but within all existing cultures" (Epstein, 1995: pp. 298-299), This was exemplified by the work of Joseph Needham.

Those advancing the Radical Enlightenment from the mid-Nineteenth Century onwards, influenced by the liberal Hegelian philosophers, perhaps most importantly, T.H. Green, created the League of Nations, the welfare state, and the United Nations, which was central to efforts to end imperialism and to acknowledge the value of non-

European cultures. Major achievements of the Radical Enlightenment were the development of democratic federalism in Switzerland and social democracy in Scandinavian countries, particularly Sweden (Higgins & Dow, 2013). As far as the USA is concerned, high points in such progress were the achievements of Franklin Roosevelt and the New Dealers, strongly influenced by John Dewey and the pragmatist tradition inspired by Schelling, defeating Nazism and fascism, implementing Keynesian economic policies, redistributing income and creating full employment, and taking the lead in establishing the United Nations committed to putting an end to imperialism. These were all achievements of the Radical Enlightenment. After the discrediting of social Darwinism by Nazi Germany and a debased, Hobbesian form of Marxism in the Soviet Union, the Radical Enlightenment appeared to be about to triumph during the 1960s, closely associated with the rise of the humanistic Marxism of the New Left and liberal Hegelianism, as in the work of Shlomo Avineri and Charles Taylor.

And then advances in the Radical Enlightenment began to be undone. This really began with neo-colonialism which began with the overthrow of the elected government of Iran in 1953, orchestrated by Britain and USA, after this government had attempted to nationalize the oil industry. Neocolonialism became fully manifest during the Vietnam War, but also with the suppression of the Prague Spring in Czechoslovakia in 1968, reducing Communist Parties of Warsaw Pact countries to comprador elites serving the Soviet Union. These developments were followed by a global counterattack on the Radical Enlightenment and its quest for genuine democracy by neoliberals in the 1970s, sometimes claiming to be libertarians, which really meant upholding the rights of people with wealth to free themselves from any responsibilities to the communities on which their wealth depended. Neoliberalism was led intellectually by the Mont Pelèrin Society established in 1947, led by Ludwig von Mises and Friedrich von Hayek, and the Chicago economists, led by Milton Friedman (Mirowski & Plehwe, 2009), but they were strongly supported by transnational corporations, particularly those associated with the financial sector, such as George Soros. This movement, vehemently hostile to social democracy, set about unravelling all that had been achieved in the quest for liberty and democracy over the previous century (Slobodian, 2018, 2023). This was a return to possessive individualism in a bureaucratized form, with rule-by-oligarchy, enslaving humanity to the global corporatocracy based in transnational corporations. It involved corrupting national institutions of democracy while manufacturing consent for all this through massive expansion of public relations. All of this had been legitimated by further advances in reductionist biology by advancing the concept of information via sociobiologists, characterizing living organisms as machines for reproducing genes, reviving the previously discredited Social Darwinism which was then used to attack the welfare state. Opposition to neoliberalism was subverted by concentrating media ownership, largely by eliminating investigative journalism, and by undermining the autonomy of public institutions, particularly universities. These developments played

a major role in marginalizing and crippling the humanities and education associated with the humanities.

While philosophers like Cornelius Castoriadis and Paul Ricoeur continued to defend imagination and its role in human creativity and the political possibilities it opened up, showing the role of metaphors and narratives in this, and used this defence of imagination to defend the quest for autonomy and democracy, their work has been ignored by most philosophers (Adams, 2017). Defences of the humanities, from the anthology, *Crisis in the Humanities* (Plumb, 1964), to Mikhail Epstein's brilliant work based on the development of culturology and pointing out its role in transforming cultures, *The Transformative Humanities* (Epstein, 2012), have also been ignored. What I have tried to show is that this failure of the Radical Enlightenment, which is now a threat to the future of humanity, was largely due to its weakening through fragmentation, with most academics in the humanities virtually surrendering and even sabotaging its ideals. Effectively, the Logical Empiricists and then Deconstructionist Postmodernists, who both debunked claims to truth in the humanities and the arts, were embraced, while developments in metaphysics, natural philosophy and the natural sciences that provided support for the civic humanists' conception of humans and their social and political ideals, along with recognizing the importance of the humanities and arts in education, were ignored. What is required is a reintegration of the Radical Enlightenment, and achieving such a reintegration requires above all a recovery of imagination and its powers.

