Chapter 6

Causation, Perspective and Agency
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Introduction
Philosophers of mind tend to take it for granted that causal relations are part of the mind-independent, objective fabric of the physical world. In fact, their status has been hotly contested since Russell famously observed that the closest thing to causal relations in physics are time-symmetric dynamical laws relating global time slices of world-history.¹ These bear a distant relationship to the local, asymmetric relations that form the core of the folk notion of cause. Nancy Cartwright, in an influential response, agreed about the absence of causal relations from physics, but argued that Russell’s position was not viable because agents choosing among potential actions need specifically causal information to distinguish effective from ineffective strategies for bringing about ends.² Causal beliefs play an ineliminable role in practical deliberation In recent years, there has been a great deal of progress in understanding the relationship between causal concepts and the dynamical laws that appear in advanced physics, together with a proliferation of new tools for representing and discovering causal structure.

Many of the figures on the forefront of this research share the view of Pearl, who, describing a shift in his own thinking, writes:

“[I used to think that] causality simply provides useful ways of abbreviating and organizing intricate patterns of probabilistic relationships. Today, my view is quite different. I now take causal relationships to be the fundamental building blocks both of physical reality and of human understanding of that reality, and I regard probabilistic relationships as but the surface phenomena of the causal machinery that underlies and propels our understanding of the world.”³

Early work in this tradition analyzed causes roughly as handles whereby human agents could manipulate effects. Pearl and his coworkers have replaced reference to human action with the notion of intervention, understood neutrally as a particular kind of causal process. One might, however, see lingering indications of internal ties to the embedded perspective, suggesting the possibility of a perspectivalist reconstruction of causal relations that mirrors the one that we give of properties like being a foreigner, being nearby, happening soon.⁴ A perspectivalist reconstruction that

¹“All philosophers imagine that causation is one of the fundamental axioms of science, yet oddly enough, in advanced sciences, the word ‘cause’ never occurs… The law of causality, I believe, is a relic of bygone age, surviving, like the monarchy, only because it is erroneously supposed to do no harm.” (“On the Notion of Cause”, in Mysticism and Logic, Doubleday, 1953, p. 171-196).
⁴ Or even, in relativistic physics, being at rest, or being simultaneous with.
followed the pattern of these examples would explain the absence of causes at the fundamental level of physical description, without requiring Russell's eliminativism. We don't eliminate mothers or foreigners from the world by recognizing their perspectival nature. The same goes for 'is next door to' and 'is simultaneous with'. We simply recognize that these are relativized in some way to the situation of the speaker. In what follows, I'll examine the prospects for perspectivalism about causal concepts, and argue that while the perspectivalist is right to see deep and important connections to the embedded perspective, a conservative perspectivalism that follows the pattern of the examples above, is not possible. I'll conclude with a few more positive words about a more radical perspectivalism with pragmatic underpinnings advocated by Price.

Perspectivalist explanation

The perspectivalist pattern of explanation is easiest to see against background of global reduction. It was a real advance in ontology when we stopped requiring that reductions of F to Y (e.g., causal facts to non-causal facts, or mental to physical) provide necessary and sufficient Y-conditions for individual F claims and required instead the global supervenience of F facts on Y-facts (and not vice versa). One of the implications – and this was something that was brought into sharp relief by the difficulties about undermining in the case of chance – was that local facts about these globally supervenient quantities or structures (i.e., structures that supervene on the global, but not local, configuration of events) will contain information about parts of the manifold extrinsic to those over which it is defined. Globally supervenient quantities like chance, even though defined at an instant contain information about past and future, and distant parts of space. Why would we describe things in terms of these globally supervenient quantities, in terms that contained this kind of veiled extrinsic information? Because it's rather useful to build as much information about the way things generally hang together as we can into our descriptions of the here and now. There are countless examples of more mundane ways in which we build useful, extrinsic, information into representations of things, and let this information guide our interaction with them. We give appliances names like 'toaster' and 'can opener'; we represent people as "Mr. such and such", "Dr. so and so"; the coordinate names that we assign to places and the dates we use as names for times effectively encode information about their relations to all other places and times.

