

# How do causes depend on us? The many faces of perspectivalism

Jenann Ismael<sup>1</sup>

Received: 29 September 2014 / Accepted: 19 April 2015  
© Springer Science+Business Media Dordrecht 2015

**Abstract** Huw Price has argued that on an interventionist account of cause the distinction is perspectival, and the claim prompted some interesting responses from interventionists and in particular an exchange with Woodward that raises questions about what it means to say that one or another structure is perspectival. I'll introduce his reasons for claiming that the distinction between cause and effect on an interventionist account is perspectival. Then I'll introduce a distinction between different ways in which a class of concepts can be said to depend on facts about their users. Three importantly different forms of dependence will emerge from the discussion: (1) Pragmatic dependence on us: truth conditions for  $x$ -beliefs can be given by a function  $f_0$  of more fundamental physical structures making no explicit reference to human agents. But there are any other number of functions ( $f_2 \dots f_n$ ) ontologically on a par with  $x$  and what explains the distinguish role  $f$  plays in our practical and epistemic lives are facts about us. (2) Implicit relativization: truth conditions for  $x$ -beliefs are relative to agent or context. The context supplies the value of a hidden parameter ('hidden' in the sense that it is not explicitly represented in the surface syntax) that determines the truth of  $x$ -beliefs. (3) Indexicals: like implicit relativization except that the surface syntax contains a term whose semantic value is context-dependent. I suggest that Price's insights are best understood in the first way. This will draw a crucial disanalogy with his central examples of perspectival concepts, but it will refine the thesis in a way that is more faithful to what his arguments show. The refined thesis will also support generalization to other concepts, and clarify the foundations of the quite distinctive research program that Price has been developing for a number of years.

---

✉ Jenann Ismael  
jtismael@u.arizona.edu

<sup>1</sup> University of Arizona, Tucson, AZ, USA

23 **Keywords** Causation · Perspective · Pragmatics · Semantics · Huw Price ·  
 24 James Woodward · Interventionism · Temporal direction

## 25 1 Introduction

26 In a set of recent papers, Huw Price raises the question of whether the distinction  
 27 between cause and effect is a matter of perspective. In his words

28 Is the distinction between cause and effect like the distinction between us and  
 29 them—a perspectival projection onto a nonperspectival reality? Or is it better  
 30 understood as nonperspectival from the start<sup>1</sup>

31 The issue has intrinsic interest. Causation is a concept that is central to our thinking  
 32 about the natural world. Many of the notions of central metaphysical import are tied  
 33 to causation. The asymmetry between cause and effect is arguably the most basic and  
 34 important form of temporal asymmetry in nature.<sup>2</sup> If it turns out that the distinction is  
 35 perspectival, that is a result of some importance.

36 Price argues that on an interventionist account of cause the distinction is perspec-  
 37 tival, and the claim prompted some interesting responses from interventionists and in  
 38 particular an exchange with Woodward that raises questions about what it means to say  
 39 that one or another structure is perspectival. I'll introduce his reasons for claiming that  
 40 the distinction between cause and effect on an interventionist account is perspectival.  
 41 Then I'll introduce a distinction between different ways in which a class of concepts  
 42 can be said to depend on facts about their users and suggest that Price's insights are  
 43 best understood in only one of these ways. This will draw a crucial disanalogy with  
 44 his central examples of perspectival concepts, but it will refine the thesis in a way  
 45 that is more faithful to what his arguments show. The refined thesis will also support  
 46 generalization to other concepts, and clarify the foundations of the quite distinctive  
 47 research program that Price has been developing for a number of years.

## 48 2 Interventionism

49 Price's discussion takes its departure from the interventionist account of causal struc-  
 50 ture and although there is still some dispute about the interventionist account, I will  
 51 assume it here, as a point of agreement between the disputants and background for  
 52 the discussion of perspective. If you don't like the interventionist account, it shouldn't  
 53 affect the main body of the discussion.<sup>3</sup> Philosophically, interventionism is a devel-

<sup>1</sup> Price (2007, p. 4).

<sup>2</sup> This is not to say that the causal asymmetry is just a temporal asymmetry, only that it is an asymmetric notion that normally aligns with the temporal arrow. The connection between the two arrows is one of the matters to be settled by an account of causation.

<sup>3</sup> See Pearl (2000), Woodward (2005), and Sloman (2009), for an accessible survey of recent developments. Where there are differences, I rely on Woodward. causation is not an unambiguous term, and there are two largely separate traditions in philosophy dealing with causation. The first is associated with analytic metaphysics. The primary data are intuitions about hypothetical cases, and the goal seems to be to systematize

54 opment of manipulability theories of causation, which are built around the idea that C  
 55 is a cause of E, just in case manipulating C in the right way is a way of affecting E.<sup>4</sup>  
 56 Although manipulability theories capture the intuitive content of causal claims, the  
 57 notion of manipulation has seemed to interventionists objectionably anthropocentric.  
 58 It seems to make reference to human capacities and human agency, where causal struc-  
 59 ture should be part of the mind-independent fabric of reality. Interventionists trade the  
 60 notion of manipulation for that of ‘intervention’ and provide an explicit characteriza-  
 61 tion of the class of interventions that make no essential reference to human agency.  
 62 The result is an advance on manipulability theories that preserves the intuitive content  
 63 of that view, but removes any constitutive connection to human action.

64 According to interventionists, causal information is information about the results  
 65 of hypothetical interventions. An intervention is a ‘surgical’ change in the value of a  
 66 variable, one that severs it from old functional relationships while keeping other causal  
 67 relationships intact, allowing it to vary effectively free from the influence of antecedent  
 68 variables. So knowing the causal effects of A is knowing what *would* happen if A were  
 69 allowed to vary free of its own past causes. So, for the interventionists, causal notions  
 70 have an important but non-constitutive connection to human agency. Manipulation by  
 71 human agents is a paradigmatic example of an intervention, but flipping coins and  
 72 randomizing trials are ways of approximating surgical interventions as well. And this  
 73 feature of the interventionist account is important to its proponents. As Woodward  
 74 writes:

75 “Even when manipulations are carried out by human beings, it is the causal features  
 76 of those manipulations and not the fact that they are carried out by human beings or are  
 77 free or are attended by a special experience of agency that matters for recognizing and  
 78 characterizing causal relationships. Thus...[interventionism] avoids the ... problem  
 79 besetting manipulability theories—that of anthropocentrism and commitment to a  
 80 privileged status for human action. *There is nothing in the interventionist version of a*  
 81 *manipulability theory that commits us to the view that all causal claims are in some way*  
 82 *dependent for their truth on the existence of human beings or involve a “projection”*  
 83 *on to the world of our experience of agency.”<sup>5</sup>*

84 There is one sense in which the common sense idea of cause does plausibly involve  
 85 such a projection; the quasi-phenomenological idea of compulsion that we experience  
 86 as a kind of tension in the muscles when we act on the environment is read into the  
 87 relations between natural events, so we imagine one billiard ball pushing another, or  
 88 the earth pulling us towards it. But this idea of causation as compulsion, doesn’t play  
 89 a role in the interventionist notion.

---

Footnote 3 continued

judgments about when it is right to say that A caused B. The second focuses on causal modeling in engi-  
 neering and the special sciences. Intuitions play almost no role in this literature. The emphasis there is on  
 providing a framework for representing causal relations in science, i.e. a formal apparatus for rendering the  
 deep causal structure of situations, refines intuitions and gives us positive criteria for making assessments  
 in hard cases, provides normative solutions to causal inference and judgment problems. The interventionist  
 account of causal structure grew up in the latter tradition.

<sup>4</sup> See Woodward (2013).

<sup>5</sup> Ibid., emphasis mine.

90 This progress from a notion that is initially characterized by an external connection  
 91 to human action to one that can be characterized explicitly without such reference  
 92 is an important part of how a concept matures. So, for example, I used to think of  
 93 aspirin as pills that cure headaches, and now have a more mature concept of aspirin  
 94 that can be characterized by chemical composition independently of its relationship  
 95 to headaches, and I can tell a little of the informative story science gives us about why  
 96 it cures headaches. Children start by thinking of parents as people that play a certain  
 97 role in their lives. Parents are grown ups that take care of them, put them to bed,  
 98 and provide food. Later, they come to possess an explicit biological characterization  
 99 of parenthood and an understanding of the social and ecological contingencies that  
 100 explain why beings that satisfy the biological characterization play the relevant role.  
 101 These sorts of explications are something other than simple analyses. They give an  
 102 explicit (non-anthropomorphic) account of the extensions of concepts initially defined  
 103 implicitly by their relations to human practices.<sup>6</sup>

104 Interventionism aims to provide a formal framework for representing causal rela-  
 105 tionships that meshes with the ways that we have of discovering causal structure and  
 106 the uses causal beliefs play. It doesn't purport to give a non-circular, reductive analysis  
 107 of causation, because the notion of intervention can't be characterized in non-causal  
 108 terms. But it does insist on objectivity. Although interventions can't be characterized  
 109 in non-*causal* terms, they can be characterized in non-*human* terms. The fact that  
 110 there is no ineliminable reference to human agents or agency in the truth conditions  
 111 for causal claims means, in their view, that causal structure is part of the fabric of  
 112 nature and not a projection onto that fabric by the human mind.

