



THE  
THIEF  
OF  
TIME

Philosophical Essays  
on Procrastination

*Edited by*  
CHRISOULA ANDREOU  
*and* MARK D. WHITE

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Chrisoula Andreou &

Mark D. White

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To  
Mike and Kaemon  
and  
Paul and Ree

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# The Thief of Time

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# Introduction

*Chrisoula Andreou & Mark D. White*

Procrastination is familiar and interesting but also puzzling. Although it is generally perceived as harmful and irrational, recent studies suggest that most of us procrastinate occasionally and many of us procrastinate persistently.<sup>1</sup> Not even saints are immune: Saint Augustine records in his *Confessions* how, after years of sexual hedonism, he vowed to return to Christianity and prayed for chastity and continence—“only not yet.” Although he “abhorred” his current way of living and “earnestly” wanted to change his course, he kept deferring any change until “tomorrow.”<sup>2</sup>

What, exactly, is procrastination? According to one simple and familiar characterization, procrastination involves simply putting things off until the last minute. But some people do this intentionally, maintaining that they do their best work under pressure. Taking the simple, familiar characterization of procrastination as their starting point, some psychologists have explored the question of whether procrastination improves or reduces quality of work and quality of life. Prominent studies suggest that, in general, the strategy of leaving things until the last minute is not a good one—the agent pays a steep price in the form of reduced well-being and shoddy work.<sup>3</sup>

But does this really get to the core of the problem of procrastination? In a unique classic essay on procrastination, psychologists Maury Silver and John Sabini suggest that the answer is no.<sup>4</sup> According to their view, we do not *discover* that procrastination is a problem by discovering that it has bad consequences. Rather, proper analysis of the concept reveals that delay does not count as procrastination unless it is “irrational.” Taking this as their starting point, they then look into the factors that prompt or support irrational delaying.

1. Steel, “Nature of Procrastination.”
2. Book VIII.
3. Tice and Baumeister, “Longitudinal Study.”
4. Silver and Sabini, “Procrastinating.”

Here, philosophical distinctions and debate concerning reason and rationality become relevant. Presumably, a person does not count as a procrastinator simply because she performs an action later than it should have been performed. For instance, given the information available, she may have had very good reason to believe that she should act later rather than sooner. In this case, she need not count as irrational, even if she failed to do what she had most reason to do.

Drawing on a common philosophical conception of irrationality, one might characterize procrastination as acting later than one *thinks* one should. Before accepting this characterization, one must carefully think through the following questions: Is there room for a subtle form of procrastination that works precisely by influencing one's thinking about when something ought to be done? For example, can procrastination take the form of discouraging one from forming any clear judgment about the need to act promptly, perhaps by distracting one's attention away from certain inconvenient truths (or possibilities), such as that one will be even more tired tonight than one is now? What if one is not only distracted from inconvenient truths but also develops a rationalization for delaying (for example, "I really must watch this DVD so that I can return it to Maria promptly")? Can this still count as procrastinating? If so, must the rationalization be interpreted as self-deception? Otherwise put, must it be true that, on some level, one thinks delaying is uncalled for? Another thing to consider in relation to the idea that procrastination involves acting later than one thinks one should is the possibility of procrastinating with respect to an action that one commits to against one's better judgment. Suppose someone forms the intention to tell a lie even though he believes he should not do so. He can, it seems, procrastinate with respect to his akratic intention, but it is not clear that procrastination of this sort can be squared with the idea that procrastination involves acting later than one thinks one should.

Perhaps more promising is the idea, taken for granted by some psychologists, that procrastination involves irresoluteness, which is possible even with respect to an akratic intention. In being irresolute, one violates a prior intention. But this alternative characterization of procrastination might also be too restrictive. For it seems that there could be a form of procrastination that works precisely by discouraging one from forming any specific intention about when to act.<sup>5</sup> Evasiveness of this sort is particularly easy to get drawn into when vagueness concerning when one must get started on goal-directed actions makes it possible to interpret oneself as having a goal (such as retiring with enough funds to live comfortably), though one has not acted on the goal or even yet formed any plan for realizing it.

