

8 Decision and the Open Future

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The literature on temporal experience has focused on the dynamic features of temporal experience: the feeling of passage, flux, the ‘whoosh of process’. And there has been substantial progress both in characterizing and explaining these features. But the familiar image of an open future that is in the process of coming into being remains shrouded in darkness, notwithstanding that it is part of most people’s pre-theoretic conception of time. Probably the most evocative metaphorical rendering of the ideas and emotional attitudes associated with this image is contained in these lines from the *Rubaiyyat*.

The Moving Finger writes:
and, having writ, Moves on:
nor all thy Piety nor Wit
Shall lure it back to cancel half a Line,
Nor all thy Tears wash out a Word of it.

What follows is an attempt to understand the source of these ideas and to see if they can be given literal content.

It is sometimes assumed that the sense in which the future is open and past is fixed is that we know more about the past than the future in the way we might know more about Spain than about Turkey if we have records and memories of having visited the first but not the second.¹ But that cannot be the whole story.² Unlike the parts of space we have not yet been to, the end of a book we have not finished, or the end of a football match we have not watched, most people do not think of the future as *out there*, waiting to be experienced, a fixed reality that comes into view only in stages. We think of it, rather, as existing only in potential until it has been made available to experience.

Broad introduced the doctrine of ‘Absolute Becoming’ to encapsulate this idea.³ Absolute Becoming is *the coming into existence* of events that exist only in potential until they are experienced, at which point they become, and remain real. On Broad’s view, the present is, as one commentator puts it, a kind of ‘ontological gateway’ through which events have to pass on their way to becoming real.⁴

It is not easy to make sense of this image for several reasons, but it carries a good deal of intuitive appeal for most people. And it presents a curiosity, since there is nothing in the physicist's conception of time, as conceived since the time of Einstein, suggesting that it is anything but one dimension of a four-dimensional manifold of events, each of which is as real as every other.

There are philosophical models of time that incorporate Absolute Becoming. There is the 'Growing Block' model.⁵ On this model there exists a single four-dimensional block of events that contains all of the temporal locations in the past and present, but no future temporal locations. And there is the 'Branching Universe' model.⁶ On the Branching Universe model there exists a single four-dimensional trunk that contains the temporal locations in the past and present, peering into an array of non-actual but ontologically real future branches, each of which represents a possible way that things could be, given the way they are in the objective present. Both models are dynamic. In the Growing Block model, time grows by accretion of fact. In the Branching Universe model, branches are pruned as a multiplicity of futures is transformed over time into a singular past.

These philosophical models have been roundly and, in my view, rightly criticized on the grounds that they portray time itself as undergoing change, something that would not seem to be intelligible without some super-time dimension in which that change could occur. But there are reasons for not dismissing them out of hand. They are responding to something important about how time appears from the first-person perspective that is not captured in the now familiar discussions of flow and passage. This sense of openness is a central and robust feature of the phenomenology, one that is at least as important from the first-person perspective as flux. I am going to argue that in order to account for it, we need to supplement our ideas about the perception of time in a manner that recognizes the fact that we are not mere observers of history, but *participants* in it, and participants whose actions make a difference to how it unfolds. This fact is the root of the psychological differentiation of space and time, and structures our experience of time in ways that are both fundamental and far-reaching.

1 RECONSTRUCTING TEMPORAL PHENOMENOLOGY

A bit of background about the motivation for the discussion: there are two different kinds of questions we can ask about time. We can ask about the nature and structure of time as it appears *sub specie aeternitatus*. Or we can ask how time appears to the embedded agent. The first is a question about ontology. The second is a question about phenomenology. Those who think that the ontological question should be settled by physics can be impatient with exploration of phenomenology. Questions about how time *seems* to the likes of us, or how it presents itself in experience can seem irremediably

fuzzy, confused, and with little bearing on the physics. It is fairly claimed that it is hard to separate features of temporal experience that are genuinely perceptual from the confused metaphors and pseudo-philosophical theories that infect our thinking about time. I understand the impatience, and I think that the fuzziness makes the exploration of temporal phenomenology inherently hard, but there are reasons that it is worth attending to.

First, some of the most trenchant criticisms lodged against the physical conception of time argue that it can't do justice to temporal experience. There are two increasingly entrenched camps in the metaphysics of time, which we might call the Parmenidean and the Heraclitian (a.k.a., the B-theorist and A-theorist, or the eternalist and temporalist). The Parmenideans ally themselves with physics and cleave to the physicist's image of a static universe extended in time. The Heraclitians ally themselves with the experience of time and claim that we have direct experience of a universe in process. They hold that we *perceive* movement, flow, change, and motion. Because they draw support from different sources and each regards its own as more authoritative, there have been few attempts at bridge building between the two camps. My own view is that they are both right. Parmenideans are right about the view of time as it appears *sub specie aeternitatus*, but the Heraclitians come closer to capturing the content of the first person experience of time. Resolution of the debate, if it is to be had, is to be had by providing a Parmenidean account of temporal phenomenology.

Second, the human mind is unique, or close to unique in the fact that we explicitly represent our histories and those representations interact in complex ways. At any given moment in our psychological history we have multiple representations of time from different temporal perspectives. Time appears differently from different moments. There are memories, anticipations, memories of anticipations, anticipations of memories, and so on. We don't just experience time in stages; we represent and re-represent it obsessively, looking forward and backward and our memories and anticipations feed into our experience of the present. As a consequence, all of the really interesting temporal structure lies not at the level of physics, but in the psychological life of the self-memorializing agent.

