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Climate Change, Individual Preferences, and Procrastination

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The scientific community almost unanimously agrees that it is imperative to reach the target of net-zero carbon emissions by 2050 to avoid causing irreversible changes to the climate, with all the negative consequences that would follow for both human and non-human animals (IPCC 2018, chap. 2). Yet, the political and individual response to this looming threat continues to lack the needed momentum (Keating 2020; Hodgson 2019). This failure is in stark contrast to the responsiveness that contemporary societies show in the face of other threats, including environmental ones. For example, in the faces of floods, earthquakes, or similar events, people are willing to change their working, production, and consumption habits, and to support supererogatory redistribution of wealth to deal with collective threats. The most recent example of this is the response to the Covid-19 pandemic. In only a few days, almost half the world’s population radically changed their day-to-day routines in order to contain the pandemic (see Araujo and Meyer, L. in this volume for more on this topic).

Some believe that it is epistemic obstacles that make it difficult to motivate people to take concrete action to address climate change (CC), because unlike nuclear or pandemic threats, for example, most of the negative consequences of CC are not knowable by everyone through direct experience but require a high degree of trust in the work and forecasts of experts (Almassi 2012), and this makes the game easy for those who want to deny or reduce the scope of the phenomenon both for specific interests and for mere moral self-absolution (see, e.g. Gelfert 2013). Others argue that it is difficult for people to see CC as a threat that will affect them, or at least as a threat for which they carry some responsibility (Jamieson 1991; Gardiner 2011). This is because CC is a complicated phenomenon that unfolds over time, and its negative effects are predictable only within ranges of risk percentages. Still others contend that it is difficult to feel a strong moral motivation to address CC. This is because its spatial and temporal scope gives the impression that it is possible to delay action indefinitely. After all, why should a person living in Vienna reduce her meat consumption if the main victims of CC are located in distant areas subject to flooding or desertification? Moreover, why should she do her part if richer and more powerful people do not? Isn’t it the responsibility of institutions to deal with CC, rather than individual citizens (Jamieson 2010; Peeters et al. 2019; Persson 2017)?

My theoretical assumption in this chapter is that both the epistemic and the moral obstacles have been largely overcome by the recent waves of climate mobilization, by the serious commitment made by the media on the subject, and not least from the recent and frequent climate-related environmental tragedies (such as the latest floods in Venezia; see BBC 2019). According to extensive studies by the Pew Research Center, over the last decade there has been an increase in the perception of CC as a major threat facing human beings. More specifically, CC is now perceived as the most dangerous threat – more than terrorist attacks or nuclear wars

– by respondents in thirteen of the twenty-six countries surveyed, representing countries on five continents (Fagan and Huang 2019; Poushter and Huang 2019). Another recent study by the Yale Program on Climate Change Communication suggests that almost seventy percent of Americans are “somewhat worried” by CC, while half of them report having personally felt the negative consequences of CC (Leiserowitz et al. 2019). Similarly, individual motivation to bear a share of the CC mitigation costs has increased considerably in recent years. A study published by the Energy Policy Institute and the AP-NORC Center for Public Affairs Research at the University of Chicago (2019) found that more than two thirds of Americans would be willing to pay a carbon tax if they were assured that the proceeds would be used for natural environment restoration. While another study revealed that over sixty percent of British people would be willing to pay to substantially reduce the number of deaths - estimated to be 7000 additional deaths per year from 2050 and 12000 from 2080 onward - in the country associated with CC in the years to follow (Graham et al. 2019).

Yet, despite the fact that people today are much more convinced of the looming and dangerous nature of CC, so much so that they declare themselves willing to make sacrifices to contain it, the motivational gap seems to persist. This poses a serious problem of feasibility with respect to CC mitigation policies, which require not only political dynamism (from both representatives and voters) but also the direct willingness of individuals to shoulder a small part of the mitigation burden (Tan 2015). The focus of this chapter will be on the latter. In particular, I will identify the psychological phenomena that encourage individual procrastination in relation to the implementation of personal CC mitigation strategies. These phenomena can properly be categorized as feasibility hurdles to acting on our accepted moral commitments with regard to CC since their presence makes it less likely that we will act to reduce our individual contribution to CC. Thus, it is important that we understand both how these problems arise and how we can dismantle them as obstacles that stand in the way of personal change.