113 Against this background, Price claims that the attempt to exorcise the human ele-  
 114 ments in causal claims fails. He focuses on the distinction between cause and effect,  
 115 which he claims is not an asymmetry in nature, but one imposed by an asymmetry  
 116 in what he calls the 'causal viewpoint' of an agent. And he characterizes the causal  
 117 viewpoint of an agent as "a distinctive mix of knowledge, ignorance and practical  
 118 ability that a creature must apparently exemplify, if it is to be capable of employing  
 119 causal concepts."<sup>7</sup>

120 Here he is taking a leaf from Ramsey's book.<sup>8</sup> Ramsey held that causal thinking has  
 121 its home in the deliberative context, and we think of effects as lying temporally down-  
 122 stream of their causes because when we assess the affects of hypothetical actions (or,  
 123 as he sometimes says, volitions), beliefs about the past remain unaffected, but beliefs  
 124 about the future are affected. This is supposed to show that the direction of dependence  
 125 is imposed by the viewer rather than intrinsic to the situation under consideration. And  
 126 this, in turn, is supposed to show that it is a perspectival effect.

<sup>6</sup> Kutach (2013) is a book length account of the development.

<sup>7</sup> Price (2007, p. 5).

<sup>8</sup> Ramsey (1978); also Price (1992).

127 **3 Perspectival concepts**

128 Claims that one or another concept (e.g., taste, aesthetic value, ethical belief) is per-  
 129 spectival are a staple of the philosophical literature, and a number of so-called global  
 130 perspectivalist views have gained currency recently,<sup>9</sup> but there's no received general  
 131 understanding of what it is for a concept to be perspectival. The term is used loosely  
 132 in both ordinary language and philosophical contexts with wide and evidently varied  
 133 meaning. We might try to cull Price's meaning from his examples: local and foreigner,  
 134 us and them, nearby and far away. In these cases, there is a suppressed parameter that  
 135 takes different values in different contexts, so that the extension of the concept varies  
 136 across contexts.<sup>10</sup> Because truth conditions for claims about what is nearby and far  
 137 away (i.e., what falls into the extensions of the words 'nearby' and 'far away' or the  
 138 concepts [nearby] and [far away]) make reference to the situation (suitably character-  
 139 ized) of the speaker (or thinker), what's nearby for one agent is not nearby for another.  
 140 The same goes for 'us and them' or 'local and foreigner'. Differences in situation or  
 141 in speaker reverse the references of these terms.

142 Likewise, Price argues that the direction in which causal influence runs *depends on*  
 143 *who is viewing it*. When we view a pair of correlated events, we think that if there is a  
 144 causal relationship, the earlier is cause and the later is effect. But he argues that agents  
 145 in a different epistemic situation—agents who remember the future but not the past,  
 146 and who hold beliefs about the future fixed when assessing the effects of hypothetical  
 147 actions—would see the distinction differently. For such beings, the temporal order of  
 148 cause and effect is reversed. He writes:

149 When we imagine intervening, we carve up the relevant aspects of reality, on  
 150 broadly temporal lines, into a fixed or 'given' past and an open or mutable future.  
 151 This ... reflects contingent features of our own circumstances, in such a way that  
 152 other thinkers, differently 'situated' in the relevant respects, would carve matters  
 153 up in a different way.

154 There's some back-story to this claim. Price argues that our interest in causal struc-  
 155 ture derives from the role it plays in our lives. It has to do with the fact that human  
 156 actions have the status of interventions from the agent's point of view and strategizing,  
 157 planning, and decision are temporally asymmetric activities that can only be under-  
 158 stood by seeing them in the context of the cluster of epistemic asymmetries that define  
 159 human cognitive life. And he's building here on work that has gradually revealed the  
 160 physical basis of these asymmetries. The fact that we have information about the past  
 161 in the form of memory and records, but only inferred information about the future  
 162 derives from the entropic gradient and that is something that is, from the point of view  
 163 of physics, a contingent product of the way matter happens to be distributed in our  
 164 universe, or at least the little corner of our universe that we inhabit.<sup>11</sup>

<sup>9</sup> See, for example Giere (2006).

<sup>10</sup> The notion of a context is drawn widely, so that different users, different locations, different times, all count as differences in context. Which contexts make a difference to extension will vary from case to case.

<sup>11</sup> Albert (2000) provides one clear formulation of the asymmetry and its physical basis.

## 4 Arguments for perspectivalism

Price offers an abstract characterization of the architecture of deliberation that carves out a role for causal beliefs as the basis for strategic action. The details don't matter for our purposes. We can summarize the role that causal beliefs play in practical reasoning as the *Causal Role*. The central argument for perspectivalism is a thought experiment. He invites us to consider beings that live in regions of the universe where the entropic gradient is reversed with respect to ours, and for whom the Causal Role is filled by a relation that is the temporal reverse of our causal concepts. What we call 'cause' they call 'effect', so that they see causal influence as running in the opposite direction, from future to past.

The most powerful argument in favor off the perspectival view... [Argues] for the possibility of creatures with an alternative perspective on the same objective reality... In their hands, then, the same conceptual framework acquires a different extension.

When Price says 'possibility' here, he means physical possibility, but he adds to the claim the live *epistemic* possibility that there may actually be creatures in a distant part of the galaxy or far in our own future in which the entropic gradient is reversed with respect to ours and whose causal judgments run in the opposite temporal direction.<sup>12</sup> He writes

It remains a live empirical possibility that the universe contains regions in which the thermodynamic gradient is reversed. In such regions, it seems likely that intelligent creatures would have a time-sense reversed relative to ours. ... Suppose we grant that if there were such creatures, of whatever origins, then two things would follow: (i) they would think that the causal arrow is oriented in the direction that we would call future-to-past; and (ii) their perspective would be as valid as ours. Then we have all it takes to establish that causal direction is perspectival for us—whether they exist or not!<sup>13</sup>

## 5 Ambiguity

To assess Price's claim, we need to answer two questions: whether he is right about the possibility of creatures for whom the direction of probabilistic dependence runs in the opposite direction, and whether this shows that the distinction between cause and effect is perspectival. Not everyone would agree, but I am going to grant the physical possibility of creatures in whom the Causal Role is played by relations that are the temporal reverse of relations that play that role in us, and focus on whether and in what sense this means that the direction of cause is perspectival. For simplicity, we'll imagine that their causal notions are a simple temporal reflection of ours so that when

<sup>12</sup> These cases are described in a context in which our own temporal concepts well-defined so that we can say in our terms that their causal judgments are reversed.

<sup>13</sup> *Ibid.*, p. 19.

201 we say ‘A causes B’, looking at the same events, they say ‘B causes A’.<sup>14</sup> But the  
 202 fact that there might be creatures in whom the Causal Role is played by something  
 203 time-reversed, relative to the relations that play that role in us, does not settle whether  
 204 the time-reversed relations are *causes*. They can use words in whatever way they like;  
 205 the question is whether *we* would call them causes. The reason it doesn’t settle the  
 206 question is that it leaves open the possibility that what we mean by cause and effect  
 207 is fixed rigidly by their role in our deliberative practices. And in our deliberative  
 208 practices, causes always precede their effects. One way of putting the question is to  
 209 ask whether ‘cause’ just means ‘whatever plays the Causal Role’ or whether it refers  
 210 rigidly to whatever plays the role of causal relations *for us*. If causal relations are  
 211 defined implicitly in this latter way, then it would not follow that there is contextual  
 212 variation in the extension of the concepts (or terms) ‘cause’ and ‘effect’ akin to the  
 213 contextual variation in the concepts ‘us’ and ‘them, or ‘local’ and ‘foreigner’, or  
 214 ‘nearby’ and ‘far away’. The beings in Price’s imagined scenario would simply be  
 215 using words differently.