The task for someone trying to reconcile temporal phenomenology with physics is to acknowledge all of this psychological complexity, and reconstruct the first-personal experience of time without attributing more structure to external time than physics recognizes. An important part of that reconstruction involves looking at how time seems when viewed from different perspectives.⁷ Formally, we start with the image of time viewed *sub specie aeternitatus*. We introduce the temporally embedded point of view (TEmp), which is a representation of time implicitly relativized to a particular moment in it. So, for example, in the TEmp associated with noon EST, Jan. 1, 2000, all moments preceding are part of the past, and all succeeding moments lie in the future. In the TEmp associated with noon EST, Jan. 1, 2011, all moments preceding that date are past and all moments succeeding

are future. This gives us a way of understanding how things look to the self-memorializing agent at different points in her history. Then, we obtain the temporally evolving point of view (TEv) by stringing together temporally embedded points of view in an order defined by their frame-defining temporal parameter. Formally, this is just like taking snapshots of time as it appears at different moments and then stringing them together in temporal order and running them through a film projector. This gives us a way of capturing how time appears over the course of a day, a year, or a life.⁸

2 ON BEING A PARTICIPANT

We see ourselves from the earliest moments of our remembered history as *doing* things, initiating movements, and observing the results. The child's earliest movements are random, uncontrolled muscle flexings. The developing mind, seeing its own activity projected back to it in sight and sound, develops an appreciation for how its actions are connected in the perceptual field. It notes that sensations like pressure or pain follow on the perception of objects impinging on its body, and that it can willfully initiate movements of its limbs. The feedback created by perception of results of internal efforts develops into a sense of control of its body. Daniel Gilbert captures the pleasure that children take in their developing sense of control:

Toddlers squeal with delight when they knock over a stack of blocks, push a ball, or squash a cupcake on their foreheads. Why? Because they did it, that's why. Look Mom, my hand made that happen. The room is different because I was in it. I thought about falling blocks, and poof, they fell. Oh boy! Sheer doing!⁹

That sense of control centered on the body becomes increasingly articulate, and gets extended. Children learn to control forks and toys. Teenagers learn to control cars and computers. Dentists learn to control instruments by reflected images on carefully positioned mirrors. Tools become temporary parts of an extended body that in some cases we can control as easily and transparently as our arms and legs. And as our sense of bodily control grows, our view of nature evolves as well. Out of the back and forth of acting and observing the results of action, there stabilizes a conception of the built-in causal pathways in the environment (robust, counterfactual supporting regularities in nature) that can be exploited as routes of influence to affect things far and wide. We learn to articulate our internal efforts in the course of time with deliberate mental fiat that we call 'volitions' and use them to our advantage in a manner regulated by decision. In decision, an agent takes stock of her situation of the world, considers the actions that are available to her, explores their potential downstream consequences of potential actions, and makes a choice based on her assessment of those

consequences. To get the logic of this process right, we distinguish volition from action. The *volition* is the product of deliberative reasoning, and is the mental fiat that initiates action. The *action* is the bodily movement it executes.¹⁰ An agent regards as *available* to her only actions that are under volitional control, that is to say, actions that can be brought about by willing them so. The volition is chosen on the basis of its projected effects, but the mind sees itself in the first instance, as the producer of volition.

From its perspective, volition is connected in the perceptual field in something like the way that the hands of the gamer are connected in the virtual space in which the game plays out. It is not the volition itself, but the effects of volition that are observed. What it means for some perceived happening—e.g., the motion of an arm, or the sound of a scream—to count from the mind's perspective as its *own doing* is that it is under volitional control. From the mind's perspective, the body is its avatar, a representative in the perceptual field whose motions become the most direct observable expression of its will.¹¹ It sees itself as a *participant* in the events it observes because its internal efforts have perceivable effects.

3 EPISTEMOLOGY

The mind is not just a producer of volition; it is also a producer of belief. We form beliefs about everything from the rising sun to the political unrest in Egypt. Human behavior is of special interest, and when forming beliefs about human behavior, we don't limit ourselves to just the observable movements of bodies. There is a whole inferred descriptive psychology that is indispensable to explanation and prediction.¹² Opinions about what other people believe and the deliberative processes that underwrite their behavior are part of the field over which opinion is defined, fully integrated with other beliefs, and indispensable in the formation of expectations about their behavior. And the epistemology of beliefs about the psychological processes of others is straightforwardly evidential. If I am writing a biography of Obama and forming opinions about his judgments and decisions, I'll go off what he and others have said: explicitly stated goals and beliefs, what he wrote and told friends, perhaps offer hypotheses and conjectures built on patterns of reasoning in the past. All of these processes are part of the fabric of human history as we conceive it and forming beliefs about that history involves inference and conjecture. One is guided by the evidence, but one can always be wrong. When I am forming an opinion about future decisions, there is even more risk. If I want to predict how a judge will rule in an upcoming case, or how an opponent in a chess game will move, there will not be records, but belief will be guided by everything I know about them, including beliefs already in place, habits of thought, patterns of reasoning in the past, what they believe to be true, what they desire and aim for—anything I can find that will tell me how their decision processes are

likely to go. Ultimately, my information about their decisions—past, present, and future— is inferred from information from observation and records of past observations, and it can always be wrong.