5. According to Sarah Stroud (chapter 3), procrastinating with respect to X may be possible without even a vague intention to X at some point (let alone a specific intention regarding when to X).

The possibility of vague goals raises questions concerning the connection between procrastination and hypocrisy, as well as questions concerning procrastination and self-management problems associated with the fact that our choices are spread out over time. Based on the idea that actions speak louder than words, it might be suggested that procrastination is nothing but hypocrisy, understood as mere lip service to a goal one does not genuinely have. Traditional economic models of choice suggest that preferences (broadly construed so as to capture all of the agent's values) are revealed in (informed) choice. This suggests that when an agent puts off an action too long relative to her proclaimed preferences, this betrays a mismatch between her proclaimed preferences and her true preferences. Recent quasi-economic models have made room for genuine procrastination by showing that there are ways in which global preferences (preferences over extended courses of action) can fail to be revealed in choice. If, for example, an agent experiences preference reversals as a result of discounting, or has intransitive preferences, her preferences concerning her current options can lead her to follow a course of action that she finds unacceptable and invariably ranks below another available course of action that she finds acceptable. Consider an agent who values saving for a comfortable retirement but also values the goods she can get from current spending. At every point in time, the agent may rank never saving below saving every week and rank saving every week below spending this week and saving next week. Given these preferences, the agent can be led to constantly put off saving and so end up having never saved, which she invariably ranks below having saved every week.<sup>6</sup>

The introduction of preference reversals and intransitive preferences raises issues concerning the challenges associated with effective self-management in the face of fragmented and temporally extended agency. As such, a deep understanding of procrastination will require some reflection on personal identity and on what it takes to be a functional enduring agent. Is procrastination the product of compromised agency, involving a breakdown of will? Does it betray a lack of identification with one's future self? If the latter, does the assumption that procrastination is irrational involve a commitment to the normative force of the dictates of prudence and a rejection of pure instrumentalism about practical reason? Is procrastination just a manifestation of the vice of imprudence? Are there dimensions of procrastination that can be illuminated by (or that can illuminate) ethical theory, particularly virtue theory?

Like questions about the nature of procrastination, questions about coping with the problem are both interesting and important. Consider the following: If procrastination involves a breakdown of will, is the

6. Regarding procrastination and preference reversals, see, for example, O'Donoghue and Rabin, "Doing It Now or Later," "Incentives for Procrastinators," and "Choice and Procrastination." Regarding procrastination and intransitive preferences, see Andreou, "Understanding Procrastination" and "Environmental Preservation and Second-Order Procrastination."

solution the building of greater willpower or, instead, less reliance on the will in achieving one's long-term goals? Are social and legal pressures aimed at reducing procrastination unacceptably paternalistic? Do we have a right to access legally enforceable precommitment devices that can keep us on course, and do those in power have the right to provide or impose upon us these devices at our expense and for our own good?

We pose these questions without expecting to work through every one of them in this volume. The aim of this project is to take the first major step toward integrating the problem of procrastination into philosophical debate. The mix of theoretical models, empirical data, and critical argument in these chapters reflects our sense that philosophical questions concerning the nature of procrastination are illuminated by a wide range of methods of inquiry. Our hope is that this exploration of procrastination will spark novel ideas about both familiar and newly emerging philosophical issues.

We have divided the volume into three parts. The chapters in the first part are primarily concerned with analyzing procrastination or uncovering its sources. In "Procrastination: The Basic Impulse," George Ainslie presents procrastination as the purest illustration of our propensity to disproportionately value the immediate future. Given his definition of impulses as temporary preferences for smaller, sooner rewards over larger, later rewards, procrastination figures in Ainslie's view as the most basic impulse. Don Ross's "Economic Models of Procrastination" relates the leading psychological account of procrastination, which is tied to Ainslie's work on impulses, to economic models of procrastination and other self-control lapses. According to Ross, economic modeling illuminates features of self-control lapses that would otherwise remain obscure. In "Is Procrastination Weakness of Will?" Sarah Stroud considers the hypothesis that procrastination is a species of weakness of will—a practical failing that has received a great deal of philosophical attention. She argues that while there are important affinities, procrastination does not fit seamlessly with either the classic or the revisionist account of weakness of will but, instead, is distinctive enough to require an analysis of its own. In "Intransitive Preferences, Vagueness, and the Structure of Procrastination," Duncan MacIntosh resists the idea, mentioned above, that procrastination can be fostered by intransitive preferences and argues that procrastination is more closely tied to familiar explanations of weakness of will. Part I ends with Jon Elster's "Bad Timing," which embarks on the task of cataloguing the causes of irrational delay. Elster's discussion covers a range of mechanisms that can generate procrastinating behavior, including perfectionism, wishful thinking, and self-deception.