My central argument in this chapter is that the main reason for people’s continued lack of responsiveness to CC can be explained by a “short circuit” that leads them to decisions that do not reveal their true preferences regarding CC. A preference is “true” if it is one that an individual forms when she looks at intertemporal choices from a position that is temporally neutral. Such a position is one that allows her to form rational judgements about the maximization of her individual well-being, i.e. judgements that take into account a possible discount rate of future utility but that are nonetheless immune from the psychological distortions which, once the moment of choice is approaching, can influence her to sacrifice medium- or long-term benefits (whose utility is duly discounted) to obtain fewer benefits in the immediate future. I claim that this short circuit is caused by two psychological phenomena. First, as the possibility of early rewards gets closer, individuals discount further future utility and reverse their preferences. Second, individuals struggle to order their preferences in a transitive manner when there is an opportunity to obtain small marginal utilities (or avoid disutilities) in the short-term.¹ If we can understand how these phenomena manifest in the context of personal decision-making about CC mitigation, then we can devise solutions that are well-suited to reduce their influence. Towards this end, I offer three strategies that will help individuals resist the temptation to procrastinate on this front. I conclude that while the mechanisms that lead to procrastination can decrease the feasibility of personal action in the

¹ The most insightful contributions on these two topics should be credited to Chrisoula Andreou (2005, 2007a, 2007b, 2010) and Manuel A. Utset (2006, 2010).

face of CC, properly understanding and implementing plans to overcome this phenomenon will render personal efforts aimed at CC mitigation much more feasible.

I. INTERTEMPORAL PREFERENCE REVERSAL

Let's start with the psychological phenomenon whereby people tend to assign more and more value to immediate utility as the moment of decision approaches, often resulting in a complete reversal of their temporally neutral preferences. In this section I will explain why this continuous preference reversal can trap the individual in an infinite loop of procrastination, in which she never carries out the choice she considers the best one, at least, as we will see, from a temporally neutral perspective.

The intertemporal dimension of CC is usually treated by both economists and philosophers in terms of social discount rates, which is the rate at which we must discount costs and benefits realised at equal intervals in the future (Rendall 2019). Let's say that we have to decide how to invest a given amount of money, M , in a project that will be financed over the period of t to $t1$, but will provide returns (in terms of utilities) that extend to the later time $t2$. Many people value enjoying those utilities earlier, rather than later, and how much they do so sets a discount rate. This means they would hold that a marginal increase (or decrease) of utility U that occurs at time $t1$ is more valuable than an equal increase (or decrease) of U that occurs at $t2$. Put another way, if they could invest 2 dollars at $t1$ to obtain 2.2 dollars at $t2$, the existence of a discount rate could imply that their investment actually reduces U , because the value of 2.2 dollars at $t2$ is lower than the value of 2 dollars at t .

There are two basic normative reasons that justify the social discount rate. The first one is that when people can choose whether to enjoy a given benefit sooner or later, they prefer to have it sooner, and this should be taken into account when we evaluate individual well-being. The second reason is that we commonly assume that economic growth rates are sustained over time, so the principle of diminishing marginal utility makes it mandatory that benefits accrued to a poor and to a rich society are not treated equally (see also Nordhaus 2007). Although many people criticize the practice of discounting on normative grounds (see, e.g., Caney 2014; Tarsney 2017), the social discount rate is not inconsistent with individual preferences; indeed, it is supposed to be an indication of how members of a given social group on average assess the utility achieved in the future. Accordingly, once we agree on a given social discount rate, someone who conforms to it in her cost-benefit analysis is supposed to stick to her "true" preferences, that is to say, stick to those preferences that maximize her well-being in light of the fact that the value of utility diminishes over time.

A different phenomenon that is often confused with the discounting of future utility is what Manuel Utset (2010, 256) calls "the immediacy multiplier." Consider the following case. At time t John buys a new car that is worth 100 coins, and the market value of this car is expected to decrease by 2 coins every year for the first two years, by 10 coins per year at the end of the third year, by 20 coins per year at the end of the fourth year, and by 25 coins per year from the fifth year onward until its market value drops to zero. Accordingly, at t John decides that the strategy that would maximize his well-being is to exchange his car within $t1$, that is within the first two years from purchase. Indeed, John is aware of the fact that the value of his utility decreases over time, let us suppose at a rate of 4 percent per year. Thus, if at the end of the

second year he waits one year more to change his car, the marginal value of his loss is not 10 utils but rather 9.6 utils². But the rational strategy remains: bear the cost of changing the car before entering the third year, i.e. before the annual devaluation rate multiplies fivefold. So, we can take John's preference expressed at time t to be his true preference.