When it comes to forming beliefs about *my own* past decisions, the story is largely similar. If I want to know what I decided last week about today's lecture, I consult my memory and records, but I can easily be wrong. But when I am forming beliefs about my own pending decisions, when I am, that is to say, predicting the outcome of a decision process in which I am currently engaged, things are different in two ways. Evidence is irrelevant and I cannot be wrong. Indeed evidence is irrelevant *because* I cannot be wrong. My beliefs about my own pending decisions is epistemically unconstrained by any information I might have in the form of memories or records. And that is because I have one sure way, and the *only* sure way, of arriving at true beliefs about my own judgments: let the decision process run its course and let its conclusion "I will X" serve simultaneously as volition and my belief about the volition. This process is guaranteed to produce a true belief and trumps any evidence that I might have by other means. When it comes to beliefs about my own pending judgments and decisions, ordinary epistemic constraints—the constraints that I have to respect if I want to form a true belief— are empty. The choice between the available alternatives is to be decided as the outcome of that very process; any antecedent information I might have about how the deliberation may turn out is screened off by the deliberative process itself.¹³ It's not that I might not have some information beforehand relevant to how that decision will come out. It's that any such information is automatically overridden by the decision process itself, and (hence) it can't *constrain* its development. Decision trumps evidence.

The volition stated in the first person at the conclusion of a piece of deliberative reasoning ("I will that so and so") is at once volition and belief about my volition. If I want to know what I will decide, I can do no better than simply decide. The distinction between choosing to act and predicting how I will choose breaks down. The epistemic attitude is in an important sense degenerate here. There is no possibility of epistemic error. The belief about my volition formed by letting the deliberative process run its course cannot be false because it is self-fulfilling. The internal logic of the procedure is a utility calculation based on comparison of likely outcomes of potential decisions. Because the conclusion cannot be false, it is unconstrained by any evidence I think I may have one way or the other beforehand. The upshot is that to the extent that volitions are the product of decision processes and my behavior is under voluntary control, volition functions here as a new source of information about behavior that screens off but is not screened off by information through perceptual channels and memory. The mind *generates* information is by deciding how to act that it is free to use in updating its opinions about the world quite generally.

Volition is to practical reasoning what judgment is to epistemic reasoning, and a similar thing can be said about beliefs about my own pending

judgments. When I sit down to work out what I think about p , the judgment self-ascribed at the conclusion of (e.g., “I judge or affirm that so and so”) serves at once as judgment and belief about the judgment. It can’t be wrong in the latter capacity—once again—because it is self-fulfilling. And because it cannot be wrong in the latter capacity, the only operative epistemic constraints are those relevant to whether p . The only sure way of arriving at true beliefs in this case is to let the reasoning run its course, and the conclusion serve at once as judgment and belief about the judgment. Again, in this case, the epistemic constraints on the formation of belief about my judgment are empty, and so the evidence I consider is not evidence about me, but evidence relevant to whether p .

When I want to know what others judge about some matter, I gather psychological evidence about them. When I want to know what I judge, I judge. When I want to know what others will decide, I gather psychological evidence relevant to their decisions. When I want to know what I will decide, I decide. In doing so, I’m not trying to predict the outcome of a program or process that occurs somewhere or somewhen else; I *implement* the process. No evidential constraints can be relevant because there is no hope of being wrong. The same is true when a jury pronounces a verdict or the Supreme Court announces a decision.¹⁴ When the spokesperson for a jury says “We, the jury, find the defendant guilty”, he can be wrong about the guilt of the suspect, but not about the finding of the jury. When the Supreme Court issues a judgment of the form “We, the court, rule that the law is unconstitutional”, they can be wrong that the law is unconstitutional, but not that they so rule.

I am not just predicting what I will decide when I deliberate towards a conclusion; I am *making* it so. Like promises, commitments, orders (e.g., “I (hereby) promise to x ”, “I (hereby) order you to y ”), judgment and volition in the first-person present tense are self-fulfilling self-descriptions that have a *performative* character. And like performatives, they have the kind of immunity to error also possessed by these graphs. They are like wildcards whose value the mind gets to set in a manner unconstrained by anything from outside.

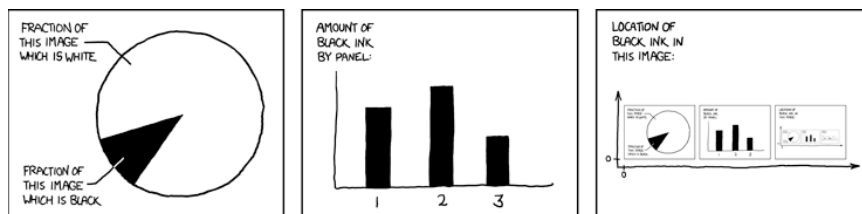


Figure 8.1

Velleman calls the freedom we exercise in judgment and volition ‘epistemic freedom’, but the label suggests that I am free to believe what I like because I do not know any better.¹⁵ The point here is rather that there is no such thing as knowing any better, because there is no way of being wrong. This is the best and most immediate way of knowing. The sort of power that the mind has is the power to will, and is better described as a *practical* freedom. It is not merely the freedom to form beliefs without epistemic constraint, but a freedom to *make beliefs true* simply by affirming them.