The chapters in the second part of the book explore the connection between procrastination and imprudence or vice. In "Prudence, Procrastination, and Rationality," Olav Gjelsvik picks up on the idea, mentioned above, that procrastination is tied to preference reversals that result from

discounting the value of future well-being and argues that recognizing external reasons is the key to a solid defense of the idea that rationality precludes discounting-induced preference reversals. Christine Tappolet's "Procrastination and Personal Identity" ties procrastination to a lack of concern for one's future self and suggests that, so understood, the phenomenon of procrastination undermines certain objections to psychological continuity accounts of personal identity, since many of the objections assume that we invariably have a special concern for our future selves. Sergio Tenenbaum's "The Vice of Procrastination" casts procrastination as a failure of instrumental rationality and, more specifically, as the "vice of deficiency" corresponding to the virtue of "practical judgment," which allows for the successful implementation of long-term plans and policies. Based on his reasoning, Tenenbaum questions the influential view that a purely instrumental conception of rationality is incoherent. In "Virtue for Procrastinators," Elijah Millgram connects procrastination with the fact that the value of many important human goods is not simply the sum of the goods they provide at each moment. He then sketches a picture of the "fallback virtue" procrastinators sometimes use to overcome their problem and, building on this picture, challenges the Humean idea that instrumental reasoning is all there is to figuring out what to do. Finally, Jennifer A. Baker's "Procrastination as Vice" suggests that procrastination cannot be understood independently of a rich ethical theory concerning virtue and vice and that ethical theorists can benefit from exploring the complexities of procrastination, which are often papered over for the sake of clean analysis.

The chapters in the third part of the book are concerned primarily with strategies for coping with procrastination. In "Overcoming Procrastination through Planning," Frank Wieber and Peter M. Gollwitzer recommend forming detailed implementation intentions (plans concerning when, where, and how one will perform goal-directed actions) as an easily applicable planning strategy that can help automate goal-directed behavior. Their discussion reviews and draws on their extensive empirical research in this area. Chrisoula Andreou's "Coping with Procrastination" focuses on a puzzling but familiar coping strategy that has not yet been analyzed in the literature on procrastination. The strategy involves leveraging control, and, according to Andreou's reasoning, in employing the strategy, we take advantage of the possibility that poor self-control can be a local trait rather than a robust character trait. Mark D. White's "Resisting Procrastination: Kantian Autonomy and the Role of the Will" explores procrastination in the context of a volitionist economic model of will and character that he developed in previous work. White represents procrastination as a type of akratic behavior, reflecting weakness of will, and warns against weakening the will further via heavy reliance on external coping devices. In "Procrastination and the Extended Will," Joseph Heath and Joel Anderson argue that an overly internalist conception of the will has biased discussion toward coping strategies focused

on changing one's thinking and has obscured the strength and significance of the environmentally scaffolded will. In the final chapter, "Procrastination and the Law," Manuel A. Utset considers how lawmakers can help us cope with procrastination or, alternatively, can take advantage of our procrastinating ways. In this chapter, the social significance of procrastination—an often neglected but important issue—is made apparent.

# Part I

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## Procrastination

### The Basic Impulse

*George Ainslie*

Webster's defines *procrastinate* as "to put off until tomorrow, or from day to day"; it generally means to put off something burdensome or unpleasant and to do so in a way that leaves you worse off. By procrastinating, you choose a course that you would avoid if you chose from a different vantage point, either from some time in advance or in retrospect. Thus, the urge to procrastinate meets the basic definition of an impulse: temporary preference for a smaller, sooner (SS) reward over a larger, later (LL) reward. I will argue that it is the most basic impulse, the one in which the disproportionate value of the immediate future can be seen without confounding factors.

