

Dispositions without Teleology

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In “Teleological Dispositions,” Nick Kroll offers a novel theory of dispositions in terms of primitive directed states. Kroll is clear that his notion of directedness “outstrips talk of goals, purposes, design, and function” (##), and that it commits him to “primitive teleological facts” (##). This notion may strike some as outdated and unscientific, but Kroll argues that it has an important theoretical role to play. In particular, he holds that a primitive notion of directedness can provide a theory of dispositions, an explanation of the link between dispositions and conditionals, and an account of the progressive aspect in English. In this paper, we raise some worries for each of these claims.

1. Directedness and Dispositions

Kroll’s first and most important claim is that a primitive notion of directedness can provide a plausible theory of dispositions. He summarizes this theory as follows:

(T₃) Necessarily, the property of being disposed to M when C just is the property being in a state directed at the end that one Ms when C.

According to this view, something is disposed to dissolve in water, for example, just in case it is in a state that is directed at the end that it dissolves when placed in water. On Kroll’s view, directed states of this sort are not reducible to non-teleological facts.¹

We have two main concerns for this account.

¹ Note that one could accept (T₃) without accepting this last claim. For example, one could reduce facts about dispositions to facts about directedness, and then reduce facts about directedness to facts about singular causation, or primitive laws, or counterfactuals. (See §2 for more on this last suggestion.) Kroll rejects these reductions on the grounds that “it’s possible for there to be a disposition that is a fundamental property” (##). But he offers no argument for the claim that fundamental dispositions are possible, and we confess to lacking any direct intuitions about whether it’s true. As a result, we think this question should be left as spoils to the victor.

First, (T₃) is only a plausible account of dispositions if the proffered *explanans* is less mysterious than the *explanandum*. We are not sure this is the case. Suppose, for example, that Adam is disposed to order an extra shot of espresso in the morning whenever he's been up late the night before (unless it's the weekend or a holiday). Does this mean that Adam always walks around “in a state directed at his ordering an extra shot of espresso in the morning when he's been up late, provided that it's not a weekend or a holiday”? We have no idea how to understand this question—not, that is, unless we understand it as a roundabout way of asking whether Adam has the relevant disposition. To us, this suggests that directedness is more naturally understood in terms of dispositions, rather than the other way around.

Our second worry for (T₃) is that it is unclear whether it can account for three interrelated features of our talk about dispositions. First, our talk about dispositions can take the comparative form. We can say that a substance is volatile, for example, but we can also say that one substance is *more volatile* than another. Second, our talk about dispositions is gradable. We can say that an object is fragile, for example, but we can also say that it is *highly* fragile, or that it is *somewhat* fragile. Third, our talk about dispositions is sensitive to context. The standards for counting as ‘irascible’ in a context, for example, depend on who *else* is relevant in that context, and how short *their* fuses are. These three features of dispositions are closely related. In fact, if we follow the standard approach to gradable adjectives, the second and third features can be analyzed in terms of the first. We begin, for example, with the relation of *being more fragile than*. This relation provides an ordering of objects along a scale. We can then say that an object is fragile just in case it meets a contextually-determined cutoff point on that scale, and that it is *highly* fragile (for example) just in case it *easily* meets that cutoff point. In this way, we can provide a unified account of the comparativity, gradability, and context-sensitivity of our disposition talk.²

However, this approach is in tension with many theories of dispositions. Consider, for example, the simple conditional analysis of dispositions:

² Elsewhere we have argued that things are a little more complicated, because there is more than one dimension to the context-dependence of gradable adjectives. (See Manley and Wasserman 2008: 78-9).

(SCA) Necessarily, N is disposed to M when C iff N would M if C.³

According to (SCA), an object is disposed to break when dropped, for example, just in case it would break if it were dropped. One problem for this idea is that that it does not allow for comparisons. Two objects might be such that they would both break if dropped, but it's not as if one of these counterfactual facts is somehow "more of a fact" than the other. Since conditionals do not come in degrees, (SCA) does not establish a scale. And, since it does not establish a scale, it does not allow for the standard approach to gradability and context-sensitivity.⁴

Kroll's account seems to face the same problem. As he elucidates his view, it appears that a state either has a certain *telos* or does not—there is no such thing as having this *telos* to a greater degree than some other object does. However, if directedness does not come in degrees, it is unclear how (T₃) could establish a scale. And without a scale, there is no way to apply the standard treatment of gradability and context-sensitivity.