With the Radical Enlightenment vindicated by advances in both the natural sciences and also mathematics inspired by the Schellingian tradition of process metaphysics, aligning the natural sciences, formal sciences, and the humanities, are we now in a better position to justify the continued existence of humanity?

As we have seen, this tradition, by conceiving the goal of science as understanding, brings about a more effective "indwelling" in the world and its components. "Understanding" takes into account the context of analyses and can give a place to the discovery of intrinsic meaning in what is being investigated. The meaning of life is being revealed through the advance of biosemiotics and post-reductionist ecology and the evolutionary theories formulated in terms of these. From this perspective, human history can now be understood in the context of the evolution of nature. Hegel argued that the dialectic of labour is only one of the driving forces of this history. There is also the dialectic of recognition, forming social relations and creating social institutions that more adequately recognize the significance of people, and the dialectic of representation associated with art, religion, philosophy, and science, all of which are not reducible to the dialectic of labour with its quest for control. Formulating these dialectics on the naturalistic foundation supplied by Schelling and the tradition of process metaphysics, this history involves nature through the development of life as semiosis is coming to understand itself through

humans, recognizing the significance of not only humans, but of all life. Humanity is also beginning to develop the institutions that incorporate this recognition. Understanding this historical narrative and its role in nature also involves "indwelling" in this narrative. It invites the receivers of the narrative to interpret their own lives and the lives of their communities, including their broader biotic communities, in terms of it. What is emerging is a grand narrative, extending the grand narrative of the Radical Enlightenment, advancing the dialectic of recognition and the quest for understanding based on process metaphysics. Indwelling in this narrative is, above all, appreciating it as an invitation to advancing life and the conditions for life, augmenting the health of the ecosystems of which humans are part, including human ecosystems. To embrace this narrative is to implicitly be committed to life.

It is possible to refuse the invitation to this commitment, but then it is necessary to provide reasons for this refusal, and when the development of the culture of modernity is fully understood, with its intellectual incoherencies, with the failures of reductionist science, and with the destructive trajectory of the grand narrative of the Moderate Enlightenment and its quest for total control of the world, it is no longer possible to claim that this alternative is the logical conclusion of hard-headed science.

It might still be claimed that humans have become so destructive, that the commitment to life might still require one to align oneself with Günter Grass's rat, as quoted at the beginning of this essay. It could be that despite the possibilities revealed by the Radical Enlightenment, that even when we recognize that humans are cultural beings able to reflect on their culture and transform it to overcome problems facing them, including the enslavement of humans to their own technology on a trajectory to global ecological destruction, humans as a species are so fundamentally flawed that terrestrial life would be better off without them. To begin, with there are their well-documented vices: greed, malice, vindictiveness, propensity for hatred, cruelty, and brutality, along with more difficult-to understand vices associated with an astonishing capacity for self-deception and a propensity for self-destruction, each of which is exacerbated when they operate collectively. These are mostly pathologies of the dialectic of recognition, although not only this. Where involvement in the dialectic of representation is concerned, as Bertrand Russell observed, most people are incurious, absorbed in petty vanities, disinclined to think anything through to a conclusion, and would prefer to die rather than think, and usually do. This is lack of curiosity is clearly important for upholding their self-deception. Then there are the vices associated with the dialectic of labour, such as laziness and shoddiness. There are also pathologies of social life, the most obvious being the growth of macro-parasites, as the historian William McNeill characterized them, contrasting them with the microparasites which cause diseases. These are the people who live by dominating and exploiting others in order to avoid doing useful work themselves.

Less obvious, but even more problematic, are pathologies associated emergent forms that come to dominate societies. As Georg Simmel observed:

> Whenever life progresses beyond the animal level of culture, an internal contradiction appears... We speak of culture whenever life produces certain forms in which it expresses and realizes itself... But although these forms arise out of the life process, because of their unique constellation they do not share the restless rhythm of life, its ascent and descent, its constant renewal, its incessant divisions and reunifications... They acquire fixed identities, a logic and lawfulness of their own; this new rigidity inevitably places them at a distance from the spiritual dynamic which created them and which makes them independent... This characteristic of cultural processes was first noted in economic change. (Simmel, 1971: pp. 375-376.)