The motives we think of as impulses usually involve an impending thrill, a vivid sensation that is hard to resist. Examples include eating rich food, drinking, taking recreational drugs, having sexual encounters, and making purchases. Often, impulses are focused on a physical activity or consumption good, which makes them easier to understand in terms of conventional utility theory. But many impulses involve no consumption. It could be argued that gambling is the most basic impulse, because it requires no physical stimulation, only surprise. The emotions occasioned by play in an addicted gambler are as strong as those provoked by drugs and are followed by the same physical symptoms on sudden discontinuation.<sup>1</sup> But gambling also creates a thrill in the short run. More basic still must be the simple temporary preference for less cost in the present over the greater cost that leads to a better deal in the long run. Procrastination needs no great pleasure to drive it and no activity to instantiate it. It is just the venerable sin of sloth.

Most impulses have definable boundaries. Sometimes the impulsive act itself is naturally demarcated—you take a drug, or you do not. Even where no line divides the harmful from the benign, there is usually a definable topic that can be subjected to rules—diets to define overeating

1. Wray and Dickerson, "Cessation of High Frequency Gambling."

and budgets to regulate spending and gambling. But the impulse to procrastinate is diffuse, seeming to grow pervasively from the way we experience time. It always feels better to defer costs. We put off going to our workroom; in our workroom, we put off cleaning it; when cleaning it, we put off the grungy or monotonous parts. However small the unit of activity, we are drawn from the more tedious parts to the less tedious. This is not to say that we always do the work in that order; we are apt to make a rule to do just the opposite and follow the rule so habitually that it becomes second nature. But the rule is our response, not the original impulse. Where the impulse comes from a reward that is too imminent, too variable, and/or too vague to control with a rule, it simply prevails. When cleaning the workroom, our attention wanders in undefined ways that reduce our efficiency. At the most microscopic level, the more interesting parts of a picture “jump out” ahead of the less interesting. To give a personal example, whenever I have a choice regarding the order in which I add columns of figures, I add the ones that look as if they will produce round numbers first, even though a systematic approach would probably be more efficient. It is hard to be sure, when each competing behavior takes fractions of a second.

## HYPERBOLIC DISCOUNTING AS A MECHANISM OF PROCRASTINATION

There is debate about what causes impulses. Sometimes they are attributed to naiveté or inability to estimate the values of the contingencies involved. But impulses, including procrastination, persist despite the person’s great familiarity with the outcome. A popular explanation is to say that the “viscerality” of an SS reward—its emotional evocativeness—can make it preferable to an LL alternative when it is close but not when it is distant.<sup>2</sup> But procrastination can occur at such a low level of interest that viscerality would have to imply only the quality of being marginally more attractive than some alternative, that is, nothing more than rewardingness itself. Instead, I would argue that the occurrence of procrastination among even the most mundane alternatives is evidence for a pervasive tendency to perceive value as a hyperbolic function of delay, an instance of the Weber-Fechner law by which most psychophysical quantities are perceived.<sup>3</sup> Mathematically, the discount function is

$$\text{Present value} = \text{Value}_0 / [1 + (k \times \text{Delay})]$$

2. Bernheim and Rangel, “Addiction and Cue-Triggered Decision Processes”; Laibson, “A Cue-Theory of Consumption”; Loewenstein, “Out of Control.”

3. Gibbon, “Scalar Expectancy Theory.” For the possibility that hyperbolic discounting is based in the elementary dynamics of receptor saturation by neurotransmitters, see Berns, Capra, and Noussair, “Receptor Theory.”

where  $\text{Value}_0$  = value if immediate, and  $k$  is degree of impatience. A plot of this function against delay shows that for some combinations of SS and LL rewards with a constant lag between them, SS rewards will be temporarily preferred when they are close. This pattern contrasts with the prediction of the exponential curve that is necessary to produce consistent choice over time:

$$\text{Present value} = \text{Value}_0 \times \delta^{\text{Dela}}$$

where  $\text{Value}_0$  = value if immediate, and  $\delta = (1 - \text{discount rate})$ .