However, as soon as the end of the second year approaches ($t1$), chances are that John begins to look at the investment costs of exchanging his car (say 4 utils) *vis-à-vis* the loss of entering into the third year in a different way than he did at t . It may happen that at $t1$ he applies an "immediacy multiplier" to the investment cost of 4 utils, such that at $t1$ he considers the disvalue of the investment costs to be greater now than he did at t . Let us imagine, for example, that John values a benefit obtained right now three times more than a benefit obtained a year later; hence his immediacy multiplier is 3. So, once $t1$ arrives, the perceived disvalue of the investment cost for exchanging car is no longer 4 utils, as it was when John was still at t , but rather 12 utils ($4*3$). When the immediacy multiplier is sufficiently high, as in this case, a preference reversal may occur (Andreou 2007a, 185-187; 2007b, 236-237). Specifically, at t exchanging the car within the second year is valued more highly than waiting until the third year, but at $t2$, the opposite is true.³

The problem with intertemporal preference reversal is that it can give rise to a chain of procrastination. If John follows the strategy that, at $t1$, "seems" to maximize his well-being and accordingly waits until the third year to change cars, then at time $t2$ (the end of the third year) he again ends up in the same situation. At $t1$ he is determined to change his car at $t2$ so as to avoid losing 20 more utils. Yet, when $t2$ comes, the investment costs that John should pay for avoiding entering the fourth year, 14 utils [2 utils (first year's depreciation) + 2 utils (second year's depreciation) + 10 utils (third year's depreciation)] get multiplied by the rate of preference for immediate consumption, i.e. 3; hence John is faced with a choice between renouncing 42 utils ($14*3$) now and renouncing 32,64 utils [34 utils (the sum of annual depreciations from the first to the fourth year)⁴ - 1,36 utils (the 4% of 34, i.e. the yearly discount rate)] at the end of next year, which can give rise to another preference reversal. This behavior is likely to be repeated several times until John ends up in the situation that was the worst for him at t , i.e., the one in which his car no longer has market value.

Accordingly, intertemporal preference reversal can lead an individual into a "procrastination loop" (Andreou 2007a, 189) in which he never reveals in choice his true preferences. In the case of John, his true preferences are the ones he formed at t about $t1$ (or at $t1$ about $t2$, and so forth). The question at this point, however, is why we should consider John's preferences as true at t but not at $t1$. Moreover, why do we consider it to be rational to apply a discount rate at t , but irrational to apply the immediacy multiplier at $t1$? At t John is making an intertemporal evaluation of utility, in which he takes into consideration the pros and cons of obtaining well-being sooner or later, without what Utset defines as "transient distortions brought about by the prospect of experiencing immediate gratification" (2010, 256). In other words, at t John understands that the best strategy for maximizing his well-being is to spend either 2 coins at the

² Here I am assuming, for simplicity, that utility is directly proportional to coins, i.e. to purchasing power, hence I consider, for example, 10 coins to be equivalent to 10 utils.

³ In more analytical terms, if we call option A 'exchanging the car within the second year', and option B 'waiting until the third year, we may say that a preference reversal occurs for John if at t he thinks $A > B$, but at $t2$ he considers $A < B$.

⁴ 34 utils = 2 utils (first year's depreciation) + 2 utils (second year's depreciation) + 10 utils (third year's depreciation) + 20 utils (fourth year's depreciation)

end of the first year or 4 coins at the end of the second year, while also considering the opportunity-cost of investing money to safeguard the value of the car and the fact that within a few years his income could be greater. Yet, the psychological distortions that arise at the moment in which John is called to open his wallet lead him to abandon this strategy. Another way to understand why the preference that John matures at t about what he has to do at $t1$ is less true than the preference that he matures at $t1$ about what he has to do at $t1$, is to take into account that the second preference is purely temporary. It develops only with the approach of $t1$ and if performed it gives rise to remorse immediately after $t1$: that is, if John does not make the investment at $t1$, he regrets it right afterwards, because he understands that this delay would prevent him from maximizing his well-being in the medium-run; hence he is committed to do the second best thing, i.e., changing car at $t2$. Yet, at $t2$ John will form a different preference than he had at $t1$ about $t2$, and this is why he is locked into a procrastination loop that progressively makes him worse off than he could have been if he stuck to his true preferences initially.