Kroll anticipates this objection, and offers a response in the appendix to his paper.⁵ There, he focuses on the case of *fragility*, which (he says) has something to do with striking and breaking. Since both of these things admit of degrees, Kroll says that we can establish an appropriate ordering for fragility. More specifically, we can establish a ranking of *more specific dispositions*—there is, for example, the

³ Conditional 'analyses' are often formulated as biconditionals, sometimes prefixed by a necessity operator. However, biconditionals and modal claims only *report* patterns across modal space, whereas an analysis should arguably *explain* such patterns. For more on this point, see below. See also Wasserman (forthcoming a and forthcoming b) and Manley (2012).

⁴ Manley and Wasserman (2007, 2008).

⁵ We have some concerns about the way Kroll characterizes the standard account. He writes that, "on what is perhaps the standard semantics for gradable adjectives, such adjectives do not denote properties of individuals. Rather, they denote measure functions.... A covert morpheme... takes a measure function and returns a context sensitive function from individuals to truth values" (##) This strikes us as misleading. It is true that some semanticists—like Christopher Kennedy (2007)—take gradable *adjectives* to express measure functions rather than properties (i.e. functions from individuals to truth values). But everyone including Kennedy agrees that the verb phrase as a whole—including any covert elements—expresses a property relative to a context. For example, in an utterance of "Amal is tall", the function of the VP, saturated by whatever contextual contribution, is to attribute a property to Amal. The same thing goes for dispositional predicates.

disposition to break when struck very hard, the disposition to break when struck with at least moderate force, the disposition to break when struck ever so lightly, and so on (where each of these more specific dispositions can be analyzed in accordance with (T_3)). He then says that one object is *more fragile than* another just in case the first object's more specific disposition ranks higher than the second's. For example, if one object is disposed to break when struck with at least moderate force and the other is not, then the first is more fragile than the second. With this kind of comparison in place, we can go on to give the standard analysis of gradability and context-sensitivity for "fragile".

Unfortunately, there are two interrelated problems with this approach.⁶

The first is that the dispositions on Kroll's scales will themselves come in degrees. For example, two objects might both be disposed to break when lightly struck, and yet one of those objects might be *more* so disposed. After all, there are lots of different *angles* at which something might be lightly struck, lot of different *places* where it might be struck, and lots of different *environmental factors* that might be in place when it is lightly struck.⁷ Intuitively, all of these things (and more) matter when it comes to making comparisons of fragility. Suppose, for example, that one object is disposed to break when lightly struck at any angle, and that a second is disposed to break when lightly struck at many (but not all) angles. All else being equal, this would mean that the first object is more fragile than the second. What this goes to show is that Kroll will have to get much more specific about the dispositions that appear on his scales—indeed, he will have to get *maximally* specific, in the sense that the "stimulus condition" for each disposition will have to specify not just the exact amount of force that is applied, but also the exact angle at which it is applied, the exact place it is applied, and so on.

This leads directly to the second problem: Achilles' heels. Let's suppose that we specify a particular angle, place, etc. in which a force is to be applied. We then allow the specific amount of force to vary in order to establish a scale of dispositions—there is the disposition to break when struck with a force of 1.425 millinewtons at angle a , in place p , etc., the disposition to break when struck with a force of 2.386 millinewtons at angle a , in place p , etc., and so on. Now imagine an unusual block-shaped object. If you hit the block at almost any angle, in almost any place, with almost any force, it will not break. In fact, it will not even

⁶ These problems are raised, in a more general form, in Manley and Wasserman (2008).

⁷ Including the presence or absence of various finks and masks.

scratch. However, if you hit it at *exactly* angle *a*, in *exactly* place *p*, with *any* force whatsoever, it will shatter. This is the block's Achilles' heel. Here is the problem: Given this block's unusual nature, its disposition to break when struck will rank at (or near) the top of the relevant scale—the scale in which we hold fixed place *p*, angle *a*, etc. and allow the amount of force to vary. So, if an object's fragility is determined by where its disposition appears on *this particular* scale, our unusual block will turn out to be more fragile than a delicate crystal vase. But it clearly is not.