A general tendency for both humans and nonhumans to discount prospective rewards hyperbolically has now been widely documented.<sup>4</sup> Hyperbolic discount curves describe conflicts between short- and long-range motives. Short-range motives are based on the spike of value that occurs as a reward gets closer. Long-range motives are based on the values described by the tails of the curves that describe value at a distance, which are much lower but have the tactical advantage of governing first. Each may survive in competition with the others as long as it sometimes gets its goal. A motive and the behaviors that have been learned on the basis of this motive can be called an interest, by analogy to economic interests in the larger world.<sup>5</sup>

If procrastination is defined broadly as temporary preference for early reward at the expense of greater reward later, it becomes the same thing as impulsiveness, which has been extensively reported in the above experiments. It will be more useful to follow common usage and define procrastination negatively, as a preference for deferring aversive experiences rather than just a preference for SS rewards. However, the shape of its discount curve in this case has been little studied. With human subjects, there has been only a Dutch survey in which undergraduates were asked to rate their motivation to study in the face of five kinds of temptation, such as social invitations or favorite TV shows, as a function of the delay before an exam.<sup>6</sup> Although both the exam and the delays were hypothetical, subjects estimating their likely motivation produced a hyperbolic curve for all five temptations. This shape might seem to predict that the relative values of partying and passing an exam will shift over time, but the experiment was not designed to elicit changes in relative value; this

4. Ainslie, *Breakdown of Will*; Green and Myerson, "A Discounting Framework"; Kirby, "Bidding on the Future"; Mazur, "Hyperbolic Value Addition."

5. Any reward that is sometimes chosen could be seen as giving rise to an interest, but the term is useful only when one interest includes motivation to interfere with another interest. A student who feels like watching TV would not increase her prospective reward by controlling a desire to play Frisbee; there is no point in calling these separate interests. But both may be included in a short-range interest in relaxing, which succeeds to the extent that it evades a long-range interest in doing well on her exams.

6. Schouwenburg and Groenewoud, "Study Motivation."

would have required a constant lag between partying and exam and evaluation at a variable distance before both.

The nonhuman literature is not much fuller. If pigeons are given the choice between interruption of intermittent noncontingent reward by an obligatory five-response task (FR5) after six seconds or a harder task after a longer delay, they will accept harder and harder tasks as the delay before they have to perform them is lengthened. They will often accept tasks that are more than three times as hard ( $FR > 15$ ) if the task is delayed by only a few seconds more.<sup>7</sup> However, this design, too, fails to demonstrate preference reversal as a function of delay. Analysis of preference as a function of delay in a similar experiment where the longer, later task was a duration of required pecking (FI 7.5 or FI 15 vs. FI 5) showed that the discount *rate* varied with delay, implying a curve like a hyperbolic one that could produce temporary preferences.<sup>8</sup> This finding confirmed the implication of an earlier concurrent interval study in which rats preferred a schedule that intermittently delivered LL shocks instead of SS ones when the delays to the SS shock were small.<sup>9</sup> However, all of the criteria for impulsive procrastination—preference for an LL pain over an SS one in discrete trials, if and only if the SS pain would be immediate—have been met only by Deluty et al.<sup>10</sup> Rats were given repeated trials in which they could spare themselves an eventual 5.0-second foot shock by accepting a much briefer, 0.5-second shock a few seconds earlier. When the brief shock would occur immediately, subjects rarely accepted it; when the brief shock would not occur for a period varying from 20 to 60 seconds, subjects' rate of accepting it varied from 50 percent to 95 percent, respectively. Thus, the rats preferred a few seconds of comfort to a brief shock that would prevent a much longer shock but only if this comfort was nearby—*temporary preference*.

Experimental analysis of procrastination is still in its infancy. Nevertheless, we can predict that ways of controlling procrastination will not be as simple as in the control of a single, clearly demarcated behavior. The kit of tools that work against discrete impulses will not be as effective against procrastination. A short catalogue shows their limitations.