216 The difference is brought out in Putnam’s familiar twin-earth argument about the  
 217 concept water. Putnam famously asked us to consider a conceivable world in which a  
 218 chemical compound that he dubbed XYZ looked, felt, and tasted like water and played  
 219 the role that water plays in our lives for human-like beings. The almost universal  
 220 response to Putnam’s case was not that the concept of water has a hidden contextual  
 221 variability, like ‘nearby’, so that it has different extensions in different relevantly  
 222 different situations. It was that what plays the water *role* for such beings is not water.  
 223 It doesn’t matter that *they* call it ‘water’. It doesn’t fall under the extension of *our*  
 224 concept of water. Whether or not you agree with this reaction, the question does  
 225 bring out a distinction that is relevant here. The possibility of creatures in whom the  
 226 Causal Role is played by relations that are temporally reversed with respect to ours  
 227 doesn’t establish that the concept of cause exhibits the contextual variability of the  
 228 paradigmatically perspectival concepts that Price offers as analogies. It leaves open  
 229 both of these positions:

230 *Explicit definition causes for creature x* are whatever plays the Causal Role for x.  
 231 *Implicit definition causes* are whatever plays the Causal Role for us.

232 Which of these does Price intend? His definition, curiously, preserves the ambiguity.  
 233 He writes:

234 B is an effect of A iff doing A is a means of bringing about B, from an agent’s  
 235 perspective—roughly, if controlling A is a means of controlling B.<sup>15</sup>

<sup>14</sup> The reason that it is not quite so straightforward is that the direction of cause and effect depends on how the intervention counterfactuals are assessed, and it requires a little more work to say how the truth conditions for counterfactuals would come out for such creatures. The standard strategy is to argue that the direction of cause derives from the direction of counterfactual dependence, explain the direction of counterfactual dependence by tracing it to the thermodynamic gradient. For our purposes what matters is that if we reverse the thermodynamic gradient, we reverse the facts that govern counterfactual judgments, and thereby reverse the direction in which causal influence is seen as running.

<sup>15</sup> *Ibid.*, p. 11.

236 There are two ways of reading this. The first interprets the reference to ‘an agent’  
 237 as a variable and adds an argument place in the antecedent to turn it into a well-formed  
 238 formula. It says that

239 (a) B is an effect of A *for an agent a* iff doing A is a means of bringing about B,  
 240 from **a**’s perspective.

241 The second reads ‘an agent’ as a singular term that refers to an arbitrary human  
 242 agent (or perhaps the equivalence class of such agents).

243 (b) B is an effect of A (full stop) *iff* doing A is a means of bringing about B, *from*  
 244 *the perspective of human agents*.

245 If we look to the wider context, there are mixed signals. On the one hand, the  
 246 examples he gives by way of analogy are clear cases of the first. Many of his critics  
 247 have read him that way, and it is the most natural interpretation of much of what  
 248 he says. We use ‘us and them’ and ‘near and far’ in a way that exhibits contextual  
 249 variation. On the other hand, the arguments he gives don’t actually establish this. The  
 250 possibility of creatures in whom the causal viewpoint is reversed is not enough to  
 251 establish that our own concepts exhibit the contextual variation in extension of ‘us and  
 252 them’ or ‘nearby and far away’ and so it is not enough to establish (a) over (b). One  
 253 can be persuaded that the direction in which we see causal dependence as running  
 254 depends on facts about us (metaphysical contingencies from a cosmic point of view)  
 255 without agreeing to the claim that the semantic value of claims about cause and effect  
 256 vary with those facts. It is a further claim to say that our causal concepts have the  
 257 extra, implicit argument place and variability of truth conditions with ‘context of use’  
 258 analogous to paradigm cases of perspectival concepts.

259 There is an illuminating comparison with the concept of chance, with Lewis’ Princi-  
 260 pal Principle (or one of its revisionary successors) capturing the role that chance plays  
 261 guiding belief. We can imagine creatures for whom an extensionally different notion  
 262 plays the role in the Principal Principle that chance plays for us. And there is a parallel  
 263 question about whether we would say that something other than chance guides belief  
 264 for them because of the ways in which they differ from us, or whether we would say  
 265 that their chances are different from ours. This is the question, effectively, of whether  
 266 the concept of chance has a suppressed parameter whose value is supplied by context,  
 267 so that chance (for creatures c) is whatever plays the chance role (for creatures c), or  
 268 chance is rigidly defined as what plays the chance role for *us*.

## 269 6 Arguments against the semantic thesis

270 The positions are disambiguated by how we apply our own vocabulary to describe  
 271 causal relations *in the universe of creatures whose practical and epistemic perspectives*  
 272 *differ from ours in relevant ways*. If there is indeed a suppressed parameter in our causal  
 273 concepts on analogy with ‘us and them’ and ‘near and far’, we would have to apply  
 274 our *own* vocabulary to those cases in a way that recognizes contextual variability.  
 275 Do we say that causes, in these examples, run in the opposite direction to causes in  
 276 our region of the universe or do we say that the people in those settings use causal  
 277 terms in a weird way? Would the discovery of regions of the universe in which Pricean  
 278 beings use causal concepts in a time-reversed manner be announced in the paper as the



279 discovery of regions of the universe whose native inhabitants are such that for them  
 280 effects precede their causes? Or would it just be announced as the discovery of beings  
 281 that use ‘cause and effect’ in a time reversed manner, and come with a cautionary note  
 282 to be careful when you talk to the folks that live in that region of the universe, they  
 283 attach different concepts to the same word.

284 So which way do people react to the disambiguating cases?<sup>16</sup> I’ve tried the example  
 285 in a rough poll in classes and informal conversation with friends who are not philoso-  
 286 phers. The results are in every case divided. Most people not already committed to a  
 287 metaphysical view about causation did not have strong pre-theoretic intuitions, and  
 288 the reaction among those that did was not uniform. What are we to make of this vari-  
 289 ability? If reaction to these cases is supposed to discriminate whether the concept of  
 290 cause is defined explicitly or implicitly by its role in our deliberative practices, the  
 291 variability of intuitions is problematic. It means we can’t speak unproblematically  
 292 about ‘our causal concepts’. Whose concepts are we interested in here? Mine? Yours?  
 293 Perhaps we can avoid the problem of variability by forgetting about causal concepts  
 294 and talking about the meaning of the word ‘cause’. The communicative function of  
 295 language stabilizes meanings across the community, so there is a semantic thesis about  
 296 the meaning of an ordinary language term that is better defined. But it would be very  
 297 hard to make a case for perspectivalism as a descriptive claim about the ordinary lan-  
 298 guage meaning of ‘cause’. Most people don’t have explicit knowledge of the facts  
 299 that ground the direction of causation. They think of the direction of causal influence  
 300 as basic and objective. They have to be educated with a quite articulated cluster of  
 301 concepts that are no part of common sense to get them to understand the reversal of  
 302 perspective.

303 I think that this is probably on the wrong track altogether. The reason that there aren’t  
 304 uniform pre-theoretic intuitions about how our causal concepts apply in the entropy  
 305 reversed setting among perfectly competent speakers and users of the concept of cause  
 306 is that any such intuitions are ungrounded in linguistic practice. There aren’t the kinds  
 307 of public norms in place that would enforce community-wide agreement about how  
 308 the concept should apply in those cases. There is no public use for a perspectival  
 309 concept of cause, no cognitive or conversational work for a suppressed parameter  
 310 with contextually determined values to do. Unless linguistic occasions arise that force  
 311 public judgments of the kinds of counterfactual cases that involve reversal of causal  
 312 orientation, there is no public, communicative role for such a parameter to play. That  
 313 is a reason for denying that the terms ‘cause’ and ‘effect’ have the shifting reference of  
 314 terms like ‘us’ and ‘them’ or ‘near’ and ‘far’. And that, in its turn, is reason for denying  
 315 that the corresponding concepts have a suppressed parameter that represents the user  
 316 (or the context of use). The issues here are a little complicated. But there is a good  
 317 reason for holding that the content of thoughts that employ a concept make explicit  
 318 reference to the user or context of use as an explicitly articulated constituent only  
 319 when the way in which the concept is employed requires that its users have explicit

<sup>16</sup> And curiously, early in the paper, Price proposes an intuition pump to prime the imagination, in the form of a situation in which there is no intrinsic asymmetry and we still import temporally asymmetric causal intuitions. His own description of this case suggests that we bring a fixed viewpoint even to a setting in which there isn’t the contextual asymmetry that is supposed to determine the direction of causation.

320 knowledge of the dependence and an articulated understanding of how reference shifts  
 321 with context. The concepts [near] and [far] have the location of the user as an explicitly  
 322 articulated constituent because using the concepts properly requires knowing how their  
 323 reference depends on, and shifts with, the location of the user. The concepts [local] and  
 324 [foreign] have the country of the user as an explicitly articulated constituent because  
 325 using the concepts properly requires knowing how their reference depends on, and  
 326 shifts with, the country of the user. Everyone who knows how to use the concepts  
 327 ‘local’ and ‘foreign’ understands what you mean when you say that when we go to  
 328 china we are foreigners but in the US, we are locals.