Laws

The possibility of holistic reduction, securing global supervenience but not expecting or requiring local supervenience, is important to Humeans who have to provide an account of structures like laws, causes, or chances that support abductive inferences from goings on in one part of space or time to goings on in another, but it's actually quite general: the connections between conditions and consequences of application of a concept are never logically necessary. If I describe

something as a tomato, it follows – defeasibly, but as a matter of something like conceptual truth - that it is a fruit, that it can be eaten, that it is made of organic material, that it has a certain chemical and genetic make-up, and so on…but the conditions that warranted application of the concept (the shape, color, smell, and so on) don’t bear any logically necessary connection to these. The applicability of a network of inferentially integrated concepts can be given in terms of fit with the whole manifold of events, but there’s not in general any way of giving local, Humean, truth conditions for the application of any single concept. There is always a logical gap between the conditions and consequences of application. Even to call something an object is to say something with very broad consequences for experience. If I think I’m looking at a thing, I think I can reach out and touch it. I expect I can change my position and see it from another side. A world in which there are (material) objects is a world in which there are particulars that can across different modalities, and from different locations. Of all of the ways of stringing together light, color, sound, and haptic sensations, only a miniscule number display that kind of regularity.

This metaphysical strategy comports nicely with an appreciation of the pragmatic role of representations, something Ramsey was recognizing when he referred to representations once as maps that we steer by. Physical theories supply us with world models, which are effectively maps, that span space and history, and include information about the properties of the material inhabitants of space, and we build information about pragmatically important global structures – structures, or patterns, that are distributed across space and time -- into locally defined quantities, and then we use the information built into the local descriptions (drawn out in material inferences, usually defeasible) to generate expectations that guide our interactions with other parts of the manifold. We build information about how things generally hang together into the material inferential connections between concepts that we apply locally, and then use that information to guide local interactions.

We can see the perspectivalist program as a development of this insight. Maps are tools, and like all tools, they are shaped in part by the contexts in which they are used and the properties of their users. Not only do we attach labels to one part of the map that contains information about others (as, for example, when we call a highway an interstate to indicate that it spans states, or draw arrows over a road to indicate the way to phoenix), we also personalize them in ways that make them easy for us to use, but limit their applicability. So, for example, you may personalize your map of the city in which you live in ways that depend on variously idiosyncratic features of your situation. You might mark the location of home and work, circle favorite restaurants, and highlight passable routes. Some of the markings on your personal map may represent perfectly objective features of your city (e.g., where the good Italian restaurants are), but not all of them will, and it will not always be transparent which of them do. It’s obvious that where home and work are depend on a map’s user, but so do which routes are passable. Routes that are passable to a walker, for example, may not be passable to someone who is wheelchair bound. Routes that are passable to a biker may not be passable to a motorist, and so on. A perspectival quantity (or structure) is one that is implicitly relativized to an identifiable and contingent feature

of the user or the user’s situation. The sign of a perspectival quantity is that its extension is not invariant under transformations of user or user’s situation. It has different extensions for differently situated users.

The way that I put things above suggests that we start with an objective map of the world and embellish it for use. That’s misleading. It gets the epistemology the wrong way around. When it comes the kinds of maps or world-views that I have suggested are implicit in the inferential structure of our languages, we don’t individually build and tailor those to our situations. We inherit them from a line of ancestors. By the time we get them, they are the product of generations of retooling, streamlined for ease of use, highly personalized to interface with the peculiarities of our cognitive architecture, a cognitive architecture that is, in its turn, shaped by a history of coevolution with them.

It’s not surprising from this way of thinking of things that our concepts – even, and indeed especially, concepts that play an essential role in everyday reasoning – depend on contingencies of our situation, i.e., on the values of parameters that can be suppressed because they have fixed values for us. For practical purposes, the more tailored our maps are to the contingencies of our situation, the better. Science, however, aims for a more objective frame of reference. It is an attempt to recover, or attain, a level of description that is invariant under transformations of perspective, one that doesn’t depend on contingencies of cognitive makeup or situation, one that reconstructs the world from the ground up using only objective, intrinsic quantities.

This process of disclosing the non-local and perspectival elements in our concepts is a sort of conceptual analysis, but not conceptual analysis of a traditional kind, in which one reveals structure present in the concept. When you reconstruct a perspectival quantity as a relation to contingent features of perspective, you’re not claiming to make explicit parameters that were in any sense represented internally. A perspectival concept does not in general have one’s perspective as a constituent. Using perspectival concepts is a way of suppressing representational structure that isn’t playing a pragmatic role. We use concepts like ‘to the left’ and ‘3 miles away’ rather than more objective correlates because it allows us to pick out directions and locations without knowing our own orientation in space. For the purposes of navigating our environment, we only need to explicitly represent variable features, features that change and whose changes have to be tracked. The parochiality of our concepts has to be discovered, and it is discovered as part of the general process of forming an understanding of the ways in which structures that play an important role in everyday thought are tailored to our idiosyncrasies, and the idiosyncrasies of our environment.