Clearly, in referring to economic change, Simmel was alluding to the work of Marx, who, as a major figure in the Radical Enlightenment, was claiming that the oppressive dynamics of the market could be understood and overcome. However, there are other forms that take on a life of their own. Robert Michels wrote of the "Iron Law of Oligarchy," the tendency in social democratic parties, or for that matter, any reformist movement, to generate oligarchical structures that are self-perpetuating and subvert the ends of the movement. This is clearly what took place in the Soviet Union, with the growth of managerialism leading to its eventual stagnation and failure. Such forms can reinforce each other, making it more difficult to overcome their dynamics. While all people are enslaved by these forms, these also tend to produce winners, who use their power to manufacture consent for the perpetuation of these forms, even among those who are oppressed by them. This often involves fostering people's vices in order to undermine any effective or organized opposition to injustices. Quite apart from such efforts, these forms tend to produce and perpetuate the ways of thinking required for their reproduction, and to eliminate the capacity of people to reflect upon and criticise them. This is what the Frankfurt School of social theorists and Marxist philosophers of science revealed. Finally, as Orlov argued, these forms have generated the technosphere, parasitic on and destructive of the biosphere, which increasingly controls all facets of life and is locking in place other oppressive social forms (Orlov, 2017b).

Neoliberal globalization, associated with the rise of the global corporatocracy synthesizes enslavement to the logic of the market by promoting the egoism that's characteristic of brutal 19th century capitalism, with the managerialism of the Soviet Union, thereby integrating greed and instrumental rationality. Organizing consent involves fostering human vices under the guise of supporting individual rights in order to divide and control people and to undermine the quest for truth and justice. The synthesis of greed and instrumental rationality furthers the trajectory of this social order and the forms of thinking required to sustain it. And this is now backed up by technologies of social control, and a military industrial complex that can destroy the

governments of whole regions. It is this whole system that is destroying the current regime of the global ecosystem which, over the last 12,000 years, has been ideal for humans. Mae-Wan Ho and Robert Ulanowicz accurately described the destructive effects of this order:

> The economic globalization promoted by the rich countries in the World Trade Organization is aimed at removing all barriers to trade, finance and procurement, which is tantamount to destroying the system's intricate space-time structure. This inevitably results in the over-exploitation of the poor, especially in third world countries, that will impoverish the whole economic system. But that is not all. As the global economic system is embedded in the global ecosystem, over-exploitation in the global economy will drive people to use natural resources at unsustainable rates, so that the global ecosystem increasingly fails to renew itself. This leads to diminished input into the economic system so that even more natural resources will have to be harvested, resulting in a vicious cycle that will ultimately destroy both the global economy and the earth's ecosystem. (Ho and Ulanowicz, 2005: p. 47)

However, when all the achievements of the Radical Enlightenment are acknowledged, there are grounds for optimism that a better world-order can be created, a world-order that will augment rather than undermine the life of our ecosystems. Despite the pessimism that has paralyzed and depoliticized a whole generation of young people, the history of civilization since the 15th century does show that the Radical Enlightenment has made progress. People in general are more humane and respectful of people from other cultures than they were. And then there are the advances in humanity's self-understanding through philosophy and science, including its relation to the rest of nature, and the development of emancipatory institutions, despite major regressions such as Stalinism, Nazism, and neoliberalism. Even the existence of the capacity to recognize the crisis we are in and to identify the forces driving global ecological destruction, indicates how much progress has been made. Furthermore, critiques of the existing order provide an idea of what kind of world-order is required for humanity to augment rather than undermine terrestrial life. Ho and Ulanowicz have also accurately characterized this:

> We can deal with sustainable economic systems by embedding the global economic system in the global ecosystem. … The global economic system will have an intricate structure encompassing many national economies. Ideally, the intricate structure of the global economy should look like the many nested subcycles that make up the organisms' life cycle. … And each national economy, in turn, would have its own intricate structure that is self-similar to the global. If the entire global system is to be sustainable, there has to be a proper balance between the local and the global, the same kind of reciprocal, symmetrical coupled relationship that one finds in organisms … Furthermore, the global economy is coupled to the global ecosystem, which too, has to have its own balance … so that both can survive. (Ho, and Ulanowicz 200: p. 43)

This can be seen as a defence of democratic federalism with organized decentralization of power, as argued for by Peter Kropotkin, who was a geographer and social ecologist.