329 There is no such call to recognize the agent or her causal viewpoint as an explicitly  
 330 articulated constituent of thoughts employing the concept of cause. The characterizing  
 331 feature of the kind of dependence on our causal viewpoint that Price wants to highlight  
 332 is that it is typically *unknown* by its users. Perfectly competent possessors of causal  
 333 notions do not know or believe that the direction in which causal influence runs depends  
 334 on their own viewpoint. They wouldn’t know how to interpret a newspaper headline  
 335 “Creatures discovered for whom effects precede causes”. And it’s important here to  
 336 understand that it is not necessarily that they rule out the idea of causes preceding their  
 337 effects as *a priori* impossible. It is that no provisions are made in their concept of cause  
 338 that would provide concrete content to what is being described. We could explain to  
 339 them what was meant in the way that Price does when he introduces the examples in  
 340 his paper by talking about entropic gradients and truth conditions for counterfactuals,  
 341 and the role of causal information in strategic planning, and so on. The conclusion of  
 342 the explanation is an implicit invitation to start using causal concepts in a way that  
 343 recognizes shifting reference. Whether or not the invitation is accepted, the explanation  
 344 does not show that our causal concepts are perspectival in the sense that they have the  
 345 user as an explicitly articulated constituent. It introduces articulation into the concept  
 346 that was not there at the outset for most users of causal concepts.

347 Many people I spoke to were inclined to agree that if we developed a need to  
 348 communicate with creatures whose temporal perspective was reversed with respect  
 349 to ours, we would begin to use our causal concepts with temporal orientation as a  
 350 suppressed parameter. That shows only that our concepts have an open-ended potential  
 351 to develop to accommodate new uses. We may even admit that how we describe such  
 352 developments in retrospect will depend on where they end up in a way that fudges the  
 353 distinction between description and legislation. In this sense, we’re always deciding  
 354 what to have meant in the past by choices we make now. As it is, however, we have no  
 355 use for causal concepts that are perspectival. We don’t have concepts that are designed  
 356 to work across contexts of the kind that Price invites us to consider, or a language that  
 357 is designed to allow us to communicate with beings in Gold universes.

358 I conclude, then, that it is not right to think the distinction between cause and effect  
 359 as like the distinction between ‘us’ and them or ‘near’ and ‘far’. Neither the terms  
 360 ‘cause’ and ‘effect’, nor the corresponding concepts recognize dependence on the  
 361 causal viewpoint of the agent. Causal notions as we use them have a built-in direction  
 362 that is determined by how things are around here and questions about how they apply  
 363 in settings in which the entropy gradient is reversed just do not arise.

364 **7 Objectivity**

365 This isn't a mere quibble. Being clear about the nature of the dependence bears on  
 366 the objectivity of causal claims. We saw that one of the primary complaints that  
 367 interventionists have about manipulationism is that the view is anthropomorphic. It  
 368 is important to the interventionist account that causal claims have objective truth  
 369 conditions. Causal claims should be about the world, not about us. We should be able to  
 370 give truth conditions for causal judgments in terms that make no essential reference to  
 371 the psychological profile of human agents. Reference to humans can and should occur  
 372 in the pragmatics, just not in the semantic content. If reference to our own epistemic  
 373 position is part of the truth conditions, causal judgments are as much judgments about  
 374 our epistemic position as they are about the world. If, on the other hand, the distinction  
 375 between cause and effect is rigidly fixed in part by facts about our epistemic position,  
 376 they are not about us, but are wholly about the world. One needn't deny that this notion  
 377 of 'about-ness' is a little soft, to feel the pull of Woodward's complaints about this sort  
 378 of view. Putting reference to ourselves into the truth conditions makes causal claims  
 379 partly about us, so that when we are investigating causal structure, we are investigating  
 380 (in part) facts about us. If what we mean by 'truth conditions' here is something that  
 381 is supposed to express the cognitive content of causal judgments, then I agree with  
 382 Woodward that anything that places reference to humans in the cognitive content gets  
 383 the content wrong. It is much more plausible to extend the analogy with water and see  
 384 ourselves as investigating structures in the world that are rigidly defined by relation to  
 385 us. Water is that stuff, whatever it is, that plays the water role for us, albeit that there  
 386 may be other beings for whom a different stuff plays the water role. The cause-effect  
 387 relation is that relation, whatever it is, that plays the Causal Role for us, albeit that  
 388 there may be other beings for whom a different relation plays the Causal Role.

389 It is useful to see the disagreement between Price and Woodward in a continuing  
 390 exchange that started with "Causal Perspectivalism" and includes Woodward's Stan-  
 391 ford encyclopedia article and his contribution to the causal republicanism volume, as  
 392 well as a recent reply by Price<sup>17</sup> as one about just this point, which we can put as a  
 393 question of whether causal notions are explicitly or only implicitly defined by their  
 394 role in epistemic and practical reasoning. Interventionists treat it as in implicit defi-  
 395 nition. Price treats it as an explicit definition, invoking intuitions about hypothetical  
 396 cases in which some extensionally different set of relations plays the role that causal  
 397 relations play in practical reasoning for us. I'm on the side of the interventionists here.  
 398 I think Price is right about the genealogy; it is because of contingencies about our own  
 399 cognitive architecture that causal thinking gets off the ground and has the temporal  
 400 orientation it does. He's right that the explanation for why we have these concepts  
 401 and what provides the explanation for the role they play in our cognitive and epis-  
 402 temic lives has to do with facts that are peculiar to the human cognitive architecture  
 403 and to contingencies about our environment. But Woodward is right about the truth  
 404 conditions. Concepts mature by a process that involves replacing a loosely defined  
 405 concept, identified extensionally in part by our ways of finding out about it, with an

<sup>17</sup> Woodward (2008, 2009, 2014), Menzies and Price (1993) and Price (2007, 2013, 2014).

406 explicit characterization that makes no reference to human agency. When we do this,  
 407 we sometimes find that the concepts that we use are special cases of more fundamen-  
 408 tal structures that can be viewpoints, but that doesn't make our viewpoint part of the  
 409 content of those concepts.

410 There are different ways in which concepts can 'depend on contingencies of the  
 411 human condition'. The first is that the concepts we use are tailored to interface with the  
 412 human cognitive apparatus and to be deployed in the kinds of practical and epistemic  
 413 problems we face. This is the sort of dependence on us that causal concepts exhibit.  
 414 It is not surprising that our concepts have a built-in temporal bias that is not shared  
 415 by creatures that differ from us in ways that are, for us, psychologically fundamental.  
 416 It is, after all, *our* vocabulary, crafted to be used by creatures like us. That is com-  
 417 patible with the claim that the semantic value of the terms we use to describe those  
 418 situations do not exhibit the kind of extensional variation in context characteristic of  
 419 perspectival concepts like 'us' and 'them'. Perspectival concepts have a quite specific  
 420 conversational (and cognitive) function. We have a use for terms with this kind of  
 421 extensional variation where we talk to people whose perspective differs from ours in  
 422 the relevant ways.<sup>18</sup> And it is entirely compatible with the idea that causal concepts  
 423 have objective truth conditions, that they are 'part of the fabric of reality' and that  
 424 their subjective utility itself can be explained in objective terms. The objective expla-  
 425 nation of their subjective utility makes explicit the features of ourselves that shape the  
 426 concepts we use. It is compatible with the idea that when we're investigating causal  
 427 relations in science, we're investigating features of the objective world, features of the  
 428 mind-independent fabric of reality that we want to use to guide decision that make no  
 429 reference—implicit or otherwise—to ourselves.

## 430 8 Dependence-on-us as a metaphysical thesis

431 So if there isn't the *semantic* variability with context that we see with examples  
 432 like [near and far] or [us and them], is there a better way of describing the kind  
 433 of *dependence-on-us* that Price is concerned to highlight? Consider the relation 'x is  
 434 simultaneous with y'. This has a well-defined extension in a relativistic world only  
 435 relative to a frame of reference. When we say that events that are simultaneous in  
 436 one frame are not simultaneous in another, we don't mean this as a claim about the  
 437 pre-theoretic concept of simultaneity or the meaning of the ordinary language term,  
 438 but as a metaphysical discovery. And the right way to describe the discovery is as the  
 439 discovery that the fundamental structures do not allow for an invariant, non-relative  
 440 concept of simultaneity.

441 The difference between frame-dependent and perspectival structures, if we take the  
 442 semantic variability of 'near and far' as characteristic of perspectival structures is that  
 443 the latter exhibit variability of extension across actual contexts of use that any fully  
 444 competent possessor of the concept or user of the term recognizes. And we saw that  
 445 that gives us a reason for saying that the concept has reference to user or features of

<sup>18</sup> Price cites Perry's classic discussion of Z-landers in Perry (1986). Reprinted in Perry 1993/2000 for the cognitive and communicative function that perspectival concepts play.