It’s worth emphasizing as a general point that a perspectivalist view of some concept is not eliminativist, or anti-realist. Compare the difference between perspectivalism and anti-realism, with regard to familial relations. ‘Mother’, ‘grandfather’ are perspectival. Their extensions depend on where the user is situated on her family tree, but there is nothing unreal about mothers, or grandfathers. It’s a discovery that one makes when one crosses hemispheres that not only time zones, but also seasons, are perspectival. The most famous example of

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8 Nothing important depends on the distinction between quantities and structures. We could equally well think of quantities as applying to points or particulars, and structures as relations defined over sets of particulars.
scientifically discovered perspectivalism is the treatment that Einstein
gave spatial and temporal notions. In the Special and General Theories of
Relativity, relations like ‘happens at the same time as’ and ‘is 30 miles away
from’ turn out to be relations to inertial frames. If objectivity is measured
by invariance under transformations of perspective, what happens when
you attain a more objective level of description is that properties at the
lower level are reconstructed as relations to parameters supplied by
contingent features of situation. To give a perspectivalist reconstruction
of a concept is to transcend the features of our collective or individual
situation that would otherwise constrain its translatability to a context in
which those contingencies don’t obtain.9

Is this a route to an understanding of causal concepts? Do the
links to intervention and action reveal internal suggest that causal
concepts are dependent on our particular cognitive or epistemic
perspective on the world? Are those links strong enough to support a
perspectivalist reconstruction?

Causal information as information about the results of
interventions

The first order of business is to say how causal structure relates
to the structure that we get from the dynamical equations of physics.
Dynamical equations tell us how the state of the universe at one time
depends on its state at another. If we start with information about the
past in the form of a probability distribution over past events, they will
provide us with probabilities of events to come. In our universe, as it
happens the only strict relations of covariation are among global time-
slices, but when we look at how the laws transform probability
distributions, we find a rich pattern of correlations among local
occurrences.10 What causal information adds to this pattern of
correlations is a separation of a parameter’s effects from information it
carries in virtue of being correlated with past causes from its own effects.
11 Causal information tells us what would happen if we could interrupt
the orderly dynamical flow and twiddle, or tweak, or change the value of
A. It tells us the effects that variation of A would have if it could be lifted
out of the dynamical flow, severed from its own past causes and allowed
to vary freely. This is put by saying that it carries information about the
results of interventions. Causal information about A will tell us how
future probabilities are affected by variation in A when A is treated as a
free variable.

For any set of dynamical equations of sufficient complexity,
there will be multiple conflicting causal hypotheses. These will preserve
the correlations among events, but disagree over the results of
hypothetical interventions. Causal structure separates what a parameter
does from the information it happens to carry about the future in virtue of
past causes. Since that is a difference that only shows up when its own
links to other variables are severed, and since no variable is ever actually

9 A more detailed exposition is given in my *The Situated Self* (Oxford
University Press, forthcoming).
10 I’m ignoring relativistic considerations. They don’t make a difference
here.
11 A parameter is just a variable feature of a physical system: a family of
properties, exactly one of which pertains to the system at any given time.
severed from its causes, this extra content can be captured only in counterfactual, or subjunctive, terms. Think of a newscast in which a weatherman forecasting rain is followed by Greenspan announcing an increase in interest rates and Bush announcing new ‘security’ measures in the Middle East. Firing the weatherman won’t ward off rain, but firing Greenspan and Bush would ward off rises in interest rates and new measures in the Middle East, but that difference is not one that can be made out in terms of correlations between reports and the events reported.

There are various ways of effectively severing links to the environment when attention is focused on a proscribed system, so that we can treat changes to the values of some variables as interventions. Any variable that can be manipulated and whose own causes are uncorrelated with the variables of interest can be regarded, for such purposes, as external to the system, or “exogenous”, and changes in the value of such variables as interventions. This is the essence of scientific experimentation, as Pearl writes:

“The scientist carves a piece from the universe and proclaims that piece in... The rest of the universe is then considered out... This choice of ins and outs creates asymmetry in the way we look at things and it is this asymmetry that permits us to talk about ‘outside intervention’ and hence about causality.”

But the separation is always only an effective separation. If we widen our view to take in the universe as a whole, there are no exogenous variables. And if there are no exogenous variables, there are no interventions. Pearl continues:

“If you include the entire universe in the model, causality disappears because interventions disappear – the manipulator and the manipulated [lose] their distinction...”

The universe is a closed system, forming a single, seamless pattern of events. From a god’s eye view, the variables that are treated for experimental purposes as exogenous, including the actions of human agents who manipulate them, are just part of the pattern of correlation. We can see now why causal structure doesn’t show up in the pure dynamics. We can also see why information about causal structure would be of little interest for an observer located outside the pattern of events. To such an observer, if he is interested simply in forming beliefs about the pattern, it is correlations that matter. If the correlations between what the weatherman says and what actually happens is quantitatively the same as the correlation between what Greenspan announces and what actually happens, they have exactly the same epistemic reasoning from a detached perspective.