In formal models of belief revision, we start with a field of events, D , and opinion is represented by a probability assignment to events in $D = \langle d_1, d_2, \dots, d_n \rangle$. And it is almost universally assumed that the activity of forming beliefs does not affect the probabilities of events in D , and that is because it is usually assumed that we are forming beliefs about purely physical happenings or about mental processes of others. But we ourselves and our own internal processes are part of the fabric of human history and when we include propositions about our own judgments and decisions, in the field over which belief is defined, that creates the degeneracy I have been pointing to. James Joyce comes to much the same conclusion in a very rich discussion of beliefs about one’s own decisions from a decision-theoretic point of view. He writes “an agent’s beliefs about her own decisions are *self-fulfilling*, and that this can be used to explain away the seeming paradoxical features of act probabilities.”¹⁶

The degeneracy is a purely semantic effect and does not depend on thinking of mental processes as special non-physical happenings, i.e., as anything but high-level descriptions of processes in the brain. The only feature of those events that matters here is that they have reflexive representational content that renders the ordinary constraints on the fixation of belief empty. We could say exactly the same thing about a computerized decision-maker like a chess agent. Such agents not only track the configuration of the board, but also form opinions about opponents’ decision processes that yield expectations about their responses to potential moves, and use those expectations to guide their choices. Such an agent has the semantic capacity to represent its own decisions (because it represents them in hypothetical form in deliberation), and if it were to assign probabilities to its own pending decisions, those beliefs would be unconstrained in the same way that our beliefs about our pending decisions are. Alethic constraints would be empty, and the internal logic of the decision process would generate a conclusion that would be fed directly into the field over which its opinion was defined.

We implement processes in decision in the same way that a virtual chess agent implements processes in its decisions that are explicitly represented under an intentional description at the software level. And the steps of the implementation are explicitly available to us introspectively in a manner that allows us to use that information to form beliefs. It feeds right into our beliefs not just about internal processes, but also about the mutually

observable aspects of the future. We both have beliefs about the internal processes that guide my behavior. You speculate about my decisions and intentions when you try to guess my actions. The only difference is that my beliefs about these matters are better than yours. I know my intentions the moment they are formed and my decisions the moment they are made in a way that does not permit epistemic error. And that information feeds into and guides my beliefs about how the world is likely to go. A pair of people bent over a chess board with full and equal knowledge of what has happened will have different probabilities for what will happen at the next step—will she castle, or won't she?—and not because either of them is epistemically irrational. They just have a different perspective on the course of events.¹⁷ And the same is true for each of us in everyday life. There are all kinds of accidental differences among us in what we happen to know because we weren't in the same places, had different teachers, and read different papers. But these differences are eliminable by enforcing similarity in input. The differences in opinion about what we will decide have a different source and can't be eliminated without changing who we are.

It is tempting to say that what we get by introspection is direct and not just reliable, but *infallible* information about the internal processes in our own brains, under a coarse-grained, intentional description. That's misleading, unless we replace 'introspection' with performance, and understand performance as a form of self-fulfilling self-description. Introspection suggests an eye turned inward on events of independent provenance, and that is not the right model. From the mind's perspective, it is a participant in the world that it observes in the sense that some of what it sees are effects of its own performances. And performances are wild cards, propositions whose values it gets to set as it likes without fear of epistemic error.

4 WITTGENSTEIN AND ANSCOMBE ON SELF-KNOWLEDGE AND INTENTION

Many have noticed the epistemic oddity of beliefs about one's own judgments, choices, or decisions. Evans noted it by pointing to the differences in method between forming beliefs about other people's judgments and our own.

In making an ascription of belief to another person, since it is facts about her that make the ascription true, one looks for information about her attitudes and opinions. In making a self-ascription, one doesn't attend to oneself, but to the facts affirmed in the content of the belief:

[I]n making a *self*-ascription of belief, one's eyes are, so to speak, or occasionally literally, directed outward—upon the world. If someone asks me “Do you think there is going to be a third world war?” I must attend, in answering him, to precisely the same outward phenomena

as I would attend to if I were answering the question “Will there be a third world war?”¹⁸

Wittgenstein put it by pointing to the absence of surprise:

One might say: voluntary movement is marked by the absence of surprise.¹⁹

The absence of surprise is due to the fact that the movement depends on my decision, and the decision is generated internally by the deliberative process. He writes:

Two things, however, are important: one, that in many cases someone else cannot predict my actions, whereas I foresee them in my intentions; the other, that my prediction (in my expression of intention) has not the same foundation as his prediction of what I shall do, and the conclusions to be drawn from these predictions are quite different.²⁰

And again, later, putting pressure on the epistemically degenerate character of intentions, the fact that one cannot make epistemic errors in the self-ascription of intention, and that they are not based on observation but carry information about contingent matters of future fact, Wittgenstein writes:

Why do I have doubts about his intentions, but not about mine? To what extent am I indubitably acquainted with my intention? That is, what is the use, the function, of the expression of intention? That is, when is something an expression of intention? Well, when the act follows it, when it is a prediction, I make the prediction, the same one as someone else makes from observation of my behavior, *without* this observation.²¹