446 context as an explicitly articulated constituent in the semantic or cognitive content of  
 447 such claims. It means that the truth conditions for such claims make explicit reference  
 448 to the users or semantically relevant features of the contexts of use. Frame-dependence,  
 449 on the other hand, is neutral about how the extension of the concept is fixed, or whether  
 450 reference to the user is part of the semantic content. It says that there is no well-defined  
 451 interpretation for claims involving the concept in question except relative to a frame  
 452 of reference. But it leaves it as an open question whether everyday uses are to be  
 453 reconstructed as implicitly relativized to a shared frame of reference or to be seen as  
 454 having a suppressed argument place that takes different values in different contexts. In  
 455 cases like the present one, in which there is no communicative need for the suppressed  
 456 argument place, I incline strongly against its recognition. People that use the term do  
 457 not, *because they need not*, explicitly represent the features of ourselves or our shared  
 458 environment on which the direction of causation (as we see it) depends. But claims  
 459 about semantic content are really peripheral.

460 The virtues of a frame-dependent interpretation of the kind of dependence-on-us  
 461 that causal facts exhibit are:

- 462 (i) It gets the epistemology right. Knowing how causal concepts depend on us is  
 463 not a condition of the possibility of having and using causal concepts. It is not  
 464 something that one needs in order to be a competent user of causal concepts  
 465 or terms. It is, rather, the product of a kind of analysis that is characteristic of  
 466 scientific inquiry.
- 467 (ii) It places the emphasis in the discussion where it should be, viz., on metaphysics  
 468 rather than semantics, on questions about what reality is like rather than what  
 469 words mean. It refocuses the discussion on a metaphysical claim and avoids  
 470 getting pulled into disputes about semantic or cognitive content, and
- 471 (iii) It deflects some of the legitimate resistance of people like Woodward whose  
 472 concern is to secure the objectivity of truth conditions of causal claims

473 Giving a frame-dependent account of a concept, however, means holding that there  
 474 is some physically more fundamental structure from which the structure in question  
 475 can be recovered by a specification of frame. So, for example, in the spatial example,  
 476 we can recover spatial relations like ‘is nearby’, ‘is far away’, ‘is 5 miles due north of’,  
 477 ‘is 3 feet to the left from’... invariant spatial relations by specifying a point of origin.  
 478 In the case of simultaneity, the frames of reference are given by states of motion.  
 479 And so arguing for a frame-dependent account of the distinction between cause and  
 480 effect leaves us with the burdens of giving an explicit characterization of the invariant  
 481 structure and saying how to define a frame of reference. These two things will give  
 482 us a clean separation between structure that is in the world—or is ‘there anyway’, as  
 483 Bernard Williams used to say—and structure that the viewer brings to the table. What  
 484 we mean by structure that is ‘there anyway’ is structure that is intrinsic to the field of  
 485 view.

486 Is there some non-perspectival characterization of the fundamental structures from  
 487 which the distinction between cause and effect can be recovered by specification of  
 488 a temporal orientation? This is where the story gets confusing in the causal case.  
 489 It is difficult to find in the literature a clear and shared understanding of the more  
 490 fundamental structure from which causal structure is derived by an imposition of

491 temporal orientation. The fundamental, time symmetric global dynamical laws of  
 492 physics are the obvious candidates. The problem is that it is well-known that we cannot  
 493 recover causal models from physics by simply making a choice of temporal perspective  
 494 in the way we can recover a model of the view from here by simply specifying a spatial  
 495 perspective. There is a literature built around trying to see what else is needed. The  
 496 essays in Price's causal republican volume give a very good indication of how much  
 497 is still up in the air.<sup>19</sup>

498 If one looks to Pearl's work, however, I think one will find what is needed. The  
 499 details of his account of the logic of causal modeling are helpful and illuminating  
 500 along a number of fronts. Its importance here is that it gives us exactly what we need  
 501 for a frame-dependent account of the asymmetry between cause and effect. On his  
 502 account the world has a modal substructure that furnishes a basis for judgments about  
 503 what would happen in hypothetical situations defined by a choice of exogenous and  
 504 endogenous variables (and perhaps some auxiliary structure). The direction in which  
 505 influence is seen as running turns out to be—as he says—an artifact of the choice of  
 506 exogenous and endogenous variables:

507 This choice of [endogenous and exogenous variables] creates asymmetry in the  
 508 way we look at things, and it is this asymmetry that permits us to talk about  
 509 “outside intervention”, hence, causality and cause-effect directionality.

510 We tend to choose exogenous variables earlier than endogenous variables, because  
 511 questions about how later states vary with differences in early ones have a special  
 512 importance for purposes of guiding action, but, formally, there is no problem in choos-  
 513 ing exogenous variables later than endogenous ones. We can raise questions about the  
 514 effects of variation in future states on the past as surely as we can about the effects of  
 515 past states on the future. Such questions are logically well behaved, but don't have the  
 516 same practical importance for the likes of us. “The lesson,” he says

517 Is that it is the way we carve up the universe that determines the directionality  
 518 we associate with cause and effect. Such carving is tacitly assumed in every sci-  
 519 entific investigation. In artificial intelligence it was called circumscription, by J.  
 520 McCarthy. In economics, circumscription amounts to deciding which variables  
 521 are deemed endogenous and which ones exogenous, IN the model or EXTER-  
 522 NAL to the model.<sup>20</sup>

523 So on Pearl's view, there is no intrinsic direction to the relations of mutual depen-  
 524 dence we see in the world. Any notion of a direction of influence is imposed by the  
 525 choice of what is allowed to vary and what is held fixed. There are reasons that choices  
 526 in which influence is seen as running past to future have special importance, but they  
 527 have to do with our relations to the events being represented, rather than the events  
 528 themselves.

<sup>19</sup> *Causation, Physics, and the Constitution of Reality (Russell's Republic Revisited)*, Edited by Huw Price and Richard Corry.

<sup>20</sup> Pearl (2000, p. 350).

529 In saying that the direction is introduced by the choice of endogenous and exogenous  
 530 variables that has only practical significance, Pearl is offering is not a psychological  
 531 hypothesis or a claim about the ordinary language meaning of causal terms. I think he'd  
 532 be quite willing to recognize that the everyday notion of cause has a built-in direction.  
 533 He is better understood as offering a scientific refinement and generalization of the  
 534 everyday notion that makes explicit the contextual and pragmatic factors that govern  
 535 the fixed features of everyday causal judgments. This development from everyday  
 536 causal notions to more articulated concepts that separate the invariant from the frame-  
 537 dependent content, allowing us to reconstruct the latter as implicitly relativized to  
 538 features of our viewpoint, is characteristic of scientific refinements of everyday notions.  
 539 It provides a more fundamental story that reveals the facts about the world on the one  
 540 hand, and about ourselves on the other, that ground the concepts we have and explain  
 541 their role in our cognitive lives.

542 In practical terms, the precision and understanding introduced by the refinement of  
 543 everyday notions is important. The fact that the frame-dependent features of causal  
 544 judgments can be made explicit and systematized is directly relevant to guiding inter-  
 545 ventions in the natural world and assessing causal responsibility in the human one.  
 546 The more articulated concept helps us identify loci of control and appreciate how the  
 547 choices we make representing things affects the conclusions we draw.

## 548 **9 Reference to human agency appears in the pragmatics not the** 549 **semantics**

550 So I deny that the distinction between cause and effect exhibits the variation of extension  
 551 without context characteristic of Price's examples: [us and them] or [near and far].  
 552 We agree with him, however, that our notions are shaped by contingent facts about  
 553 us in ways that emerge when we adopt a more fundamental perspective and give a  
 554 pragmatic account of how structures that play a formative role in our commerce with  
 555 the world depend on our circumstances. And it is surprising to learn that the *direction*  
 556 in which we see and conceive causal influence as running is one of those features  
 557 that is not fundamental. The direction in which causal relations run is *psychologically*  
 558 fundamental because it is determined by fixed features of cognitive architecture, but  
 559 if Pearl is right, it is not *physically fundamental*. And it is the gap between what is  
 560 psychologically and what is physically fundamental that opens up the space for an  
 561 informative side-on view of various necessities and contingencies that jointly deter-  
 562 mine our view of the world. Psychologically fundamental structures don't typically  
 563 distinguish between what is intrinsic to the field of view and what is contributed by  
 564 the viewer, when her viewpoint is, in the relevant respects, (i) constant in her own  
 565 experience and (ii) shared by those she communicates with.