**Interventions as actions of mine**

We’ve seen that causal information is information about the results of interventions, that what counts as an intervention depends on drawing boundaries, and that what boundaries we draw (i.e., which

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12 'Freedom’ is used here in the technical sense to mean simply ‘uncorrelated with variables of interest.’
13 *Causality*, p. xiii-xiv.
variables we treat as endogenous and which we treat as exogenous) depends on our interests. We also saw that if we widen our view to include the universe as a whole so that nothing lies outside the boundaries, the notion of an intervention appears to have no application at all. In this section, I’m going to suggest that that’s not quite right. It is correct that from a god’s eye perspective outside of space and time, there are no interventions, but from the point of view of a system whose activity is part of the pattern, her actions have the status of interventions for her. And it is in assessment of the results of her own actions that causal thought arises. The reason has to do with degeneracy in the epistemic stance when it is applied reflexively. A system that is representing activity that includes its own will unavoidably encounter the degeneracy. The alethic constraints that guide the activity of the representor are empty when what is being represented is the representational act itself. The most familiar examples of this kind of degeneracy are self-representing linguistic performances: “I promise to X”, “I declare that Y”. Such performances are self-fulfilling. They are perfectly good representational acts, they have truth conditions that can fail to obtain (someone else can certainly falsely ascribe a promise to me). But because they provide their own truthmakers, they are unconstrained at the time that they are made.

Anything can get filled in for X or Y here and being told to tell the truth is not going to provide guidance about what to fill in. Being told to tell the truth about what someone else will say, or what you said at some other time or place, will constrain your answer, and will lead you to look outside the representational act, to other times and places for guidance. But when you are representing your very own thoughts or statements at the time at which you are making them, the way the world is, together with the desire to tell the truth will provide no guide. One way of putting this is that there are multiple solutions to the question ‘what will I say?’ that are inconsistent with one another, but any one of which provide a correct answer. And no evidence in your possession could sway your answer, since by performing A you create evidence for ‘A’ stronger than any evidence you might have had for not A.

Let’s use the word ‘performance’ for a self-fulfilling representational act. Syntactically, any time you can add ‘hereby’ to a proposition (e.g., “I (hereby) declare that _”, “It is (hereby) acknowledged that __”, “I (hereby) decide to __”…), you have a performance. Decisions are performances. How efficacious one’s decisions are is not up to an agent. I can decide to do any manner of things, but the link between the decision to A and A is a matter of how my decisions are connected in the world, and reliability will vary. The link between the decision to raise my arm and the raising of the arm is highly reliable. The link between the decision to produce a delicious mushroom risotto and the production of the risotto is less reliable. And the link between the decision to save the developing world and the saving of the developing world is very much less so. Efficacious action depends on having an accurate understanding of how reliable those connections are. But the decision itself – the act of deciding to A - is self-fulfilling, unconstrained by the requirements of accuracy. This is what saying that alethic constraints are degenerate when applied reflexively means.

It is important the degeneracy is perspectival. It is relative both to agent and to time. “JI decided to A at time t” thought by anyone other than JI, or thought by JI at any other time than while engaged in
deliberation is constrained in the ordinary way, on pain of falsity, by whether or not I decides to A at t.\textsuperscript{15} And it is important that the degeneracy is unavoidable for any system that includes its own activity in the field of representation. The desire to tell the truth in general will not guide my answer the question ‘Will I A?’ and the ordinary epistemic procedures for getting information about whether X A’d will not apply. Guidance has to come from elsewhere. ‘Will I A?’ becomes the question ‘Should I A?’ That leads to the question ‘What would happen if I B’d or C’d instead?’ And it is here that causal information is indispensable.

The emptiness, or degeneracy of alethic constraints when applied to one’s own actions opens up the space for deliberation. I believe that it captures the sense in which, from the point of view of the participant in a dynamical process, her own actions have the status of what Ramsey called “an ultimate contingency” (and, indeed, as he also said, in a closed universe, as he says, the only ultimate contingency). One’s own contributions to history, in the form of decisions, have a special, degenerate status; they are, in the technical sense, free variables, lifted out of the causal order. And the degeneracy of decision is inherited by the actions they control. Any time you have a representational act that represents an event that is, or is probabilistically dependent, on the act itself, you have the degeneracy.\textsuperscript{16} Orders, also, fit this pattern. Velleman gives the example of a doctor that says to a nurse at the end of an examination: “you will now take the patient to the X-ray room”. The event described here (the taking of the patient to the X-ray room) is probabilistically dependent on the act of description.\textsuperscript{17} Indeed, it’s quite natural to think of the decision to, e.g., raise one’s arm, as an order that the mind gives to the body. Far from being an esoteric special case, much of the time, in the cases that matter most, when we’re reasoning about the future, we’re 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 is an epistemology built not for participants, but for detached observers. It is an epistemology built for detached observers because it presupposes the independence of what one is reasoning about from the process of reasoning itself. The embedded agent is rarely in that situation. For the embedded agent, epistemic reasoning is very often, in some part, deliberative.