Best understood are forms of precommitment. Pigeons can learn to peck a key, the only effect of which is to prevent a tempting option from being offered subsequently.<sup>11</sup> The latter rat experiment just described found that subjects would choose an option that committed them to get the SS shock but only if they chose while the SS shock would still be

7. Mazur, "Procrastination by Pigeons: Preference for Larger, More Delayed Work Requirements."

8. Mazur, "Procrastination by Pigeons with Fixed-Interval Response Requirements."

9. Deluty, "Self-Control and Impulsiveness."

10. Deluty et al., "Self-Control and Commitment."

11. Ainslie, "Impulse Control in Pigeons."

distant.<sup>12</sup> The choices in these experiments were predicted by the discounted value of the alternative outcomes at the time the subject chose and did not require awareness of a need for commitment. Subjects who are aware of the problem, presumably only we humans, can actively arrange for external controls such as deadlines or, even better, series of sub-deadlines.<sup>13</sup> Or we can associate with people who share our long-range interests and exert pressure, directly or by example. This kind of external control may or may not be available and may have undesirable costs—excessive restrictiveness, say, or side demands by the other people. Alternatively, we can avoid information on the availability of distractions—keep the TV off, do not call friends to ask what’s happening—or we can avoid toying with appetites that may grow to be overwhelming, such as fantasizing about resentments, romances, or favorite kinds of thrills. However, plans maintained by such controls on our attention or emotions will be unstable, vulnerable to reweighings of options that may give a short-range interest an opening. Furthermore, the exploration of possible information or emotion will be tempting in itself, and some incentive will be needed to maintain our plan of not exploring. As with other kinds of impulse, the most effective control for procrastination is usually willpower.

## A THEORY OF WILL

Will has been an elusive concept, partly because of multiple meanings but more importantly because it has lacked a clear mechanism of action. The term *will* has been applied to the process of connecting thought with behavior (a holdover from philosophical dualism, found superfluous by Gilbert Ryle)<sup>14</sup> and to your sense of ownership of your actions (shown to be often misleading by Daniel Wegner)<sup>15</sup> as well as to a faculty for controlling impulses such as procrastination. The nature of the impulse-controlling faculty has been variously depicted as resembling a muscle,<sup>16</sup> as an application of attention control,<sup>17</sup> as a learned loss of taste for short-term rewards (“molecular” vs. “molar” rewards),<sup>18</sup> as a function that in principle cannot be analyzed,<sup>19</sup> and, again, as a concept that is superfluous, because people always maximize prospective reward.<sup>20</sup> However, the

12. Deluty et al., “Self-Control and Commitment.”

13. Ariely and Wertenbroch, “Procrastination, Deadlines, and Performance.” See also chapter 14 in this volume.

14. Ryle, *Concept of Mind*.

15. Wegner, *Illusion of Conscious Will*.

16. Baumeister and Heatherton, “Self-Regulation Failure.”

17. James, *Principles of Psychology*, 562–565; Bratman, *Faces of Intention*; McClennen, “Pragmatic Rationality and Rules.”

18. Rachlin, *Science of Self-Control*, 108–129.

19. Pap, “Determinism, Freedom, Moral Responsibility, and Causal Talk.”

20. Becker and Murphy, “Theory of Rational Addiction.”

discovery that reward discounting is an innately hyperbolic function permits an explicit hypothesis about how will operates. Hyperbolic discount curves predict a relationship of limited warfare among successive motivational states, which can be stabilized along truce lines by the person's perception in each state that her current choice will function as a test case of the relevant truce (or *personal rule*). That is, a self-aware person notices that her current choice of an SS or LL reward is evidence about whether she will pick SS or LL rewards in similar situations in the future and thus finds that her expectation of a bundle of prospective rewards is at stake in a choice that literally determines only one.<sup>21</sup> This perception supplies the force that the Victorian psychologist James Sully said was added to an otherwise weaker alternative to give the will its strength.<sup>22</sup>