I have suggested that volitions in which the subject announces or avows a decision of his are self-affirming performances, and because of that, their epistemology is different from predictions obtained by the observation. The prediction made by myself of my voluntary behavior is, for Wittgenstein, anomalous because it seems to embody knowledge of the future that is neither observational nor inferred from observation by the application of law like other predictions. He thinks that for them to count as knowledge, they would have to be subject to the game of certainty and doubt, and that it would have to make sense to doubt their truth. And so for him, these cannot count as genuine knowledge. On the performative model, they are still knowledge, but degenerate because self-fulfilling. Whereas Wittgenstein is suspicious of the idea of knowledge free of epistemic constraints, the performative model explains it and uses it to understand how it shapes the first-person/third-person asymmetries in predictive opinion. Both of us agree that it is wrong to see the sort of certainty we have about our own

beliefs on the model of Cartesian transparency based in an introspective faculty. But the performative model provides an alternative that secures the special epistemic status and integrates it neatly with other truth-bearing discourse without undermining its status as knowledge.

All of this would be relatively uninteresting if it were not for the way that beliefs about our performances interact with other beliefs. When we include our own performances in the field over which opinion is defined, that affects the probabilities we assign to other events in the field. Far from being an esoteric case, much of the time and in the cases that matter most, when we are reasoning about the future, we are reasoning about events that depend either directly, or in an attenuated manner, on our decisions. We ignore the symptoms of degeneracy only by a sharp and ultimately indefensible division between deliberation and epistemic reasoning. Traditional epistemology and its modern Bayesian incarnation are epistemologies built not for participants, but for detached observers. They are epistemologies built for detached observers because they presuppose the independence of what one is reasoning *about* from the process of reasoning itself. The embedded agent is rarely in that situation. For her, epistemic reasoning is very often, in some part, deliberative. The mind as a producer of volition is a performing element in the field over which opinion is defined. And the fact that part of what happens in the world is *her own doing* (i.e., is an effect of her own volition) opens up the space for practical reasoning, the development of plans and projects, strategies and all of the psychological structures that follow on those.

5 THE NECESSITY OF ACTION (SPONTANEITY VS. RECEPTIVITY)

It is not just our beliefs that are affected. When we include our own performances in the field over which opinion is defined, the *attitude* we have to our own performances feeds into and structures our *attitudes* to other events in the field. When you sit down to a chess match with an opponent and you have him pinned, you form a guess about what he will choose and wait to see what he does. You experience what you learn about the outcome of his deliberative processes as a passive discovery. But when one forms beliefs about one's own mental processes while they are underway, the difference between predicting and *enacting* the process breaks down and that means that one's attitude to the outcomes of those processes cannot be one of passive discovery. The epistemic degeneracy of beliefs about one's own volitions from a first-person point of view transforms the epistemic question 'what I will do?' into the practical question: 'what *shall* I do?'

We saw earlier that if I enact the process of decision, the prediction about what I decide will take care of itself, but the process *has to be enacted*. I cannot take the attitude that my volitions are there waiting to be experienced, i.e., that I am merely predicting what is independently the case, or

is the case anyways, or that I am discovering what is there waiting to be viewed. I have to *make the decision*. John Bennett captures the switch from passivity to activity:

Even if someone else could predict which way I shall decide to turn, the facts about me on which he based his prediction are not the ones I would confront if I tried to predict my own behavior. Like him, I would attend to a plethora of events in my brain; but my data-set—unlike his—would include brain-events reflecting the fact that I was conducting this exercise; I could take those into account as well, but that taking-into-account would create yet further events, which might also be relevant to the outcome; so I should attend to them also, but that act of attention would. . . . You can see how the argument goes. It likens predicting oneself to chasing one's shadow; and it concludes that even if we are predictable, our role as deciders is secure. For a while it looked as though that role might be a mere product of our ignorance about ourselves, but now we see that it is more than that. Cure the ignorance and there is still no coherent story about how we could be forced or even invited to abdicate as deciders in favor of being predictors [sic].²²

The metaphor of chasing one's shadow captures the switch from passivity to activity, but there is another metaphor that captures the past-future asymmetry (the difference between one's prospective and retrospective opinions about one's own choices) and the first-person/third-person asymmetry (the difference between other people's attitude to your choices and your own). Instead of trying to capture one's shadow, think of an attempt to follow the path in sand created by your own footsteps. When you walk through a patch of sand, the path you leave guides and constrains the beliefs that others have about your course through the landscape and will retrospectively guide your own beliefs about your past steps. But you cannot *follow* a path *created* by your own footsteps. You have to chart your own course. There is no danger of straying from the path, but there is also nothing there to guide your footsteps. And for the will, there is no way of not acting without ceasing to be. The mind is, in this sense and for this reason, necessarily active in choice.²³

This is something that Sartre was famous for complaining about:

For human reality, to be is to choose oneself; nothing comes to it either from the outside or from within which it can receive or accept . . . it is entirely abandoned to the intolerable necessity of making itself be, down to the slightest details. Thus freedom . . . is the being of man, i.e., his nothingness of being.

Whether this is true of human reality, I do not know. But it is true for the will. For the will, to be really is to choose.