Anscombe, with characteristic acuteness, noticed the anomalousness of decision from an epistemic point of view. She focused on the closely allied notion of intention and put the difficulty sharply in

\textsuperscript{15} ‘Did I decide on the blue sofa yesterday?’  ‘Will I decide not to go through with it when the time comes?’  are perfectly ordinary questions constrained, respectively, by what I did decide yesterday, and what I will decide tomorrow.

\textsuperscript{16} The sort of dependency in question is asymmetric probabilistic dependency, conditional on what a system knows about its history, assuming the ordinary epistemological asymmetries between past and future.  See Albert, Time and Chance, Harvard University Press, 2000, and references there for discussion of those asymmetries.

\textsuperscript{17} The probability that the nurse takes the patient to the X-ray room is higher, given the doctor’s order, than it would have been, we can suppose, had the doctor said “you will now take the patient back to his room.”
the form of an observation about the difference between predicting that
A will X and forming the intention to X. She writes:

“The distinction between an expression of intention and a
prediction is generally appealed to as something intuitively clear. ’I am
going to be sick’ is usually a prediction; ’I am going to take a walk’ is
usually an expression of intention…. We might attempt to make the
distinction out by saying: an expression of intention is a description of
something future … which description [an agent] justifies (if he does
justify it) by reasons for acting… not by evidence that it is true.”

But she didn’t diagnose the difference. She continues: “But
having got so far, I can see nowhere else to go along this line, and the
topic remains rather mystifying”.

I am suggesting that the psychological space within which causal
thought has its home is created by the degeneracy of epistemic thought
with respect to one’s own actions. It is inside the context of deliberation
that the distinction between what an event causes and what it forecasts
matters, as we rehearse the possibilities for action, treating them as
interventions in the shared environment, assessing their effects and
weighing them against our ends. It is here, in this degenerate epistemic
context, where truth is no longer a guide, that causal thought has its
home.

Why perspectivalist reconstruction founders

Interventionists readily acknowledge the relativity of causal
relations to choices of endogenous and exogenous variable. Pearl, in the
quote above, suggests, quite rightly, that from a god’s eye-view, there are
no exogenous variables. I have suggested that from the point of view of a
participant part of history, its own contributions have the status of
exogenous variables. So far, the possibility of a perspectivalist
reconstruction is looking good. We can take an agent’s effective
perspective to be given by the variables that count as exogenous for her,
the decisions that mark her point of entry into the causal order. Consider
the analogy with spatial or temporal perspectives. In those cases, the
perspectival concepts are reconstructed as objective concepts implicitly
indexed to a parameter that defines the agent’s situation. Relations like ’is
close by’, ’is far away’, ’is to the left’, are relative to a spatial frame
provided by the location and orientation of the situated user. From a
detached perspective outside of space these contrasts disappear.
Properties like ‘belonging to the past’ or ‘belonging to the present’ are
relative to a temporal frame provided by the time at which they are
assessed. From a detached perspective outside of time, the contrast
disappears.

But here the analogy ends. In the spatial and temporal cases,
and other canonical examples of perspectival concepts (e.g.,
foreign/indigenous, father/grandfather), once a frame of reference has
been specified, we have a one-to-one correspondence between the
perspectival concepts and objective counterparts. There is no residual,

picking up Anscombe’s discussion, has characterized an intention, in a
way that correctly identifies the reflexive source of degeneracy, as a self-
referring mental act that causes what it refers to.
content in the concepts being analyzed. Any question you can raise about what is near or far away, or what is to the left and to the right, can be answered by looking at an objective map, once a frame of spatial reference has been specified. We put this by saying that the perspectival models are identified with relational substructures of the non-perspectival ones. The same is not true of causal models. It is not the case that the content of a causal model is completely captured by dynamical relations relative to a choice of exogenous variables. There are multiple, inequivalent causal models compatible with all of the facts about dynamical and probabilistic relations for every choice of exogenous variable. These models make different predictions about what would happen under variation in the values of the variables in question, and it appears to be a real, substantive question which of them is correct.