I suggest that intertemporal preference reversal is one of the two main explanations behind general procrastination, and I believe that there are some intrinsic features of CC that lead to this form of procrastination (see also Andreou 2007b, 240-242). As in the car example, CC mitigation is a matter of incurring costs now to avoid incurring ever-increasing costs in the future. And when it comes to making spending decisions, the incentive to postpone them is quite high because the negative consequences of doing so (increased CC effects + higher costs of mitigation) will not be felt until later (Persson 2017). The intertemporal separation of costs and benefits renders CC more similar to paradigmatic situations of procrastination due to preference reversal, as in the car case, than to other global threats, such as terroristic attacks, nuclear wars, and epidemics. What characterizes these latter phenomena is that only one part of the costs can be postponed, namely those related to investments for containment, while the negative effects of this postponement cannot be postponed, namely the risk of attacks or the deaths due to the epidemics. This helps to explain why these other threats usually receive proportionate responses, both in terms of public investments and in terms of changes in individual lifestyles, while CC does not.

II. INTRANSITIVE PREFERENCES

The second characteristic of CC that leads to procrastination is the inability of many individuals to acknowledge the transitivity of preferences with respect to mitigation strategies. Preferences have transitive properties in the following way: if an individual considers option X superior to option Y, and option Y superior to option Z, then she should also consider X superior to Z. The inability to acknowledge this characteristic is due to the fact that CC is the sum of countless individual emissions that taken separately are negligible (Sinnott-Armstrong 2005; Jamieson 2010).⁵ This is a challenge that is often discussed in relation to assigning individual moral responsibility for CC. Why should I consider it morally wrong to travel by car rather than by bus if the emissions caused by a one-day drive are neither sufficient nor necessary to cause

⁵ John Nolt (2011) convincingly argues that it would be wrong to consider as negligible the harm caused by the annual emissions of an average American (that is the amount of emissions you obtain by dividing the sum of American emissions by the American population). Yet, in this chapter I am focusing on the negligible impact, in terms of emissions, of a marginal routine activity. This is compatible with the claim that the effects of a huge number of these activities repeated throughout the year are by no means negligible.

CC? This same concern is also related to the question of whether individual moral responsibility for CC is political – understood a responsibility to engage in political advocacy for the adoption of appropriate climate policies – or also interpersonal.

Yet, a less evident, but equally important, result of the structure of CC is that it provides the psychological prerequisites for a continuous postponement of changes in individual behaviors that are necessary for mitigation. Because of the small disutility of a marginal postponement and the huge disutility of an immediate change in individual routine, the rational thing to do is to continuously postpone the change, until the individual ends up in a situation in which she prefers not having postponed from the first moment. For even those individuals – the majority, I guess – who care not only about themselves but also about their children and grandchildren, or more generally about their community, know that the negative effect of an additional steak or car trip on the group or on the people they care about is much less than the disutility they would personally have to endure from a day of abstinence (from meat or from their car). In this sense, the individual gets trapped in a procrastination loop in which she does not reverse her preferences, as in the previous example, but rather she cannot maintain the transitivity of her preferences over time.

Let's consider, for example, a person who finds out he has high cholesterol and has to stop eating his favorite food, cheese. What is the right moment to stop eating cheese, or in other words, what is the best strategy that maximizes individual well-being in the face of both the risks stemming from high cholesterol and the great pleasure spawned by every single slice of cheese? At time t our cheese-enthusiast is still far from suffering the negative effects that high cholesterol might have on his body, and one more slice of cheese might give him significant pleasure without altering his cholesterol level. Thus, he might have good reason to prefer eating one more slice. But a second slice of cheese would also have no effect on his cholesterol level, so he might prefer eating two more slices rather than just one. If we take N to be the level of cheese consumption of this person at t , and W to be the minimum amount of cheese slices which, summed to N , can give rise to severe health problems, we might order the preferences of the cheese-enthusiast in the following way: $N+1 < N+2 < N+3 < N+4 < N+5 < \dots < N+W < N+1$ (See also Andreou 2007, 187-188; Thaler and Tversky 1992; Aldred 2007).