This kind of case shows that we cannot analyze fragility as meeting a *specific* threshold on a *specific* scale of *specific* dispositions. Rather, in order to understand fragility—in all of its forms—we must somehow take *all* of the different stimulus conditions from *all* of the more specific dispositions into account. Kroll does not offer any suggestions about how this is to be done, so his reply is, to that extent, incomplete.⁸

2. Directedness, Dispositions, and Conditionals

One task for a theory of dispositions is to explain the evident link between dispositions and conditionals. In most cases, a device is *disposed* to circulate air when turned on just in case it *would* circulate air when turned on. So too, a person is *disposed* to smoke when nervous just in case he *would* smoke if nervous. There are, of course, exceptions to these rules,⁹ but an adequate theory of dispositions should explain the why there is an exception-admitting rule at all—that is, it should explain the link between dispositions and conditionals.

According to Kroll, his account of dispositions suggests the following “interesting and counterexample free connection between dispositions and conditionals”:

(CDC) Necessarily: if *x* is disposed to *M* when *C*, *x*'s disposition to *M* when *C* is activated, and *x* doesn't immediately *M*, then there is some process such that: if the process were to continue without interruption, *x* would *M*.

⁸ We suggest an alternative approach to these issues in the following section.

⁹ For a discussion of these exceptions, see Martin (1981), Lewis (1997), Fara (2005), and Manley and Wasserman (2008).

Here, the notion of *continuing without interruption* is to be understood in terms of directedness (##): to say that x would M if the relevant process were to continue without interruption is to say that the process is directed at x's M-ing. So, for example, if something is disposed to kill when ingested, and this disposition is activated (by, for example, someone's ingesting it), then it will either immediately kill the person, or there will be a process in place that is directed at killing that person. More generally, an object with a disposition to M when C *will* M when C *if* the disposition is activated and there is no interruption. According to Kroll, this is the link between dispositions and conditionals.

We have three general worries for this suggestion.

First, we worry about Kroll's notion of teleological processes. However, we will put off discussion of this point until section 3.

Second, we worry about Kroll's notion of "activation". In the example just given, a poison's disposition to kill when ingested is activated when the relevant stimulus condition obtains—i.e., when someone ingests the poison. However, Kroll tells us that these two things can come apart. For example, he tells us that a vase's disposition to break when dropped is not activated when it is dropped *while in protective packing*. In this case, he says, the disposition is "stimulated" without being "activated". But, given this distinction, we are unsure whether we have an adequate grasp of the latter concept.

Here is one way of putting pressure on this idea. Let's suppose that there are fundamental probabilistic dispositions. More specifically, let's suppose that there are A-particles and B-fields, and that A-particles are probabilistically disposed to decay when they enter B-fields. Most of the time, when an A-particle enters a B-field, it decays instantaneously. However, sometimes—by chance—an A-particle enters a B-field without decaying. (This is not a case in which a decay-process begins and is interrupted—it is simply a case in which no decay-process begins.) Now, suppose that an A-particle has just entered a B-field and that—by chance—it does not decay. Was this particle's disposition to decay activated? To the extent that we understand this question, we think that the answer is left open. On the one hand, it seems like indeterminism might enter in at the activation stage—i.e., it might be indeterminate whether the disposition will be activated when the stimulus condition obtains. But it also seems as if indeterminism could enter in at the manifestation stage—i.e., the disposition might always be activated when the stimulus condition obtains, but it might be indeterminate

whether the activated disposition manifests. If this is indeed possible, we have a counterexample to (CDC)—the particle’s disposition to decay when entering a B-field is activated, the particle doesn’t immediately decay, and yet there is no process such that: if the process were to continue without interruption, the particle would decay.

Here is a second, related example.¹⁰ Suppose that magical spells involve direct causation at a distance, so that there is no process connecting the casting of a spell to its effect. Suppose further that the froschkönig spell is disposed, when cast, to turn the prince into a frog at midnight. Suppose, finally, that Merlin casts the froschkönig spell at noon and the prince turns into a frog at midnight. To the extent that we understand talk of “activation”, this strikes us as a clear case of a disposition being activated. After all, we are talking about *the disposition to frogify the prince when cast*, the spell *has been cast*, and the prince *does turn into a frog*. It may be possible for stimulus conditions and activation conditions to come apart, but we do not see how this is possible *in this case*. And, given this, we have yet another counterexample to (CDC)—the spell’s disposition is activated (at noon), the prince does not instantaneously turn into a frog, and yet there is no process such that: if the process were to continue without interruption, the prince would turn into a frog.