Hope for a more complex probabilistic reduction is still held out in some quarters. And it is possible to resist the view that there are real, objective facts about causes that are simply invisible from the detached perspective by familiar strategies like fictionalism or projectivism. The difference between a causal model and a probabilistic model of the history of the universe as a whole is, as I remarked earlier, strictly counterfactual. It’s a difference in implications for the results of interventions that do not occur, and it’s a live debate among statisticians what attitude to take towards this counterfactual residual. Price’s very nuanced brand of pragmatic perspectivalism that rejects the demand for anything but a deflationary account of what causal relations are may provide an alternative to the familiar strategies. But a conservative perspectivalist reconstruction that follows the pattern of the canonical cases, I believe, isn’t feasible.

**The observer vs. the participant**

The real insight in perspectivalism - and the one that is most important for the understanding of causal phenomenology: what it is like to be an embedded, embodied participant in the world, not an onlooker, but one of the players on the field - is the degeneracy of epistemic thought with respect to one’s own activity. That degeneracy is a perspectival effect. God sees correlations and conjunction. There is no distinction from that perspective between what an event forecasts and what it causes (no distinction between the relation the weatherman’s reports bear to the weather and Greenspan’s declarations bear to interest rates). The participant, however, who can intervene and observe the results of interventions, can ferret out the network of causal relations supporting the correlations. His epistemological advantage over the spectator consists in the fact that where information flows one way between the spectator and the system of interest, it flows two ways between the participant and the system of interest. The spectator receives data, but the participant is both recipient and source. The epistemological advantage that the intervener has over the observer is well documented in both Pearl’s book, and elsewhere. It confirms what we know from experience about the advantage an interviewer has over the audience of a lecture.\(^{20}\)

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\(^{20}\)At least an interview when ‘no comment’ isn’t an allowed answer, there is no telling of lies, and the respondent doesn’t get to choose the questions. That is the kind of control that an unconstrained ability to intervene would give us. How is it possible, in principle, for a participant to know more than the observer if the observer is privy to the results of the participant’s interventions? If it is possible, it is possible for the same
There are trivial and more interesting notions of participation. In the trivial sense, a participant is a system that just includes its own activity in its representational scope. This is enough to yield degeneracy in values of certain variables in the field of representation, and hence enough to make the system unavoidably active with respect to the values of those variables. This sort of degeneracy is a purely formal effect, closely akin to the semantic ungroundedness that generates the liar paradox, and paradoxes of reference.\footnote{For discussion of semantic ungroundedness see \textit{Liars and Hoops}, JC Beal, \textit{ed.}, Oxford University Press, New York, 2003.} It is just a matter of widening the scope of representation so that the representational relation has fixed points. We get something interesting from a dynamical perspective only when those variables interact dynamically with variables whose values we get information about perceptually. In that case that we have the epistemological situation that has the structure we need for causal relations; i.e., not just free variables, but perceptual feedback from the results of tweaking those variables. The crucial thing here is a two-way exchange of information. That two-way exchange is both what gives the participant his epistemological advantage over the observer, and – I want to suggest now - generates a sense of effective presence.

Suppose you are in a video arcade with your hand resting on the console of one of the games while you watch your child dump coins into machines, shoot guns and turn wheels. Something catches your eye, and you realize that the restless movements you’ve been making with your hand are controlling some of the action on the attached screen. It dawns on you that there is unused playing time in the game and that you are actually playing. You discover pedals and with some experimental pushing and pressing, you figure out what the knobs and pedals control, i.e., what changes they effect on the screen, and suddenly you’re in the world of the game. Once you’ve determined your interventions are connected in this universe, you can begin to participate. You experience yourself as having an effective presence on the screen, directing its course, within the parameters of the game. In some games, you might do little more than steer a shape around a maze. In others, you might take the action from one locale into another, blow things up, and create sounds and visual images… My final suggestion is that this richly structured experience of self as occupant and source of some of the changes that one observes depends on perceptual feedback from the results of interventions. It is the product of a history of interaction that belongs to the participant and not to the spectator, in which feedback between intervention and observation has established robust psychological links between action and observation. It seems to happen largely unconsciously and will be mediated, at first, by phenomenological awareness of our presence in the non-virtual world, i.e., by the feel of our hands on the console. But the mind is very quick to make reliable mediating processes phenomenologically transparent. Normally, this sense of effective presence extends to the boundaries of the body, but we know that it can grow to include artificial prostheses and tools, and contract if a subject loses voluntary control of limbs.

If this is correct, it is the tight dynamical loop in which the agent is acting an observing the effects of its actions, the repeatable cycle of willing and watching (i.e., of intervening and observing the results of
intervention) that divides the events one observes into the things one does and the things that merely happen when one acts, and gives one a sense of having an effective presence in the world. I don’t just think that my arm moves when I will, but that it moves because I will, in a sense that supports the belief that it wouldn’t have moved if I didn’t, because I’ve tried, multiple times, under all kinds of conditions. And I don’t just believe that my car accelerates when I press the pedal, I believe that it accelerates because I press the pedal, in a sense that supports the belief that it wouldn’t have moved if I didn’t. And I know that because I’ve tried, multiple times, when the relevant conditions obtain. It’s the feedback cycle of intervention and observation that teases apart the causal paths.