As we can see, the structure of the “cheese problem,” which is the result of a long series of consumption actions that outside the sum do not have any impact on the health of our friend, prevent him from ordering his preferences in a transitive way. While the cheese-enthusiast has reasons to prefer any single act of procrastination, this chain leads him to a level of cheese consumption that he considers worse than not having procrastinated from the first moment he discovered his risks associated with high cholesterol, namely t . This sort of intransitivity of individual preferences is a different phenomenon from the intertemporal preference reversal, since at no time in the cheese case does the individual reverse his preferences. The latter remain stable and intransitive over time. Yet, both phenomena give rise to similar procrastination loops. More specifically, the intransitivity of individual preferences in cases as the one just described creates a sort of individual tragedy of the commons. For the rational thing to do at each subsequent interval is to keep on exploiting the “individual” pool of resources⁶, which in this case is the body's ability to absorb cheese without causing a dangerous accumulation of

⁶ Conversely, in classic collective tragedies of the commons we are concerned with “common pool resources” (See Schlager 2002).

cholesterol. Yet, the pursuit of maximum individual utility risks progressively dragging the individual in a way that actually minimizes his utility.

Something similar happens with individual actions that can mitigate CC, as for example going by bus instead of car or investing money in the thermal insulation of a home, with the further complication that the problem of procrastination is exacerbated by the possibility of freeriding on others. For in the cheese case, and more generally in classic cases of procrastination that are discussed in the psychological literature, it is the same individual who procrastinates who also suffers the consequences of marginal delays and there is no way to delegate to others the actions that one continues to postpone. Conversely, even the individual who is strongly committed to changing her behaviours to mitigate CC knows that a failure to meet her commitment will have an insignificant effect on CC. On the other hand, in a situation in which all other individuals do not abandon the status quo, the committed individual knows that her change of behaviour has an insignificant effect on CC.

Accordingly, the right way to look at the procrastination of individual actions that could mitigate CC is as the procrastination of single actions that, in order to achieve the objective that motivated them, must be accompanied by a series of similar actions carried out by other individuals over whom the procrastinator has no control. More simply, while the cheese-enthusiast can experience both the positive effects of fulfilling his commitment (better blood analysis) and the negative effects of procrastination (the risk of raising his cholesterol too high), the CC mitigator cannot touch either the positive or the negative effects of his change of transport (for instance). His commitment has to be strong enough that he sticks to it simply because it is collectively rational to do so: i.e., if everyone renounces the maximization of her well-being (by renouncing freeriding, for example), it is possible for everyone to avoid ending up in the worst situation, a climate out of control.

III. OVERCOMING CLIMATE CHANGE PROCRASTINATION

Procrastination is the last step in the chain of obstacles that limit the feasibility of personal CC mitigation. It arises when an individual has understood the dangers of climate change, is convinced that she wants to play her part towards remedying the collective problem (Baatz 2014), but nonetheless continues to postpone the actions that she considers morally just. Accordingly, I maintain that the proper way to look at the feasibility problem of CC with respect to what individuals could do is not in terms of a motivational gap (Roser 2016) or of moral corruption (Gardiner 2011), but rather in terms of the implementation of already established motivations. Being distinct with regard to the diagnosis of the feasibility obstacles that hinder CC mitigation, will therefore allow us to be distinct with regard to the solution around these obstacles.

If we are to make individual mitigation efforts feasible, we must first acknowledge that the two types of procrastination described above require two different strategies of containment because their causes are different. The second thing to note is that not every procrastinator is aware of the psychological mechanisms that are at stake in his constant postponement of the things he feels are important. In this respect, I think that, following Utset (2010, 257), it is useful to distinguish between naïve, sophisticated, and partially naïve procrastinators. In the case of intertemporal preference reversal, a naïve procrastinator is convinced, at time t , that at

time $t1$ he will be able to carry out what he deemed rational at time t ; a sophisticated procrastinator is aware that when the time comes to collect a benefit or postpone a loss, she will reverse the preferences she ordered at time t ; and a partially naïve procrastinator is aware that a sort of utility multiplier can increase the value of an early reward (or loss) but she does not foresee that this phenomenon can reverse individual preferences. In the case of stable and intransitive preferences, a naïve procrastinator is not aware of the circularity of her preferences; a sophisticated procrastinator knows that at some point she will consider not having procrastinated from the first moment as preferable to the situation she ends up in through marginal delays that, taken separately, are rational; and a partially naïve procrastinator knows that she might have incentives to postpone the tasks she is committed to, yet she ignores that this might lead her into a procrastination loop.