This hypothesis about the mechanism of will has two parts. The first is that bundling prospective rewards into series increases the present value of LL rewards relative to their SS alternatives, contrary to what exponential discounting predicts.<sup>23</sup> This effect has been shown experimentally in both people and rats,<sup>24</sup> the latter finding being proof that the effect is not an artifact of cultural suggestion. The second part is that the very perception of the present choice as a test case for similar choices in the future puts at stake a bundle of the expected rewards for those choices. This part has intuitive appeal but is only tangentially available to empirical test. Kris Kirby and Barbarose Guastello found that students who made choices weekly were more apt to choose LL rewards if it was initially suggested to them that a current choice had predictive value,<sup>25</sup> but this is not definitive proof. More substantial evidence comes from a tightening of introspection by means of thought experiments, which, I have argued, can be interpreted conservatively to test hypotheses, just as controlled experiments can.<sup>26</sup> Simplest is Monterosso's problem: Imagine that you are trying to stop smoking, and an angel tells you that you will never smoke after today, whatever you do now. Do you smoke a cigarette now? (Why not?) Now, imagine that the angel says you will always smoke after today, whatever you do now. Do you smoke a cigarette today? (Again, why not?) These and other intuitions can be interpreted as demonstrating that the way you are motivated to forgo a current indulgence is by how it affects your expectation of your own future choices.<sup>27</sup>

21. Ainslie, *Breakdown of Will*, 90–116.

22. Sully, *Outlines of Psychology*, 669.

23. Summed *exponential* curves from pairs of SS and LL rewards have no more tendency to cross than curves from a single pair (Ainslie, *Breakdown of Will*, 78–85).

24. Kirby and Guastello, "Making Choices" (people); Ainslie and Monterosso, "Building Blocks" (rats).

25. Kirby and Guastello, "Making Choices."

26. Ainslie, "Can Thought Experiments Prove Anything?"

27. Monterosso and Ainslie, "Beyond Discounting."

## THE USE OF WILL AGAINST PROCRASTINATION

From here on, I will assume that the mechanism of willpower is the perception of current choices as test cases for bundles of prospective reward, as I have just described. This is *recursive self-prediction*, which can change your prospects of reward several times before you make a single choice. When dealing with procrastination, the will's maneuver is to ask, "If not now, when?" Unfortunately from the viewpoint of your long-range interests, this is not a rhetorical question; a short-range interest will readily answer it with, "Tomorrow, when I'm rested," or "In that empty time slot I'll have next week." The will's great vulnerability is to rationalization. Although an expected sequence of LL rewards may have more present value than the sequence of their SS alternatives, the sequence of SS now and LL thereafter, if believable, has the most present value of all. To the extent that a person relies on willpower, the success of impulses will depend not on the imminent availability of gratification but on the existence of a credible excuse that lets her expect to be, as in Saint Augustine's prayer, "chaste and continent, but not yet."

The credibility of the excuse is the pivotal factor. If you start to accept waiting until you are rested as an excuse, your estimate of whether you will get the task done at all may fall. That is, you may expect your future selves to interpret it as a lapse and decide to lapse themselves, thereby reducing the credibility of your resolutions in this area. The threat of this fall may move you to reject that excuse and do the job—or find a better excuse. As you survey the possible excuses and your likelihood of buying one, your predictions of getting your long-range reward may seesaw violently, variations that are fed back recursively over a period of mere seconds until you actually behave in one way or the other. The sensitive dependence of choice on self-prediction is arguably the source of enough introspective opacity to account for the experience of free will in a mechanism that is strictly determined by incentives.<sup>28</sup> In order for will to operate, the summed, discounted value of the bundle of prospective rewards at stake must be more than the discounted value of the present impulse, and resisting the impulse must seem both necessary and sufficient for eventually obtaining this bundle. If a credible excuse is available, resisting the impulse will not seem necessary. Conversely, if you have given in to too many similar impulses in the past, resisting this one may not seem sufficient to reverse the trend. As Roy Baumeister's muscle model also predicts, exercise gives the will more strength,<sup>29</sup> but unlike the prediction of the muscle model, the strength is somewhat specific to particular temptations—perhaps to procrastinating but not to smoking—and is

28. Ainslie, *Breakdown of Will*, 129–134.

29. Muraven, Baumeister, and Tice, "Longitudinal Improvement."