Conclusion

I’ve argued that the emptiness of alethic constraints applied reflexively underwrites an agent’s conception of her own activity of interventions. This creates the psychological space for the fine-tuning of action with an eye to achieving particular ends, and it is in this context – the context of choice or decision - that causal thought has its home. I’ve also argued that both causal phenomenology and causal knowledge, or belief depend on perceptual feedback only available to the participant in history. But these deep and important ties to the embedded perspective do not appear to underwrite a full perspectivalist reconstruction of causal concepts. Those concepts have an irreducible residue, in the form implications for what would happen under hypothetical interventions, that plays an essential role in choice.

The interventionist insight was that the history of the universe forms a seamless pattern of events. To tease apart the causal threads, we have to pull some variables out of the fabric and regard them as free variables: unconstrained by, but constraining, the values of others. There are no such variables from a God’s eye point of view. But from the perspective of a participant in the universe (i.e., a system whose own activity is woven into its dynamical development), its own occurrence actions have that status. The only interventions in the evolution of any closed system come from the inside, from the perspective of participants. What counts as an intervention is a matter of perspective; it depends on how the participant’s own activity is woven into the action.

This doesn’t mean that causal structure is perspectival in the way that properties like ‘being a foreigner’ or ‘being nearby’ are perspectival. In those cases, once the pattern of events is fixed and a perspective has been specified, there are no further questions about who the foreigners are or what is nearby. Because in the causal case, there are differences in the causal facts that aren’t reducible to differences in the objective pattern of events or in one’s perspective on them. Settling the facts about the history of the universe and our perspective on history doesn’t settle the causal facts. There are there are multiple, incompatible causal models for the universe from every perspective, even once the objective pattern of events is fixed. The disagreement about causal structure will express itself in different answers to questions about what would happen under hypothetical interventions, what would have happened if we carried out a measurement that we didn’t carry out, or what would happen if we get if we carried out a measurement or experiment that we won’t (or can’t)? No matter how long history goes on, there will be some experiment that has gone unperformed, and causal hypotheses compatible with the results of all actual experiments, but that predict different results.
We can put this in terms of supervenience theses. The facts about foreigners supervene on the objective physical facts, once my national perspective has been specified. The facts about what is nearby supervene on the objective physical facts once my spatial perspective has been specified. The causal facts do not supervene on the physical facts, even once my perspective on those facts (how my actions are woven into world history) has been specified.

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\text{physical facts + national perspective } \rightarrow \text{facts about foreigners} \\
\text{physical facts + spatial perspective } \rightarrow \text{facts about what is nearby, but} \\
\sim (\text{physical facts + agential perspective } \rightarrow \text{causal facts})
\]

This might look like the end for perspectivalism, but perhaps not. The thing to notice is that the residual content of causal models (the differences that remain once differences in historical fact, and differences in perspective have been factored out) is that it is purely hypothetical. It concerns the results of interventions that could have been, but weren’t carried out. If one were a perspectivalist about modality quite generally, she will regard these differences as perspectival as well. A generalized perspectivalism with respect to modal discourse will naturally capture causal structure in its scope and it’s arguable that this generalized perspectivalism is a stable position. It’s much more radical than the local causal perspectivalism we’ve been discussing, but it is arguable that the considerations with which I introduced causal perspectivalism, lead inevitably in that direction.

If we want to see what a generalized perspectivalist program looks like, we need look no further than the primary proponent of causal perspectivalism: Huw Price. Price avows an actualist metaphysics, according to which the universe consists of a seamless pattern of events with the activity of agents, woven inextricably into it. And he also recognizes the ways in which the embedded view of the agent differs from this; the fact that we all view actual events always against a rich background of unrealized possibilities, discern a causal substructure behind patterns of correlation, and give our own actions a special status removed from the rest of the pattern. But he denies that there is any incompatibility. It’s not that he thinks that a reduction of modal and causal beliefs about actual events is in the offing, or that he denies that modal and causal beliefs are literally true. Price thinks, rather, that the standard menu of philosophical options is imposed by the traditional picture of truth as a correspondence between constituents of belief and elements in a prestructured domain. And he thinks that it is the traditional picture of belief that has to go.23

Everything Price says in this regard is grist for my mill. It takes some complicated philosophical therapy to wean oneself of the picture of one-one correspondence. The expectation that the compositional structure of belief has to mirror that of the world is undermined by consideration of the pragmatic role of representation, and emphasis on