The third thing that it is important to highlight if we are to overcome procrastination on CC mitigation is that many strategies and suggestions for overcoming classic cases of procrastination have been formulated (see for example Steel 2010; Lamia 2017). It is impossible to take into account this enormous body of information in the space that remains in this chapter. What I shall do, instead, is to focus on those strategies that I consider more effective with respect to CC. As we shall see, there are three broad classes of actions a procrastinator can undertake to try to stick to her true preferences. However, the precondition for a procrastinator to overcome procrastination is that she understands being a procrastinator, that is, she must understand that there is a problem with the rationality of her judgments. Accordingly, the strategies for softening procrastination are accessible only to sophisticated procrastinators. On the other hand, what we can do with both naïve and partially naïve procrastinators is to make them aware of the risk they face when their choices don't actually reveal their preferences, as explained in the section "Intertemporal Preference Reversal".

Having made these points, the three broad classes of actions in response to procrastination that a self-conscious procrastinator can undertake are the following: i) pre-committing to the costly action that is likely to be postponed at a later stage; ii) raising the costs of marginal postponements; or iii) reducing the disutility of the action that is likely to be postponed. Below, I analyze each of these strategies in turn.

Pre-Commitment

Let us go back to the car case. Suppose that John, the car buyer, is a sophisticated procrastinator. At t , he prefers to exchange his car by $t1$, but he also knows that when $t1$ comes he will prefer waiting one more year, and after one year he will prefer to wait one year more. Accordingly, John makes this request to the car dealer at the moment of purchase: "Please, let's make a contract, according to which in twenty-four months I give the car back, and you deduct its value from the purchase of a new car, which I now pledge to purchase." This sort of pre-commitment can neutralize intertemporal preference reversal and can allow John to reveal in choice the preferences he has at time t (See also Utset 2010, 257; Elster 2000, 1-87; Verbeek 2007).

Pre-commitment can be useful with respect to the feasibility of those individual investments that could reduce emissions (and so contribute to CC mitigation), of which individuals perceive both the moral urgency and the economic convenience in the medium term, but which risk

being continually postponed due to a preference reversal that occurs as the time of payment approaches. Some examples can be the purchase of low-energy appliances, the thermal insulation of homes, the installation of solar panels, and so on. Let us suppose that after having fixed the car affair, John realizes that installing solar panels on the roof of his house would be both morally good and utility maximizing for him in the medium run. It would allow him to stick to his moral commitment to do his part with respect to CC and at the same time he knows that his investment will be returned in full in just five years, at which time he will start saving money on his electricity bills. Yet, when the time comes to sign the check to the solar panel dealer, the disutility of withdrawing the amount due for the panels from his bank account increases so much because of the utility multiplier, that it ends up outweighing both the utility of reducing his emissions in the years to come and the savings he will earn on his bills after five years.

A solution to this problem could consist in making the spending decision binding at time t , while leaving the actual spending at time t' . As in the car case, we can imagine, for example, that at time t John asks the panel dealer for a contract, in which it is established that at t' (e.g. one year later) he will buy the solar panel. By doing this, John makes sure that at the time he decides whether or not to make the medium-run investment, he values costs and benefit in a “rational” way, that is by balancing early costs and future benefits (which include both the utility stemming from sticking to his environmental commitment and the utility of paying lower bills). Through this pre-commitment, John can discount future utility without falling prey to the immediacy multiplier. In other words, it helps John to evaluate his investment from a psychologically neutral position, and this allows him to implement his true preferences.

Pre-commitment, when available, works quite well with intertemporal preference reversal. If sellers of all sorts of eco-friendly products - from household appliances to solar panels to electric cars - offered purchasing plans of this sort, they would greatly help consumers implement the decisions they consider to be morally right (and in some cases also economically worthwhile) with respect to CC. And in doing so they would help to make the transition to less polluting consumption items more feasible, in those cases in which the consumer has already matured a preference over a reduction of his individual emissions but she is unable to reveal this preference in her choices because she is trapped in a procrastination loop. Obviously, when the time of spending comes, the consumer might regret having signed the contract because of the immediacy multiplier, but at that point she would have no choice but to stick to her preferences, assuming that the costs of breaching the contract are sufficiently high.

It might be argued that after the consumer regrets having signed the first pre-commitment contract she will not sign another contract of this kind. This is not necessarily true, for the idea is that pre-commitment helps the individual to realize her true preferences, helping her to overcome the momentary alteration of rationality that occurs at the time of payment. Accordingly, when this obstacle has been overcome, we can expect the individual to start enjoying the benefits of the investment *vis-à-vis* the costs. Certainly, it may happen that someone like John may realize it is not worth investing a lot of money to help mitigate CC, because, for example, it is more important to invest in his daughter’s education, or that the expected savings on the bill are not actually substantial once the maintenance costs of the panels are factored in. Yet, these contingencies have nothing to do with intertemporal preference reversal, but correspond instead to a change of preferences, which is beyond the scope of this chapter.