566 What is fundamental on Pearl's account are relations of covariation that furnish the  
 567 basis for claims of influence relative to a specification of exogenous and endogenous  
 568 variables. The temporal direction is imposed by choices of exogenous and endogenous  
 569 variables that have a practical significance for human agents but don't reflect a direction  
 570 of influence among events themselves. The availability of this more fundamental,  
 571 temporally unoriented structure is what allows us to imagine and describe creatures

572 who view the same events but see the direction of influence running in the opposite  
 573 direction. The fact that the direction of influence is not invariant under transformations  
 574 between viewpoints is not something one needs to know in order to use causal terms or  
 575 deploy causal information in practical reasoning. Unlike the knowledge that is needed  
 576 to deploy perspectival concepts, it is not knowledge that needs to be possessed or  
 577 represented by users. It is not part of the everyday concept of cause.

578 So, it is wrong to think that the cognitive and semantic content of causal judgments  
 579 have an argument place referring to the causal viewpoint of the agent (or perhaps to  
 580 physical and psychological factors that shape her causal viewpoint), so that which of  
 581 a pair of events counts as cause and which as effect, depends on who is describing  
 582 it. The right way to understand the sense in which causal judgments depend on us  
 583 is that the direction in which we see causal influence as running is not part of the  
 584 fundamental, invariant, mind-independent fabric of reality, but is rather imposed in  
 585 part by our viewpoint on that reality (or if you like, by representational choices that  
 586 we make in how to represent the world that reflect facts about our relations to the  
 587 events we are representing, rather than facts about the events themselves). This leaves  
 588 the sort of dependence that Price is identifying intact, but unburdened by claims of  
 589 context dependence that rests on equivocal intuitions about counterfactual cases.

## 590 10 Invariant content and the metaphor of lenses

591 A frame of reference is a formal object, but it has significance if it can be interpreted  
 592 as the embodiment of the structure that the agent brings to the table. The most familiar  
 593 example of a frame of reference is provided by the spatial case, where a reference frame  
 594 is a set of axes that correspond to a possible location and orientation of an observer. For  
 595 philosophical purposes, however, we don't need to place any very strong restrictions on  
 596 what can count as a frame. A reference frame can be whatever needs to be specified to  
 597 recover information about the target concept from [its? a? the?] fundamental structure.  
 598 The only requirement is that the frame itself should be describable in objective terms,  
 599 where 'objective' is understood in this context as meaning in terms that employ only  
 600 the invariant vocabulary. Pearl gives a formal characterization in terms of a choice of  
 601 exogenous and endogenous variables and shows how the same situation, represented  
 602 with different choices, reverses the direction of influence.<sup>21</sup> When Price speaks of  
 603 the 'causal viewpoint' of an agent, he has in mind the psychological context created  
 604 by a specific mix of human limitations and capabilities that gives significance to  
 605 them by associating exogenous variable with actions, and explains why we choose  
 606 endogenous variables that are temporally downstream of them.<sup>22</sup> On his view, we hold  
 607 the past fixed and allow the future to vary when we assess the effects of hypothetical  
 608 actions because volition gives us very little information about the past, but a good  
 609 amount of information about the future.<sup>23</sup> Ramsey had a similar idea and I have

<sup>21</sup> *Ibid.*, pp. 349–350. See in particular, his discussion of slides 36–38.

<sup>22</sup> Price (2014).

<sup>23</sup> It is worth noting that an agent's viewpoint in this sense—in a sense that reflects her doxastic and practical relations to events being represented—is not itself fixed over time. It is something that changes



610 defended a related view. The idea that causal influence runs from past to future is  
 611 an artifact of the epistemic and practical lenses through which we view the world.  
 612 These determine what we regard as open and what we regard as fixed. We can think  
 613 of the psychological context as a frame of reference because it introduces epistemic  
 614 and practical distinctions that reflect facts about the viewer's relationship to events in  
 615 the field rather than among the events themselves, and that structure how viewers see  
 616 the events that fall within their shared field of vision.

617 Here is a convenient, and familiar metaphor. Think of frames as lenses through  
 618 which the world is viewed and what I'm going to call the *invariant representational*  
 619 *content* as what remains when we filter out the effects of lenses.<sup>24</sup> Invariant represen-  
 620 tational content is offered here as an interpretation of structure that is 'there anyway'  
 621 to be viewed from different perspectives, projected out as the objective content of the  
 622 view from those perspectives. Distinguishing the frame-dependent structure from the  
 623 invariant content is an easy matter when we can view the same situation through mul-  
 624 tiple frames. In that case, we just have to look at the same situation through different  
 625 lenses and see what stays fixed under exchange of lenses. But in cases in which we  
 626 don't have access to frames that differ from ours in the relevant way, we can't separate  
 627 artifacts of our shared perspective from what is really intrinsic to the object viewed by  
 628 simply *looking*. The process that works for forming an invariant vision of space and  
 629 time, filtering out the effects of taste, culture, personal history and education, doesn't  
 630 work in such cases, because we only have access collectively to a single point of view.  
 631 No amount of looking at the world or comparing notes amongst ourselves will give  
 632 us a non-*human*-centered vision of the world. This is where science plays an indis-  
 633 pensible role. Physics can tell us what the really fundamental structures look like, and  
 634 the cognitive and human sciences can tell us how the lenses through which we view  
 635 those structures shape and color and transform them. When the conclusion that some  
 636 bit of structure is frame-dependent is a purely theoretical matter in this sense, it is one  
 637 that is almost guaranteed to go against common sense. This is because common sense  
 638 will tend to treat structure that is common to our shared point of view as belonging to  
 639 the objects being viewed. If we are all looking through rose-colored glasses, common  
 640 sense will tend to suppose the world is red.<sup>25</sup>

---

Footnote 23 continued

along her world-line as she acquires more information and events that were at one time in her power to alter get banked in history. And the changes in her viewpoint get projected onto events which are themselves seen as 'acquiring a fixity' with the passage of time. I have argued elsewhere that this change in the fixity of events is itself a frame-dependent matter.

<sup>24</sup> Invariance is always relative to a class of transformations. What remains when we filter out the effects of lenses depends on what we include in the class of lenses. As a general rule, the object of perception and the class of possible views of the same object are co-defined. We get a better idea of the object we are looking at the same time that we form ideas of the different viewpoints from which it can be seen.

<sup>25</sup> One might wonder whether this observation threatens the use of linguistic intuitions in arguments against the semantic thesis. After all, if science can correct common sense about whether simultaneity is frame-dependent, why can't it correct common sense about whether 'cause' and 'effect' have a hidden argument place? The difference between the two cases, as I understand it, is that common sense can treat some structure as intrinsic when it is really perspectival, because there is a fact of the matter about whether the structure is intrinsic to the object being represented, or is rather that has nothing to do with what speakers believe about it. Semantic facts, by contrast, don't have that kind of independence of what speakers think.

641 There are a couple of important qualifications about what this kind of account  
 642 accomplishes. To give the invariant representational content of a class of beliefs is not  
 643 to give their *cognitive* content. Cognitive contents are supposed to capture the cognitive  
 644 significance a belief has for an agent.<sup>26</sup> This notion of invariant representational content  
 645 is offered as an interpretation of what features of the mind-independent fabric of the  
 646 world a class of beliefs *corresponds* to. It is supposed to identify truth-makers in the  
 647 mind-independent fabric of reality. There is a good and long tradition in metaphysics of  
 648 searching for invariant representational contents. Identifying invariant representational  
 649 content is giving objective truth conditions, where objectivity is understood a little  
 650 more explicitly in terms of invariance. Invariant content can serve as the common  
 651 object of representation, and a basis for communication across perspectives. As we  
 652 will see below, I reject some features of that tradition.<sup>27</sup> But the isolation of the invariant  
 653 content of beliefs is part and parcel of the process of distillation of a clear and distinct  
 654 idea of what the world is like in itself, independently of how it is shaped by human  
 655 lenses.<sup>28</sup> For present purposes, it is important to understand that a frame-dependent  
 656 account works only if it is explicitly *not* offered as a cognitive-content-preserving  
 657 reduction. The separation of invariant from frame-dependent content is something that  
 658 happens gradually, as a concept matures and only (as a matter of practical necessity)  
 659 when there is a communicative need to isolate the invariant content and as a basis for  
 660 common discourse.