Of course, Kroll might claim that these kinds of cases are all impossible, but this strikes us as a cost.¹¹

Our third and final worry about (CDC) is that we think it understates the connection between dispositions and conditionals. This is because we think the following principle is correct:

(PROP) Necessarily, N is disposed to M when C iff N would M in a suitable proportion of C-cases.

We have provided a detailed explanation of this principle elsewhere.¹² Here we will limit ourselves to one quick example involving two fragile objects. Holding fixed the actual laws of nature, consider all of the possible situations in which an

¹⁰ This case is inspired by Schaffer (2000).

¹¹ One could rule out our kind of case by treating “x’s disposition to M when C is activated” as synonymous with “either x immediately Ms, or there is some process such that: if the process were to continue without interruption, x would M”. However, this would render (CDC) an uninformative truism about a term of art.

¹² See Manley and Wasserman (2007, 2008, 2011).

object could be dropped. If one object is such that, for a *greater* proportion of those situations, it would break if it were in them, then it is *more* disposed to break when dropped than the other. And if it would break in a *suitable* proportion of dropping-cases, then it is disposed to break when dropped *simpliciter* (where what counts as a “suitable proportion” is determined by context). Finally, if the relevant object would break in an especially *high* proportion of dropping-cases, it will count as “highly” disposed to break when dropped. In this way, PROP explains the link between dispositions and conditionals, while also accounting for the comparability, gradability, and context-sensitivity of our disposition talk.¹³

Kroll, however, raises the following objection to PROP:

My computer’s... CPU is disposed to overheat when running a large number of (tasking) processes. That’s why the computer has a heat sink and fans. When the CPU is running a large number of processes, the heat sink and fans *mask* the CPU’s disposition to overheat when running a large number of processes. Now creatures smart enough to design such a CPU are also smart enough to realize that its disposition to overheat when running a large number of processes needs to be masked/finked... And this isn’t an accident. It holds *across the relevant region of modal space* that cases where the CPU is engineered are, by and large, cases where the engineers realize that its disposition to over heat when running a large number of processes needs to be masked/finked in some way... So, on any reasonable understanding of “suitable proportions,” it’s not the case the CPU would overheat in a suitable proportion of cases where it is running a large number of tasking processes. (##)

¹³ Much more could be said about PROP, but we will stress just one point. PROP is nothing more than a modal claim—it says that there is a necessary connection between dispositions and conditionals, but it does not say *why* this connection holds. For this reason, we do not take PROP to be a theory of what dispositions are. Of course, one could strengthen the principle by replacing “iff” with an “iff and because”, or converting PROP into a claim about *what it is* for N to be disposed to M in C. (See Manley 2012.) An alternative approach would be to take certain dispositional facts as basic, and to use those facts to explain the truth of certain conditionals (rather than the other way around). Yet another option would be to take certain teleological facts as basic, and to use those facts to explain both the truth of certain conditionals and the presence of various dispositions. For this reason, we take PROP to be compatible—at least in principle—with a teleological approach to dispositions.

The idea is that CPUs like this only lack masks in a *small minority* of nomological possibilities—in a sense of “minority” that incorporates objective probability.¹⁴ So there is not a “suitable proportion” of cases in which they overheat.

There are two problems with this argument. The first involves the jump from ‘small minority’ to ‘not a suitable proportion’; the second involves the gap between Kroll’s notion of a ‘case’ and our notion of a ‘C-case’.

Here is the first problem. As we have argued elsewhere, it is sometimes sufficient for a disposition to manifest in a pretty small proportion of stimulus cases.¹⁵ (Consider, for example, the disposition of a disease to spread upon contact.) So it is not enough to argue that cases with the relevant kind of CPU are, “by and large,” cases where the engineers mask the dispositions. What counts as a “suitable proportion” is a context-dependent matter, after all, and often involves a comparison with other salient objects. In the context of comparing various kinds of CPU, to say that one’s own is disposed to overheat may require only that it is *more disposed* to overheat than some other salient CPUs. (And clearly this disposition comes in degrees: the new Intel Core M, for example, is less disposed to overheat than its predecessors.) There is no fixed minimum for what proportion of cases is required to count as “suitable”.¹⁶

But this does not get to the heart of the issue. Indeed, Kroll could avoid this objection by recasting his argument in terms of comparatives. Suppose CPU-1 is highly sophisticated—say, a quantum processor—while CPU-2 is extremely basic. And suppose that intuitively they are equally disposed to overheat—for every fully specific situation in which one would overheat, the other would as

¹⁴ There are infinitely many cases of both kinds, but presumably the idea is that in imposing a measure on the space of cases, we should take objective probability into account. We are happy to grant all of this, even though we’re not exactly sure how to cash the relevant notion of probability if the laws are deterministic (so that it can’t be understood directly in terms of objective chance), or how to compare the probabilities of various sets of initial conditions compatible with the laws.