Raising the Costs of Marginal Postponements

We'll now consider the other form of procrastination, the one that is caused by intransitive preferences. How can the cheese lover get off the loop that leads him to high cholesterol? One simple solution is to recommend this person to renounce maximizing his utility. At the moment he receives his first blood test he has to stop eating cheese and in so doing he does not run the risk of losing control of his cholesterol. Yet, this is in contradiction with individual rationality, to the extent that it does not maximize well-being so long as the risk is the result of many small actions rather than a single event. So why should our friend abstain from one more slice of cheese before quitting altogether? This is not simply a pedantic academic objection, but a very practical problem. Recommending that someone renounce an action that can augment his well-being without harming anyone else is hardly a winning strategy. For the individual incentive to violate the recommendation with respect to the single action remains quite high, regardless of the risks that could be encountered in the medium or in the long run.

Instead, we can try to render any single postponement inconvenient (see also Andreou 2010, 209-210). This would reconcile the strategy of risk containment with individual rationality. Let us imagine that, like John, the cheese lover is also a sophisticated procrastinator, hence he is aware of the fact that if he keeps on consuming cheese he will end up in a procrastination loop. Accordingly, he asks his partner to hide the cookies he likes so much for breakfast, every time he eats a slice of cheese. This agreement would substantially increase the disutility of the marginal consumption of cheese, which is no longer the small impact on cholesterol levels but also includes having to forego cookies for breakfast. Under these circumstances, the rational thing to do is to renounce cheese from the first blood test, i.e., before entering the procrastination loop. As in the car case, the trick consists in leading the individual to decide in advance upon a given course of action by raising the "costs" before the loop begins.

The implications of this simple model for increasing the feasibility of individual actions aimed at mitigating climate change are quite relevant. Just think of all those changes in consumption and transportation habits that can help reduce an individual's impact on CC: using public transport instead of a car, eliminating meat from one's diet, sorting waste properly, and making the use of electricity more efficient inside one's home, to name a few. As with the cheese case, these are situations in which the disutility of marginal postponements are negligible (one more steak or one more trip by car will not change the fortunes of the planet), whereas the disutility of the change of habits is huge (just think about how painful it could be for a meat lover to suddenly become a vegetarian or for a person used to going to work in a car to have to adapt to public transport). Thus, the rational strategy is to keep on postponing the change of habits, until the individual record of emissions gets so high that the individual has fallen short of her commitment to play her part in the containment of CC. In comparison to the cheese case, individual CC mitigation has the further complication that the individual emissions that result from a complete procrastination loop have a minimal, almost imperceptible effect, on the global mathematics of CC. Accordingly, the right way to look at the failure of individual rationality is with respect to moral preferences: the individual *wishes* to play her part in CC mitigation, regardless of the practical consequences of this, but due to continuous postponements she does not do so.

One solution is to render marginal postponements costly. Let us focus, for example, on the commuter who is resolute in abandoning the car in favor of the bus, but keeps on postponing this change in her routine for the reasons just discussed. One way to raise the disutility of one more day by car is to ask someone, her flatmate for example, to add some costs to any single postponement. Suppose that the commuter makes the following request to the flatmate: “Please, every time that you see me taking the car in the morning, leave your dirty dishes in the sink, so when I come back, I have to wash them before I can cook.” If the flatmate accepts the task, the commuter would find herself having to balance two different costs every morning. On the one hand, there is the disutility of knowing that she is not living according to her personal moral commitment with respect to *CC plus* the disutility of having to wash someone else’s dishes in the evening. On the other hand, there is the disutility of a longer and less comfortable trip by bus instead of car. Chances are that the first sum of disutilities can outweigh the second disutility and hence block the procrastination loop.

As Andreou (2007b, 243-248) has correctly pointed out, however, these external control mechanisms face the further problem of “second-order procrastination.” That is, the same reasons that induce the commuter to continuously postpone the change of means of transport might lead her to postpone adopting the solution. After all, imagine that the commuter wakes up in the morning and knows that she will once again delay the desired course of action. Why would she set up an abstruse mechanism to prevent her from procrastinating if she wants to procrastinate? Here, too, the trick is to anticipate the solution by separating the time of the decision to adopt a strategy to prevent procrastination and its actual implementation. Imagine our commuter asks her flatmate to implement her sanction from the following week, adding also that if she changes her mind and withdraws the sanction warrant, the flatmate should not take it into account but should rather stick to the first warrant. This would allow the commuter to set in motion a procrastination containment mechanism before the procrastination instinct comes into play, either in the first-order or second-order variants.