661 A frame-dependent account of the direction of causation leaves causal notions with  
 662 an invariant representational content that explicitly relativizes the distinction between  
 663 cause and effect to a choice of endogenous and exogenous variables, and then explains  
 664 why choices that place the exogenous variables before the endogenous ones fill what  
 665 I called the Causal Role. By leaving reference to humans or human agency out of the  
 666 truth conditions, such an account makes beliefs about causes beliefs *about* the world

---

Footnote 25 continued

If it is correct to say that some *term* is semantically contextual, that fact must be reflected in the use of competent speakers. If there is no agreement among recognizably competent speakers about whether the reference shifts in contexts in which the thermodynamic gradient is reversed, then it is not correct to say that the term is semantically contextual. There is a presumption in this way of arguing (one implicit in the fairly standard practice of using linguistic intuitions to establish semantic facts) that semantic facts are only as determinate as linguistic norms recognized by competent speakers. Many thanks to an anonymous reviewer for raising this objection and prompting me acknowledge the presumption.

<sup>26</sup> By cognitive contents, I mean ‘Fregean senses’ individuated by the Frege test: ‘I’A’ and ‘B’ have the same cognitive content only if ‘A=B’ is not a cognitively significant truth.

<sup>27</sup> In particular, I don’t think there need always be a substantively characterizable invariant content, or that realism about a class of beliefs demands that there is.

<sup>28</sup> Any good account of cognition will see that these come apart, and we simply need a better vocabulary. First, the user of a concept need not have a clear and distinct understanding of its invariant representational content. Communicative purposes require her to know what is invariant under transformations between her viewpoint and those of her interlocutors, but she need not know how the world looks to actual or non-actual creatures she has no occasion to communicate with. Second, beliefs that have the same invariant representational content cannot always play the same cognitive role. This is most obvious in the case of indexicals. The belief that the faculty meeting starts at noon has a different cognitive significance than the belief that the faculty meeting starts now, albeit that they may have the same invariant representational content.

667 rather than about us. It captures a kind of dependence on the human viewpoint, but it  
 668 puts the reference to the human viewpoint in the pragmatics not the semantics.<sup>29</sup>

## 669 11 Generalizing to other forms of intermediate structure

670 One of the reasons that the issue is interesting is that the debate between interven-  
 671 tionists and Price—with the interventionists trying to protect the objectivity of causal  
 672 judgments and Price emphasizing the ways they depend on contingencies of human  
 673 cognitive architecture—is replayed in the discussion of other philosophically disputed  
 674 notions that play important roles in science, most notably, chance. There is a quite  
 675 similar dialectic about whether chances are objective or subjective. So we have sub-  
 676 jectivists on one side, insisting that the notion of chance has to be understood as  
 677 describing facts about believers (probabilities as degrees of belief or betting policies),  
 678 and objectivists on the other, holding that statements about chances have objective  
 679 truth conditions, are not dependent on the existence of human agents, are proper sub-  
 680 jects of scientific study, and *guide* rather than *describe* human belief. One can certainly  
 681 allow that one doesn't understand how chances work (what are the facts about us and  
 682 the world that allow them to do their job in our epistemic lives) unless one under-  
 683 stands the specifically human practices of belief formation and the specifically human  
 684 combination of limits and capacities in which beliefs are formed without holding that  
 685 chances represent facts about human believers. We need an understanding of the epis-  
 686 temic and conceptual environment in which beliefs about chance arise. Just so, one  
 687 can't understand the first thing about scissors or corkscrews unless one understands  
 688 the practical setting in which they are used. But one can be a consumer or user of  
 689 causal information without, in this sense, knowing what makes it work, what makes  
 690 it suited to play the Causal Role. And one can be a consumer of information about  
 691 chances without knowing what makes it suited to play the Chance Role. Just as one  
 692 can be a consumer of water without knowing what makes it suited to play the Water  
 693 Role, and a user of microwaves without knowing what allows them to do the work  
 694 they do in our culinary lives.

695 Between the structures of the mind-independent landscape that appear in our models  
 696 of a fundamental theory and the purely subjective projections of the human mind,  
 697 there is the great grey area of intermediate structures designed to facilitate practical  
 698 and empirical inference for agents like us. I call these Intermediate Structures because  
 699 they are designed to mediate beliefs about, and interaction with, the manifold of  
 700 mind-independent fact. Intermediate structures represent features of the world in a  
 701 manner that is prepared to interface naturally with perception and action. They typically  
 702 have an invariant representational content that can be expressed in the form of truth  
 703 conditions that make no specific reference to human epistemic or practical agency,

<sup>29</sup> By saying that the reference to the human viewpoint is in the pragmatics rather than the semantics, I mean that the truth conditions for x-beliefs can be given by a function, *f*, of more fundamental physical structures making no explicit reference to human beings, but that the explanation of the role that *f* plays in our practical reasoning makes essential reference to the human viewpoint. See Semantics versus Pragmatics, Szabo (2005) and Ezcurdia and Stainton (2013), for some of the contested issues surrounding the semantics/pragmatic distinctions, which I don't mean to be prejudging in my use.

704 but the explanation of why *those* structures play the role they do in our epistemic  
705 and practical lives makes essential reference to contingencies about ourselves and our  
706 place in nature. Causal structure and chance are the best examples of intermediate  
707 structures, but dispositions, capacities, and perhaps laws might fall in this class.

708 A frame-dependent account separates what such beliefs tell us about the mind-  
709 independent fabric of reality, and the structure that we impose by representational  
710 choices that have a pragmatic significance because they are designed to interface nat-  
711 urally with our epistemic or practical relations to the world. Concepts designed to  
712 interface naturally with our epistemic and practical relations to the world reflect facts  
713 about those relations. But they do not *represent* those facts. And that is the important  
714 distinction here. Users of those concepts needn't have any articulate understanding  
715 of those facts. And this distinction between representing those relations and being  
716 designed to interface naturally with them is crucial to the distinction between perspec-  
717 tival notions and those that are implicitly relativized to a frame, and is crucial to the  
718 functional differences between those notions

719 The fact that even seemingly fundamental concepts are shaped by contingencies  
720 about our circumstances in the world is not surprising. Our concepts are, after all,  
721 *our* concepts. When we model the world we make all kinds of distinctions that are  
722 invidious from a cosmic perspective but that have practical or epistemic significance  
723 for us.<sup>30</sup> But it can be surprising how deep that parochialism runs. To discover that  
724 the direction of causation is frame-dependent in this sense is to discover that the idea  
725 that earlier events bring about later ones is a matter of point of view, an artifact of  
726 the epistemic lenses through which we view them, not intrinsic to the field of events  
727 but imposed by distinctions that we make because they have practical and epistemic  
728 importance to us. That is a quite astounding surprise to pre-theoretic assumptions  
729 about the world.

## 730 12 From frame-dependence to Republicanism

731 A frame-dependent account works quite well for a large class of structures that have  
732 epistemic and practical importance in science. It is useful because it helps us understand  
733 the difference between structure that we find in the world and structure that is imposed  
734 by choices we make in how to represent it, and it works best when there is an invariant  
735 content, structure that is 'there anyway', viewable from different perspectives, not  
736 mere artifacts of structure that the viewer brings to the table. But it isn't quite general  
737 enough. There are other cases of beliefs in which, when we filter out the human  
738 component, there is little in the way of invariant representational content. Many of  
739 the concepts that have an importance in everyday life only make sense within a set of  
740 specifically human practices. Think of the value of a dollar, the beauty of a rainbow,  
741 the meaning of a word, romantic love, cruelty, or revenge. These are notions that only  
742 make sense within a shared and specifically human form of life. If we try to filter out

---

<sup>30</sup> I'm speaking naively here as though this separation is given, but it is more accurate to think of the inten-  
tional object as being *defined* in part by this separation. The intentional object becomes more determinate  
as this separation becomes more articulated.

743 the effects of our form of life, there is little left over in the way of invariant content, i.e.,  
744 little that could form a subject of discourse or common subject matter with different  
745 forms of life.

746 This is a spectrum rather than a partition. At one end of the spectrum, we have  
747 a great deal of invariant content and frames can be characterized minimally. When  
748 we filter out the effects of spatial perspective, we are left with a rich set of invariant  
749 relations that govern how things appear relative to different frames. At the other end,  
750 we have little invariant content, and frames are quite substantial. The causal case  
751 falls somewhere in between. If we follow Pearl, when we filter out the effects of  
752 choice of exogenous variables, we are still left with a rich modal substructure of the  
753 world that furnishes a basis for claims about what happen to endogenous variables  
754 under different choices of exogenous variables and holding fixed different elements of  
755 auxiliary structure. Compare this to the psychological lenses through which socially  
756 embedded observers that share a language and education and culture see the world.<sup>31</sup>  
757 In these cases there is little for the objective, truth conditional part of the story to *do*. A  
758 lot of work goes into understanding how the frame structures experience, and there is  
759 little invariant content to serve as a common subject matter with beings who don't share  
760 our language/education/culture. And in these cases, I agree with Price who has argued  
761 in other work over many years that it is better to just talk about the human practices in  
762 which these concepts arise, i.e., to give a richly detailed account of the role they play in  
763 our lives. Such an account may or may not, as the case may be, invoke correspondence  
764 to features of the mind-independent fabric of reality, which is to say, in my terms, it  
765 may or may not have any very interesting invariant representational content. This sort  
766 of account adverts to the facts about us, on the one hand, and the world on the other,  
767 that jointly support their use, but it need not take the form of a mapping into structure  
768 in the mind-independent fabric of reality that can be characterized in non-perspectival,  
769 non-human terms.