6 THE OPEN FUTURE

By themselves, the anomalies of beliefs about our own performances are little more than a semantic oddity. But when we add them to a field of probabilistically related propositions, what we decide will affect our probabilities across the field. The real power and interest of a decision come from its interaction with other events in the field. Our beliefs about the past are, for the most part, indifferent to our present decisions. But our beliefs about the future depend on them, directly or indirectly, sometimes by a very attenuated route. My freedom in decision translates into a freedom of movement constrained by the voluntary control I have over my body. And that, in its turn, becomes the power to affect the future. While I am deciding how to act—weighing options, considering alternatives, going through the steps that will ultimately resolve themselves in a thought of the form “I shall A or B or C”—I am not just making an isolated performance, assigning a value to an epistemic wild-card. I am deciding how the future will be. The future itself hangs on the outcome of the decision, and I can no more regard it as fixed than I can the decision itself. However far I have gotten in the decision process, it is overridden and diverted by the very next step and is not set in stone until the decision is rendered. One way to make especially vivid why I cannot regard the outcome as closed is that I can *bilk* any antecedent belief I have or anyone else has about what I will decide, if it is made known to me. It is always, in that sense, open to me from my perspective in the context of deliberation to do otherwise. Lock in your prediction at any moment before the decision is made and I can use that as the basis to make the contrary choice.

So what does all of this tell us about why we experience time as something that is unfolding as it is perceived, rather than waiting to be viewed like the parts of space that lie outside the experiential horizon? This difference in attitude is puzzling if we view time from the outside, *sub specie aeternitatus*. From that perspective time appears alongside the three spatial dimensions as just another dimension in which reality is extended, and we ought to think of it in the way suggested by this very famous image of Weyl's. He writes:

The world *is*, it does not *happen*. Only in the gaze of my consciousness, crawling up the world-line of my body, does it fleetingly come to life.²⁴

In this image, time is portrayed as a fixed reality coming into view in stages. I think physicists do tend to think of time in this way when they are thinking about it in a formal context. It is the most natural way to think about time given its almost complete spatialization in modern physical theory. And some people claim to experience time that way. Julian Barbour, for example, has said that he does, and something like it appears to have been

the aspiration of the Stoics and perhaps mystics through the ages. We all have moments of this kind of transcendence. But it is an odd mindset. Most of us do not experience time that way in everyday life. We do not experience our own future as though it were a movie whose outcome we are simply waiting to see. We experience it as something that we actively bring about, something that is no more settled than our decisions, and whose outcome hangs in the balance until those decisions have been rendered. And this was actually Weyl's view as well. He followed that remark with this very beautiful, and very deep passage, in *Space, Time, Matter*:

If the worlds of consciousness and of transcendental reality were totally different from one another, or, rather, if only the passive act of perception bridged the gulf between them, the state of affairs would remain as I have represented it, namely, on the one hand a consciousness rolling on in the form of a lasting present, yet spaceless; on the other, a reality spatially extended, yet timeless, of which the former contains but a varying appearance.

But he continues,

Antecedent to all perception there is in us the experience of effort and opposition, of being active and being passive. For a person leading a natural life of activity, perception serves above all to place clearly before his consciousness the definite point of the action he wills, and the source of the opposition to it. As the doer and endurer of actions I become a single individual with a psychical reality attached to a body which has its place in space among the material things of the external world, and by which I am in communication with other similar individuals. Consciousness, without surrendering its immanence, becomes a part of reality, becomes this particular person, myself, who was born and will die. Moreover, as a result of this, consciousness spreads out its web, in the form of time, over reality. Change, motion, elapse of time, coming and ceasing to be, exist in time itself; just as my will acts on the external world through and beyond my body as a motive power, so the external world is in its turn active.²⁵

I have quoted the passage at length because most of what I have said can be seen as a commentary on it. It is the discovery that what happens depends on our will, and the fact that we cannot experience the activity of our own wills passively, that makes the world itself appear to be in process. In cases of pure observation, as when one is viewing film, there is no reason to think that one is watching something that is ongoing. It could be long ago completed, or extended in a non-temporal dimension that comes onscreen in stages (e.g., a movie-maker pans a camera across a wide-angle image of the Grand Canyon, or a screen-saver grows an image of the universe that starts

as a point and grows to occupy the whole screen). If one can willfully direct the activity, however, as when one is playing a video game, it is as open and undecided as our own will before our minds are made up. If you can affect the progress of what you see, you know you are watching something that is happening in real time, which is to say, the time in which one's own mental processes are unfolding.