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22 The traditional options are these: deny that S-beliefs are true, provide a non-literal reading of S-beliefs, give a reduction of S’s to an already recognized element of reality, or inflate ontology, adding S’s as basic elements.

the ways in which even paradigmatic representations like maps in use depart from perfect correspondence. The representational hierarchy erected overtop of experience is an elaborate web of interconnected belief, connected to the external landscape at the periphery. It has an internal dynamics designed in the first instance to get the body moving in the right ways in response to the right kinds of experience reliably enough within its limited environment to keep it well-fed and reproducing. If these are the only constraints on representation, it’s difficult to see where the general expectation of a one-one correspondence comes from. The practice of forming beliefs and bringing them to bear on behavior can do without any more rigid structure. Modal beliefs, causal beliefs, beliefs about who your friends are, about what is beautiful, about natural laws, what is funny, or about who has done wrong… all of these will have their own links to experience, their own role in inference, and their own bearing on behavior. Some beliefs (e.g., the belief that Hesperus is Phosphorous) forge links between internal elements. Others (e.g., scientific beliefs, taxonomic theories) organize, unify, or systematize existing beliefs. Others still (e.g., evaluative beliefs) play a role in practical reasoning, and so on. There is intuitive pull for correspondence with elements in the environment for perceptual beliefs, but there is not the kind of uniformity of roles that would support a simple, one-one correspondence across the board.

The story I told about causal beliefs fits neatly into this general program. My only quibble with Price might be to wonder whether ‘perspectivalism’ is the best name for it. There is, of course, the recognition that the explanation of the role that a certain class of beliefs plays in the internal dynamics will make reference to contingent facts about the believer. This will be more obviously and directly true in some cases than in others. And it is certainly worth pointing out how the fact that we form beliefs about what is possible, or probable, or about what causes what depend on contingent facts about our epistemic perspective on the world – about what we know, about our resources for finding things out, and so on. But the notion of perspective involved here is very general. It suggests a much more basic reorientation that dispenses with the whole project of giving analyses – whether perspectival or non-perspectival, objectivist or subjectivist – and replaces it with what might call an ecology of concepts. The task for the philosopher trying to understand concepts like ‘cause’ is not to produce objective truthmakers, but to explain the features of ourselves and our environment that jointly support the use of those concepts. We ask what they are used to do, what makes it possible for them to do what they are used to do, in the environments in which they are applied. The expectation that every concept should have an objective truthmaker is a holdover from the conception of mind as mirror of nature, the view of concepts as internal proxies for structures intrinsic to the landscape, but if there’s one uncontroversial implication of a scientific conception of the mind, it is

24 There is the vexed question of what is meant by ‘compositional structure of the world’. If what we mean is dynamical structure (world decomposes into dynamically separable components), there is at best a reason to think that beliefs closely linked to experience may reflect may reflect the structure of the environment, to some degree. If we have metaphysical division of some kind in mind, there is no naturalistic reason to expect correspondence that I can see. But, see Lewis (especially “New Work for a Theory of Universals”), Armstrong (Universals).
25 Facts about whether apples are too heavily to lift depend more obviously such contingencies than whether they are red or nutritious.
that there is nothing that grounds the expectation of a mirroring relationship. In the case of our conception of ourselves, the very notion of a correspondence is degenerate, and it is not clear how to even apply the mind-as-mirror picture, and I have suggested that that degeneracy infects the notion of cause by way of intervention.\textsuperscript{26}

But these are very general issues. The more definite results of the discussion, concerning the notion of cause specifically, are that a conservative perspectivalism that follows the pattern of examples like 'is a foreigner' or 'is nearby' wherein you just recover the facts in question by adding a hidden parameter is not possible for 'cause'. In the case of foreigners; specify the perspective and specify the objective facts, and you've answered all the questions about the extension of 'foreigner'. In the causal case, you can specify which variables are exogenous, and what all of the facts are about correlations. That opens up the space for questions about causal relations, but doesn't answer them. The causal facts are not determined by, or do not supervene on, non-causal facts about correlations relative to a choice of exogenous variables. This leaves open the possibility of a generalized perspectivalism with respect to all modal notions, and it also leaves open the possibility of a methodological reorientation that rejects the project of finding objective truthmakers for causal beliefs in favor of an ecology of causal concepts. These positions have to be assessed on their own merits.

\textsuperscript{26} The metaphor actually does quite a nice job of reproducing the difficulty of the mind's relation to itself. Assuming that you know what it is for something in the room to be reflected on the surface of the mirror, ask yourself whether and how the surface itself is therein reflected? Every point on the surface of the mirror reflects something else in the room, but does it also reflect itself? This is connected to the dual content picture of "Doublemindedness", this volume.