770 This is a more general way of expressing the perspectivalist insight that, as Price  
771 and Corry put it in the introduction to an edited volume of essays on causation, “to  
772 reconcile causation with physics, we need to put ourselves in the picture: we need to  
773 think about why creatures in our situation should represent their world in causal terms”,  
774 a way of expressing the insight that doesn't leave us still looking for something in the  
775 world of physics for causal facts to correspond to.<sup>32</sup> Price and Corry call accounts that  
776 have this form ‘Republican’, and I think that is a better term for the project he has in  
777 mind in “Causal Perspectivalism”. He describes the project as one that

778 ... Aims to understand causal notions by investigating the genealogy and pre-  
779 conditions of causal thinking; by asking what general architecture our ancestors  
780 must have come to instantiate, in order to view the world in causal terms.

781 And he executes it with a very subtle discussion of all of the ways in which con-  
tingencies of the human epistemic and practical perspective on the world give rise to

---

<sup>31</sup> And this is to say nothing of the rich personal histories that we all bring to the table and that colour both the quality and content of our experience.

<sup>32</sup> See Price and Corry (2004).

the context in which causal thinking plays its important role. His discussion is full of its valuable and illuminating insight, and I haven't disputed its details or importance. It was useful to put it in frame-dependent terms because there was a substantial invariant content. But one of the primary virtues of Republicanism is that it allows realism about a class of beliefs without requiring that we exhibit some feature of the world, described in objective terms, to which the concepts in question correspond. It allows realism without much in the way of invariant content. It requires us only to give a functional account that describes the role of those concepts in the practices in which they figure. It is illuminating to see many of the philosophical discussions of metaphysically problematic structures in these terms. In the hard, contested cases like moral truth, value, or beauty, the search for invariant representational content may come up empty, and the whole story may be discharged in understanding the specifically human form of life in which these notions arise. In those cases, a deflationary, non-reductive realism together with an account of use that makes explicit the facts about us that supports their use may be the whole story.

Republicanism is the generalization of frame-dependence that allows a 'form of life' to play the role of a reference frame and the component of the account that gives the invariant content drops out of the picture. Methodologically, what distinguishes Republicans from perspectivalists, or those looking for the sort of semantic dependence on viewpoint we see with notions like 'us and them', from frame-dependent accounts that make the invariant content explicit, is that they don't look for non-deflationary truth conditions. They look for a functional story that describes the job that the target concepts play in our lives, citing facts about us and the world in that account and the human practices in which they play that role.

The discussion here is meant to clarify the foundations of a research program that Price has been developing for many years. It makes some distinctions that he doesn't make, sharpens up the position, and introduces a more articulated vocabulary that can avoid talking at cross-purposes with critics like Woodward. The most substantive disagreement I have with Price is that I make a great deal more room than Price for attempts to give objective truth conditions for beliefs. I think that such accounts are valuable for a wide class of structures, which include some of his own examples—e.g., chance and causation—so long as those accounts are properly understood, and not offered as reductions of *cognitive* content, but as a way of revealing the invariant representational content. He seems to think that these attempts are misguided across the board. But we agree that the more general task of metaphysics is to be understood in Republican terms.

### 13 Conclusion

Now we've come full circle back to interpreting the perspectivalist claim with some distinctions in hand, a better understanding of the different ways in which concepts can depend on us, and an account of which is the right way in the causal case. A perspectivalist view isn't wrong about the dependence on contingencies of the human condition, but if elaborated on the analogy of 'us and them', it puts that dependence in the wrong place: into the semantic content rather than into the pragmatic account of

825 why we go in for causal thinking and the epistemic and practical functions it subserves  
 826 in beings made the way we are made. Frame-dependence comes closer to capturing  
 827 the sort of dependence-on-us that causal concepts exhibit. But we need something  
 828 more general to cover the full range of ways in which concepts can depend on us. The  
 829 utility of a frame-dependent account depends on the existence of invariant content  
 830 that can be informatively described and from which the frame-dependent accounts  
 831 can be recovered by description of frame. This is where Republicanism comes in.  
 832 Republicanism is the acknowledgment that concepts that play an important role in  
 833 epistemic and practical reasoning for us depend on the epistemic and practical setting  
 834 in which they are employed, and that in some cases there is no more interesting story  
 835 to tell about their role in that setting. It holds that the form that an account of any class  
 836 of concepts should take is an objective account in naturalistic terms of the role that  
 837 the concepts play in the coupled exchange between agent and environment that makes  
 838 explicit the facts about the agent, on the one hand, and the environment, on the other,  
 839 that support the fixation and use of beliefs employing those concepts. And it insists  
 840 that this kind of account is to be given by what I call a self-directed hermeneutics that  
 841 takes ourselves and our representational practices into its scope.

## 842 References

- 843 Albert, D. (2000). *Time and chance*. Cambridge: Harvard University Press.
- 844 Ezcurdia, M., & Stainton, R. J. (2013). *The semantics-pragmatics boundary in philosophy*. Peterborough:  
 845 Broadview Press.
- 846 Giere, R. (2006). *Scientific perspectivism*. Chicago: University of Chicago Press.
- 847 Kutach, D. (2013). *Causation and its basis in fundamental physics*. Oxford: Oxford University Press.
- 848 Menzies, P., & Price, H. (1993). Causation as a secondary quality. *British Journal for the Philosophy of*  
 849 *Science*, 42, 157–176.
- 850 Pearl, J. (2000). *Causality: Models, reasoning, and inference*. Cambridge: Cambridge University Press.
- 851 Perry, J. (1986). Thought without representation. *Aristotelian Society Supplementary Volume*, 60, 137–152.
- 852 Price, H. (1992). The direction of causation: Ramsey's ultimate contingency. In D. Hull, M. Forbes, & K.  
 853 Okruhlik (Eds.), *Philosophy of Science Association 1992* (Vol. 2, pp. 253–267). East Lansing, MI:  
 854 Philosophy of Science Association.
- 855 Price, H. (2007). Causal perspectivalism. In H. Price & R. Corry (Eds.), *Causation, physics, and the*  
 856 *constitution of reality: Russell's republic revisited* (pp. 250–292). Oxford: Oxford University Press.
- 857 Price, H. (2014). Causation, intervention and agency—Woodward on Menzies and Price. In H. Beebe, C.  
 858 Hitchcock, & H. Price (Eds.), *Making a difference*. New York: Oxford University Press.
- 859 Ramsey, F. P. (1978). General propositions and causality. In D. H. Mellor (Ed.), *Foundations: Essays in*  
 860 *philosophy, logic, mathematics and economics* (pp. 133–151). London: Routledge & Kegan Paul.
- 861 Sloman, S. (2009). *Causal models*. New York: Oxford University Press.
- 862 Szabo, Z. (Ed.). (2005). *Semantics versus pragmatics*. Oxford: Oxford University Press.
- 863 Woodward, J. (2005). *Making things happen*. New York: Oxford University Press.
- 864 Woodward, J. (2013). Causation and manipulability. In E. N. Zalta (Eds.) *The Stanford Encyclope-*  
 865 *dia of Philosophy* (Winter 2013 Edition), URL: [http://plato.stanford.edu/archives/win2013/entries/  
 866 causation-mani/](http://plato.stanford.edu/archives/win2013/entries/causation-mani/)
- 867 Woodward, J. (2014). Agency and interventionist theories. In H. Beebe, C. Hitchcock, & H. Price (Eds.),  
 868 *Making a difference* (pp. 234–263). New York: Oxford University Press.

Journal: 11229  
Article: 757

## Author Query Form

**Please ensure you fill out your response to the queries raised below  
and return this form along with your corrections**

Dear Author

During the process of typesetting your article, the following queries have arisen. Please check your typeset proof carefully against the queries listed below and mark the necessary changes either directly on the proof/online grid or in the 'Author's response' area provided below

Query	Details required	Author's response
1.	Please restrict the keyword upto 3–6.	
2.	Please provide the reference details for the ibid in the footnotes 13 and 15.	
3.	References Woodward (2008, 2009), Price (2013), and Price and Corry (2004) are cited in the text but not provided in the list. Please provide in the list or delete this citations.	

uncorrected proof