7 CLOSING THE CIRCLE

Now let's pull all of this together to reconstruct the first-personal perspective of the decision-maker. We start with the temporally embedded Point of View (TEMP), which is a representation of time relativized to a particular moment in a psychological history: a snapshot of time, taken from the here and now. The past, from this perspective, is a partially known landscape. There is a lot one does not know about it, but the uncertainty involved is only epistemic uncertainty, the kind of uncertainty one has about the end of a book she has not finished, or a movie that she has not watched. This is a kind of uncertainty that cannot be resolved by making a decision. It is indifferent to one's volition, not open to one, from a *practical* perspective to make it thus or so. The future, by contrast, is conceived in potential terms. When one is looking into the future, one represents one's own choices in hypothetical form, sees a range of actions that directly or indirectly depend on them, and makes the choice by imaginatively tracing out their downstream consequences and comparing the results. The choice itself is the product of this imaginative exploration and the decision-maker is right to treat it in that context in hypothetical form. Whether one is deciding what to have for breakfast, which route to take to school, or whether to marry, the future is represented as something that—in the most literal sense—remains to be decided. It is represented in the decision context as unrealized potential.²⁶

One might fairly ask whether these differential relations to volition justify a blanket distinction between past and future. Why not a more subtle distinction that more accurately reflects how our volitions are connected in the causal landscape? I cannot affect events that lie outside my future light cone, for example, and I do not realistically think I can appreciably affect the price of tea in China two years after my death or the sex of Prince William's first baby. And is it really true that all of my beliefs about the past are invariant under volition? At the very least, in principle, when I make a decision, I learn something about the initial conditions of the universe (viz., that of all the ways they could have been, they were such as to lead to this decision, perhaps with the help of some chancy events along the way). These are fair questions. I think the answer is that our decisions have ramifications that ripple far and wide and indefinitely into the future. Pre-reflectively, there is no principled place to draw a line between what is fixed and what is open except between past and future. In a relativistic setting,

or setting in which we had a different and more definite idea of the potential effects of volition, we might draw the lines in a different place. And under extraordinary conditions—e.g., in Newcomb cases, contexts involving time travel, or examples in beliefs about our volitions are connected in non-standard ways to beliefs about the past and future—our beliefs about what is open and what is fixed will themselves come under pressure. The claim I am making is only that beliefs about what we regard as potential from a given practical perspective go together with beliefs about what we can bring about willfully from that perspective. The fact that the mind is, from its own point of view, a performing element in the field of experience, and that its contributions propagate asymmetrically into the future, are both contingencies from a physical point of view. But they are contingencies that structure fundamental attitudes towards the past and future.

Now let's look at the Temporally Evolving View (TEv). This, recall, is obtained by stringing together the temporally embedded snapshots in an order defined by the frame-defining temporal parameters of TEmPs, and was intended to capture the way that the world appears over time to an agent who keeps a running record of her past and makes decisions with an eye to the future. The content of the TEv, I suggest, is a kind of moving image that represents the progress of history as one of resolution of possibility into actuality. String together a collection of TEmPs in the order given by an image of the open fan of future possibilities resolving with the passage of time into the thin line of hard fact.

This gives us an interpretation of the Khayyam metaphor and the philosophical images of a world in the process of Becoming, not as images of how the world appears *sub specie aeternitatus*, but as images of how it appears to the evolving point of view of the self-memorializing decision-maker. There is nothing deluded about this perspective. We're not wrong to think that the past is fixed and the future is open, that our own actions resolve facts that are genuinely indeterminate until the moment of choice. Nor is physics wrong not to recognize any form of Absolute Becoming. The mistake that philosophers who defend an Absolute Becoming make is to reify features of the embedded point of view and regard them as aspects of time itself. But there is an equal and opposite mistake on the other side, which is to dismiss features of the embedded perspective as intellectual confusions. They are not confusions; they are real features of how time appears from the practical perspective of participants in history.

We all have tacit appreciation of the differences in perspectives from which time might be viewed and how they relate to one another. What is future from one TEmP is past from another. And the same goes for *practical* perspectives, where a practical perspective is defined by how the events represented depend on one's input. Consider how the time line of a novel looks from the differing practical perspectives of author, reader, and participant. From the point of view of Tolstoy himself, the events in Anna Karenina's life were open at one time, but are closed to him now: done and

dusted, fixed and accomplished. There is nothing he can do now to change Anna's fate and nothing in the time line of the story that remains open or unsettled. From the point of view of the reader, nothing she does or wills affects the outcome, so the only kind of openness there is in the storyline is epistemic openness. It is there, waiting to be discovered, like the events described in a journal from a long-dead ancestor. From Anna's point of view, however, while she stands by the track in the final moments of the story weighing her options, her fate really does hang in the balance. Nothing is set in stone until that soul-searching last instant in which she throws herself under the wheels of the train, asking:

'Where am I? What am I doing? What for?'²⁷

The most important tendency we have to battle in articulating how things seem from the embedded perspective of the participant in time is the tendency to think that the embedded view is overridden or superseded or rendered somehow illusory or illegitimate by the eternalist vision of the time as one dimension of the static, four-dimensional manifold of events. The master mistake that is made in the way that the discussion in philosophy of time is organized is that of thinking the Parmenidean and Heraclitian views are competing visions of the universe. They are mutually inclusive, mutually informing. The latter is a very special sort of extended, evolving frame-dependent representation of what is represented in a frame-independent way in the former. The two go together, as two sides of the same coin, each implicitly contained in the other, and obtainable from it by a transformation of frame.²⁸

CONCLUSION

I have argued that a full reconstruction of temporal experience requires recognition of a form of Becoming, not as a feature of time viewed *sub specie aeternitatus*, but as a feature of how time appears from the point of view of the participant. This gives some literal content to the elusive openness we see when we look to the future, contrasted so poignantly with the fixity of the past in Khayyam's image of the Moving Finger.