Such thinking supports and is supported by recent developments in human ecology, ecological economics and ecological politics. Alf Hornborg, as a human ecologist, has shown why it is necessary to abandon all-purpose money and develop local currencies to foster local communities and prevent destructive exploitation of the peripheries of the world-system (Hornberg, 2019). Ecological economists such as Herman Daly and John Cobb Jr., Peter Söderbaum, Arild Vatn, and Ove Jakobsen have shown what kind of institutions and decision procedures are required to constrain the market to make it serve ecological health, and how to measure genuine economic progress taking into account environmental degradation (Daly and Cobb Jr, 1997; Söderbaum, 2000; Vatn, 2005; Jakobsen, 2011).

In doing so, Daly, Cobb Jr, and Jakobsen have drawn on the work of Whitehead, while Söderbaum and Vatn have integrated ecological and institutionalist economics, and drawn on the work of the institutionalists such as Thorstein Veblen, Karl Polanyi and Gunnar Myrdal. As Erik Reinert pointed out, the institutionalists, influenced by the German historical school of economics, are the intellectual descendants of the Renaissance economists (Reinert, (2004)

Some of the political paths to implementing these ideas to achieve ecological health were charted in the anthology edited by Douthwaite (Douthwaite, 2011), but there are also many more recent works on this, including those associated with the transition town movement committed to transforming towns so they have net zero CO_2 emissions. These works tend to focus on local and national politics. However, it is necessary to think globally, working out how communities need to be changed at every level. The problem of creating a global movement for this is addressed by a variety of eco-Marxists, including Carl Boggs, who, influenced by Antonia Gramsci, argued for the importance of developing an alternative hegemonic culture (Boggs, 2012, and Kohei Saito who, reinterpreting Marx on the basis of unpublished work, has recently argued for a degrowth communism (Saito, 2022). These are only some of the works showing us what needs to be achieved, from the local to the global level, in order to change the direction of civilization, by showing how to achieve this. While victory cannot be guaranteed, such work has been sufficiently advanced to show that there are no grounds for giving up in the face of all the problems. Perhaps biggest problem is that such work is ignored by governments, the mainstream media and the general public, and those developing or promoting such work are being squeezed out of universities and schools by their new managers, identifying themselves as company executives of transnational business corporations and identifying with the global corporatocracy. However, the trajectory we are on will inevitably generate a number of crises, and these crises will generate the opportunity for putting into practice these

ideas, providing they are sufficiently well worked-out and that there are people with sufficient commitment to putting them into practice.

This is the ambition of those promoting an ecological civilization based on a process-relational metaphysics, elaborated through ecology and human ecology, thereby uniting the sciences, the humanities and the arts, while also promoting transculturalism. The notion of ecological civilization was taken up by radical environmentalists in China, most importantly by Pan Yue, the former deputy secretary of the Ministry of Environmental Protection, who argued that since China will be so badly affected by global ecological destruction, it is imperative that it lead the world in creating such a civilization. Formulated as a grand narrative, this involves interpreting the past from the perspective of the future to be aspired to and, utilizing and developing ecological thinking, delineating the paths that need to be taken by participant individuals, communities, nations and civilizations at every level to realize this future. Rather than instrumentalizing the world in order to realize this future, which is characteristic of mechanistic thinking, progress will involve creating the niches where individuals and communities with the potential to augment life can establish themselves and flourish, realizing their full potential to augment life. Embracing this narrative, interpreting all beings, including humanity, human communities, living organisms, and ecosystems as inter-related creative processes, involves imagination, cultivating people's feeling of being participants in communities of communities in a creative world, participating in efforts to realize the highest aspirations of humanity as a component of the global ecosystem. This means embracing life and being committed to augmenting life. It is in this context, with a commitment to overcoming the destructive propensities of humans and the current destructive trajectory of contemporary civilization, that the value of humans can be justified. Making this judgment, that humans are worth saving, should not be understood as the judgment by people as detached spectators, however. As Marx proclaimed in the second thesis on Feuerbach, it is a commitment to proving "the truth, that is, the reality and power, the this-sidedness of … thinking, in practice" (Marx, 1945/1978: p. 144).

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