¹⁵ Manley and Wasserman (2008: 75; 2011: 1203).

¹⁶ Kroll may have in mind a context in which one is explaining the presence of the heat sink and fan. This adds a layer of complication, because it is very natural to interpret an utterance like ‘There’s a fan because the CPU is disposed to overheat’ as eliding the word ‘otherwise’: it is *otherwise* disposed to overheat. (In another context it’s perfectly fine to say that the CPU *is not* disposed to overheat—*because* of the heat sink and fan.) Arguably the function of ‘otherwise’ in such contexts is to hold fixed the absence of the explicitly mentioned mask. (Compare: “Why did you buy insurance? Well, I’d go broke if there were a fire.” Here the lack of insurance is held fixed in evaluating the counterfactual.)

well. Still, let's suppose that across nomological possibilities, processors like CPU-1 are more likely to have their disposition masked. (Engineers capable of creating a processor like CPU-1 will be especially motivated to protect it with masks.) So, probabilistically speaking, there are *more* possibilities in which CPU-1 would overheat than in which CPU-2 would overheat. But they are equally disposed to overheat—a violation of our account of the comparative.

This leads us to our second response. In the description of the revised objection we wrote:

- (1) For every fully specific situation in which one would overheat, the other would as well.

But we also wrote:

- (2) There are *more* possibilities in which CPU-1 would overheat than in which CPU-2 would overheat.

These claims are consistent only because we mean different things by 'situation' and 'possibility'. To illustrate, suppose we ask what Donald would do in a very specific situation—say, meeting President Obama by chance in a café, etc. We can also ask what Ted would do in *that very same situation*. Even a highly specific situation involves more than one (centered) *possibility*—Donald's meeting Obama in just that way, Ted's meeting Obama in just that way, etc. These possibilities are comprised of the same situation saturated by different individuals.

The point is that our C-cases are situations, not possibilities.¹⁷ Think of each C-case as corresponding to an *open sentence* describing all the specific factors that are causally relevant to the disposition. For example, comparing the fragility of two objects, we evaluate each one with respect to the truth of a huge list of counterfactuals of the form "N would break if it were dropped from 1 meter onto a surface with a Shore hardness of 90A, through air with a density of 1.2 kg/m³... etc". And we ask in what proportion of these situations each object would break. It will make no difference to this comparison whether, for some of those situations, one object is *more likely to be in that situation* than the other. Thus a very fancy vase and a very plain vase might be such that they would break in all the same situations, even though the fancy vase is *less likely* to be in many of the

¹⁷ See Manley and Wasserman (2008: 74-75): "We can introduce the term 'stimulus condition case' or 'C-case' for every precise combination of values for heights, Shore measurements, densities of the medium, and so on..."

situations that induce breakage. Even if this were true across nomologically possible worlds, it would make no difference to their relative fragility on our view—and this seems like the right result.^{18,19}

3. Directedness and Progressives

At this point, we have addressed Kroll’s first two reasons for believing in primitive directedness: the claim that it provides a successful account of dispositions and the claim that it explains the link between dispositions and conditions. We now turn to his third and final reason: the claim that primitive directedness can provide an account of the progressive aspect in English.

A sentence in the progressive says that a certain type of event in progress. For example, ‘Steve is driving to Boston’ says that a *drive to Boston by Steve* is in progress. The challenge is to say what it is for a given type of event to be “in progress”, and to do this without presupposing that this event will culminate (since Steve could be driving to Boston, for example, even if he will never reach his destination).

Kroll suggests the following:

(EIP) Necessarily, e is a ϕ event in progress at t iff e is, at t , directed at the end that it cause the resultant state of a ϕ event to obtain at some $t' > t$.

So, for example, what makes it the case that there is a “drive to Boston by Steve” in progress is that there is an event going on that is directed at *bringing it about that Steve has driven to Boston*. Crucially, such an event could be going on, even if this telos is never achieved—this, Kroll claims, is what makes teleological talk ideal for understanding the progressive aspect.