Reducing the Disutility of the Action

That Is Likely to be Postponed

Another lever that can be used to combat both intertemporal preference reversal and intransitive preferences is to ease the malaise and discomfort that is associated with the course of action that is sought to be postponed. Admittedly, in situations like the solar panel investment, it is quite difficult to find something fun or enjoyable in signing a check. Yet, when we are in the presence of single, small actions that change our routine, it is possible to associate them with small rewards or to try to socialize them so as to render them more enjoyable.

Let us focus on the bus/car case. We have seen that we can raise the costs of marginal postponements through something like the “dishes penalty.” But we can also think of lessening the “costs” of prompt action. We could transform the penalty-mechanism into a reward-mechanism. For example, we can suppose the commuter entrusts her precious bottle of Japanese single malt whiskey to her flatmate and advances the following request: “Please, keep it hidden from me, and let me pour a glass in the evening only on the condition that I took the bus to get to work that morning.” Another strategy is to create a new reward, instead of depriving yourself of something and then taking it back as a reward. Our commuter might

convince herself that by taking the bus instead of the car for one week she gets enough exercise (walking to and from bus stops) that she can eat dessert when she goes out to dinner with friends (see also Andreou 2010, 211-212). The commuter can lower the disutility of the change in routine and hence reduce her incentive to get into the procrastination loop. A further possibility is to render the change in routine more enjoyable in itself, without any reward. An easy solution can be to focus on the positive aspects of the bus trip that exist but risk being underappreciated: the chance to read the newspaper on the way, to take a nap, to meet new people, and so on. A more complex solution is to try to render the trip more enjoyable. For example, the commuter might try to persuade her friends or colleagues to take the bus as well, so that they can have a chat together on the way there and back (see Heath and Anderson 2010, 242-244).

These strategies, seemingly trivial, can play a role in the feasibility of those routine changes that are necessary to implement one's moral preferences with respect to CC. This is particularly true with regard to those actions, such as changing means of transport, making selective consumption of products with low emission impact, reducing the use of air conditioning in summer and winter, which are perceived by many as just, do not involve costs (indeed, in many cases they lead to savings), but they are difficult to be put into practice because of non-economic disutilities (the renunciation of the comfort of the car, the convenience in terms of time and effort of a diet based on meat, the pleasure of living in a very cold environment in summer). In these cases, neither the reward mechanism nor the strategies that aim to make the change in routine more pleasant, eliminate the non-economic disutility associated with the change in routine, nor do they aim to correct their subjective perception over time, but instead aim to introduce new counterbalancing benefits, so as to encourage the individual to do what she considers right.

IV. CONCLUSION

There is a fourth way to avoid procrastination, which I have not considered in this chapter: taxes, subsidies, and state sanctions. Do you want to convince John to invest in solar panels? Just let him deduct the costs from his taxes. Do you want to convince someone to stop using the car? You can raise taxes on fuel, create restricted traffic zones, or increase parking costs. Do you want to encourage the purchase of green appliances? Give subsidies to producers so they can lower costs.

These practices are valid, though if taxation is not well calibrated it risks unfairly allocating the costs of the energy transition. The same applies to subsidies, which could unfairly enrich some people to the detriment of others. And complete prohibitions on some activities are likely to be so radical that it will be hard to get them approved.

Yet, the purpose of this chapter was to explore why many people fall short of their personal moral commitment with respect to CC, thus stalling any attempt to engage in personal CC mitigation. The explanation is that two characteristics of CC expose motivated people to a *status quo* bias: the temporal dispersions of costs and benefits and the fact that CC is the result of a huge number of actions that taken separately are negligible. Accordingly, I discussed three different strategies to overcome procrastination in personal CC mitigation. The advantage of framing the feasibility of individual duties of climate justice in terms of helping people to reveal

in choice their true preferences, instead of assuming that people have morally wrong motivations and focus on how to change them, is that it enhances their moral autonomy. In other words, it leads them to implement what they consider as morally compelling without resorting to coercive practices, thus avoiding, among other things, the costs of enforcement.

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