NOTES

1. The best and most recent attempt to capture the idea that the past is in Albert (2000), building on work of Horwich and Reichenbach. The general strategy in all of this work is to supplement the epistemic asymmetry with a counterfactual asymmetry. We say that the future is open and the past is fixed because the future does and the past does not, depend counterfactually on the present and give truth conditions for counterfactuals that explains why we assess counterfactuals that way given the sort of localized input that

- situated agents like us have. I think all of this is right. Nothing I say is incompatible with that story, but it takes a different route to the same conclusion that pays more attention to the way things seem to the embedded agent and tries to tell a convincing internal story.
2. One might respond that this is just a way of saying that we think of experience as extended in the same dimension as that in which the song is extended. That is correct, but the question is why we make that identification. Why don't we think of external time intuitively in a way precisely analogous to space, i.e., as one dimension of a fixed reality that comes into view in stages in consciousness? Or if we do, what interpretation can we give to the openness of the future?
 3. Broad (1923), p. 66.
 4. Grey (1997).
 5. Proposed by Tooley (1997) and Forrest (2006).
 6. Proposed by McCall (1994).
 7. For richer development, see Ismael (forthcoming).
 8. It's a little more complicated than this, because what we really want to capture is the record of that changing image of time recorded in the memory of the agent and forming the backdrop of her current experience. This is like a snapshot that has a temporal dimension in its content and explicitly represents the history of change. We can suppress this additional complexity for the moment.
 9. Gilbert (2007).
 10. Even if we don't always discern separate steps—first, the will to act, and *then* the action—the distinction is recognized in the understanding that the link between the willing and the acting can be broken (if one is drugged, hurt, incapacitated, or asleep). Whenever one acts willfully, the volition is tacitly present and causally implicated in the production of the action.
 11. It has been sometimes suggested that to be in a world is to view it from a particular perceptual perspective. We have a spatial point of view on the action in a movie, so that doesn't capture what it is to be *in* a world, in the full sense, part of its history. The proposal here is that that requires one's actions to be connected in it.
 12. Physicalists might hope for a lexicon purged of mentalistic vocabulary, but beliefs about psychological processes are an indispensable part of the field over which opinion is defined for any real believer. Disputes about the ontology of those events do not affect the point here, which is that they are part of the field over which opinion is defined and integrated probabilistically with physical events.
 13. We can allow that there may be factors that influence decision in ways that bypass the decision process. The point is that volition is not *constrained* by them. If they influence decision, it is by exercising a causal rather than epistemic influence.
 14. See my "Being of One Mind" (ms).
 15. Velleman (1989).
 16. Joyce (2002). Joyce is there answering a charge against causal decision theory here, from Levi (2000).
 17. Dennett uses this example in a telling way in *Freedom Evolves*. I'm putting a slightly different spin on it here.
 18. Evans (1982), p. 225. I think that it is best to distinguish descriptive self-ascriptions like feelings and tacit epistemic attitudes like standing beliefs from self-fulfilling mental performances—i.e., judgments, decisions, and the self-authored products of practical or epistemic deliberation. What Evans says about self-ascription of belief is most clearly true if by 'belief' he means

'judgment'. Some have claimed that the same holds of the wider class of first-person ascriptions. So, for example, Bar-On and Long write,

"If asked whether I am hoping or wishing that p , whether I prefer x to y , whether I am angry at or afraid of z , and so on, my attention would be directed at p , x and y , z , etc. For example, to say how I feel about an upcoming holiday, I would consider whether the holiday is likely to be fun. Asked whether I find my neighbor annoying, I would ponder her actions and render a verdict." (2003, p. 106)

I'm less convinced in these cases, and I think there are important differences.

19. Wittgenstein (1978).
20. *Ibid.*, 224e.
21. Wittgenstein (1980), p. 788. There is a wealth of literature on Wittgenstein's views on self-knowledge. See, for example, the references in Marques (2001).
22. Bennett (2004), p. 176.
23. Korsgaard has some nice discussion of the kind of activity in question, especially here (on-line draft), p. 1. She writes
 "Human beings are condemned to choice and action. Maybe you think you can avoid it, by resolutely standing still, refusing to act, refusing to move. But it's no use, for that will be something you have chosen to do, and then you will have acted after all. Choosing not to act makes not acting a kind of action, makes it something that you do."
24. *Philosophy of Mathematics and Natural Science*. Frank Wilczek, in his introduction to that book, ranks the passage "among the most beautiful and profound passages in all of literature." I have to agree, perhaps with the exception of the passage that follows.
25. *Ibid.*, p. 6.
26. The idea that the deliberating agent treats her own volition as open, and that there is a not-purely-epistemic difference between the past and future is an artifact of how volition is connected in the field over which opinion is defined was a view that Ramsey shared. He was concerned in particular with causal asymmetries, and there has been some interesting discussion of his insights, in particular by Price. There is a great deal to be said here. For present purposes, the pertinent point is that there is a notion of potential that arises from the practical perspective that is needed to some literal content to the idea that the future is open.
27. Tolstoy (1954), p. 781.
28. To be explicit; the TEMP of the participant is obtained from the view *sub specie aeternitatus* by relativization to a moment in time and a practical perspective. The TEV is obtained from that by stringing together TEMPs drawn from the same psychological history in the order defined by the temporal parameter relative to which TEMPs are defined. The view *sub specie aeternitatus* is obtained by de-relativization.

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