¹⁸ It *might* make a difference if, though they would otherwise break in all the same situations, one object would break in a *more probable situation*, while the other would break in a *less probable situation*. When imposing a measure on situations, we may take into account the objective probability of the situations, independently of the objects that saturate them. (For example, the situation of *being struck by an iron hammer* may be more probable than *being struck by a francium hammer*—even across nomologically possible worlds.)

¹⁹ The comparative version of this argument does seem to cause trouble for Barbara Vetter’s version of PROP, since she explicitly treats cases as ‘triples of a world, a time, and an object’ (2012: §2; 2014: §2.3).

We have three main worries for this claim.

First, we worry that Kroll's approach requires *too much* of events in progress. Of course we agree with Kroll that there is *some sense* in which Steve's drive is directed toward his having driven to Boston. Similarly, if Sanjay is building a house, then there is *some sense* in which his activity is directed toward his having built a house. However, once we get beyond these kinds of examples, teleological talk seems far less natural. Suppose, for example, that Sela is laughing, or standing still, or shaking uncontrollably. All of these statements are in the progressive aspect, but none of them need have anything to do with teleology. There is *no sense*—or, at least, no intuitive sense—in which Sela's laughter is “directed at the end that it cause Sela to have laughed”. Since (EIP) requires this to be the case, that principle strikes us as implausible.

Our second worry is that Kroll's approach seems to require *too little* of events in progress. Suppose Bill kills Bob with his gun. While he is firing the gun, Bill is killing Bob; but while he is planning the murder and buying the gun, he is not yet killing Bob. But why not? On Kroll's view, it must be that no event has begun that has *Bill's killing Bob* as its end. But that seems false, as far as we can understand it. It seems that Bill's planning is directed at this end in *exactly the same sense* in which his firing the gun is. But Kroll will need to draw a sharp distinction between these events in order to get the data right. This strikes us as a difficult position to maintain.

Our third and final worry concerns the relation between progressives, outcomes, and directedness. To begin, consider the following case, which Kroll discusses elsewhere:

Suppose Mary needs to cross a minefield. Besides the first few feet, the minefield is densely filled. So, while there is some probability that she would cross it if she tried, the probability is minuscule. Also, the mines are spread out fairly evenly: besides the first few feet, for each step she could take forward, there is roughly the same, and very high, probability that she would step on a mine. Mary, however, is unaware that the field is a minefield. All she knows is that she needs to make it to the other side. So, she steps out into the minefield, showing absolutely no caution. She takes a few steps and then, not surprisingly, steps on a mine. Let t be some time after Mary first steps out into the minefield

but before she steps on the mine that kills her. (6a) is true at t. But what about (6b)?

(6) a. Mary is walking in the minefield.

b. Mary is crossing the minefield.

It seems to me (and many others) that (6b) is false at t. Mary was trying to cross the minefield but wasn't crossing it. (2015: 2934)

We agree with Kroll's judgment in this case: (6b) is false in the case where Mary will soon step on a landmine. In order to generate this result, Kroll will have to deny that there is (at that time) an event that is directed at bringing it about that Mary crossed the minefield. So far, so good. But now what about the case in which Mary does—by a string of lucky steps—happen to cross the minefield? In that case, Kroll says that (6b) is—at some point—true. (2015: 2935, fn 9) Indeed, even if Mary had said after the first few steps, 'I'm crossing the field!', we would have to admit in retrospect that she was speaking the truth. But, in this case, Kroll will have to say that there *is* an event that is directed at bringing it about that Mary crossed the minefield. In other words, whether or not there is a directed event of the relevant kind will depend upon the occurrence (or non-occurrence) of certain events in the future.²⁰ This strikes us as a strange thing for the teleologist to say—one would think that whether or not a primitive teleological fact obtains at t would be independent of what goes on after that time.

In fact, this final worry seems to bring out a tension between Kroll's theory of dispositions and his account of the progressive. After all, the fact that directedness is outcome-independent is precisely what was supposed to make it suitable for analyzing dispositions in the first place: whether or not an object is disposed to break when dropped—or whether it is in a state directed at breaking when dropped—does not turn on whether it will actually be dropped or broken. But, in that case, directedness seems ill-suited for analyzing the progressive since some progressive statements differ from disposition ascriptions in exactly this respect.

²⁰ Suppose Bill is firing his gun at Bob and intending to kill him. Is he *killing* Bob? If Bill happens to miss every time—however unluckily—the answer is 'no'. If he hits Bob—however luckily—and causes Bob to die, the answer is 'yes'.

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