Commentary on Barnes, “The Paradox of Predictivism” -- Do-it-yourself predictivism!

The Paradox of Predictivism is very rich not only in discerning and developing an account of a relationship between predictivism and epistemic pluralism (and the miracle argument, and the problem of old evidence), but also in understanding each of these phenomena in its own right. For example, his discussion in chapter 6 of how members of a community would rationally assimilate information from many experts at a time provides a concrete answer to the general judgment aggregation problem. There are many impossibility theorems saying that there is no rule for aggregating judgments of a group of experts that will give you all of a set of natural and desirable properties: consistency of the verdict, anonymity of the judges, a unique answer in every case, and systematicity, for example. But the frameworks that are assumed in proving the theorems are very generic, and adding more variables to the descriptions (which weakens the highly general premises) has begun to be a promising way to see possibilities that might be tolerable. (See Cariani, Philosophy Compass, 2010.) This is what Eric’s account offers, though not, I think, intentionally. He says an evaluator should take a weighted average of the experts’ degrees of belief, and inspired by the concrete case of a scientific community he says the weights come from distinguishing between amount of evidence and quality of theoretical beliefs and weighting the judges by weighing the significance in a given situation of those two kinds of epistemic resources, and how much of them each judge possesses. There is also a possible null case application of this account to the peer disagreement literature, which I think has too little in the way of concrete facts behind its speculations.

My concern is about how Eric treats individualism. In particular, given that he thinks the predictivist effect is essentially a pluralist phenomenon, he owes some explanation of how it could be that there have been strong individualists who have also had strongly predictivist opinions. Philosophers until quite recently
have probably underestimated the number of pluralists, even self-conscious ones, among scientists in history, but even if there were many there are exceptions: the scientist and philosopher Descartes appears to have combined his obvious arch individualism with strongly predictivist intuitions (Principles of Philosophy). Obviously scientists need not have thematized pluralism consciously in order to have behaved as it demands, showing a deference toward those perceived as more competent experts about a theoretical matter, but if Descartes is to be believed he didn’t even do that. It is not beyond possibility that Descartes was making a mistake, of course, but Descartes is someone whose mistakes tend to be big and interesting. So, I think it is worth identifying clearly what predictivist effects Eric’s view implies for the individualist, to see whether it would have made sense for someone to consciously embrace both very strongly, and to see how much and precisely what kind of a difference pluralism makes.

Eric shows his appreciation of the explanatory demand I am making in the fact that he stops to discuss the thinner predictivist effect the individualist might see at each step where he explains the effect for the pluralist. Eric defines the individualist – for now I’ll call her Ida – as someone who evaluates all the evidence for herself, and comes to an opinion about theory T on that basis alone. The opinions others have about the theory do not affect her beliefs, but she may still note what those opinions are. In so doing she may note a correlation between successful prediction and confirmation of background beliefs, which is in turn correlated with higher probability for the theory. And she may see that the accommodator Alex will, necessarily, not have the opportunity for this effect, due to the lack of endorsement, implying lack of sufficient pro-T background beliefs, that makes him an accommodator in the first place. Ida does not experience a predictivist effect in her beliefs but only sees it, much as Eric the philosopher sees it from a distance. (incidentally, it may be that philosophers have been dealing with a pluralist element for some time without knowing it, since the philosopher in recent analyses has been standing outside looking at a predictor and an accommodator and asking what we should think the difference is for our beliefs.) Presumably Ida the individualist also sees the differential effect successful
prediction has on Eva the evaluator when Eva relies on Peter as expert rather than on Alex, but given Ida’s methodological views she cannot approve of the deferential behavior that is required for this effect.

This is the only benefit Eric sees successful prediction potentially bringing to the individualist: knowledge of a correlation between successful prediction and the probability of the theory. Knowledge is a good thing, but since Eric assumes this does not make any difference to Ida’s beliefs about the theory or matters relevant to it I am not prepared to call it a predictivist effect, as he does, not even a thin one. Regardless of what we call it, though, Eric agrees that it is very weak, and this appears to support his view that predictivism is a phenomenon that only really kicks in once you have a community in which people rely on each others’ endorsements.

So, was Descartes just wrong to endorse predictivism when he had no intention of following other peoples’ endorsements? I don’t think Eric has to say that, because I think he has misidentified the individualist in his account. The fact that Eric thinks the predictivist effect is essentially pluralist makes him look for an effect for Ida only by asking how similar she might be to Eva. The answer is, Not very, and so the benefit for Ida is merely an observation she makes about others.

This combines with another problem I see in Eric’s definition of the individualist. It is natural to think of the individualist as someone whose degrees of belief change only in response to the evidence – and I will keep that part of his definition – but it seems to me inconsistent with that to allow that on observing the endorsements of others she discerns a correlation between successful prediction and the probability of a theory. The reason it is inconsistent is that the fact that Ida believes those successful predictions happened, and the correlation Ida observes between them and the probability of the theory are themselves evidence. Ida’s observation of the correlation makes successful prediction probabilistically relevant to the probability of the theory, so for her to form beliefs about successful predictions and then ignore them is irrational. It looks like Eric’s individualist isn’t even possible – that’s a strong epistemic pluralism!
The individualist of Eric’s definition – the one who evaluates all the evidence for herself – is possible, but it must be that she never hears endorsements of others – Adam before Eve? – or hears them but has prior degrees of belief that prevent them from ever being taken as relevant to the theory’s probability. One could achieve the latter via extreme conditional probabilities, which would prevent Ida from registering any correlation, no matter what she observed. So, to be an individualist Ida must assume that the endorsements of others have no evidential significance at all – she is stubbornly impervious to others’ opinions – or she must be in the first case, where the endorsements are just not there to be seen – Adam before Eve. (Once Eve is there he has someone to look up to, someone more competent than himself, and of course he not only should but actually does defer!) Stubbornness is easy to imagine in a scientist, and in some ways can be good, but though Adam was a helpful figure in many an early modern thought experiment he hardly seems relevant to science as we now observe it. However, I think there is a functional equivalent to Adam within the scientific community, namely, a theorist out on a limb; whether because she is the only expert on a theoretical area, or because no one else has an interest in the topic, she is the only one posting any endorsements of or predictions from this theory, or any other theory on the topic. The closer one is to being a certain kind of trailblazer in the questions one asks, theories one studies, or the topics one has knowledge of, the more one will be forced to behave like an epistemic individualist, even if one does not want to. There is a sense in which every piece of original research must have a tiny bit of this property. (You can also be marginal in virtue simply of disagreeing with mainstream views, but that won’t force you to be an individualist. If the mainstream people are much more expert then arguably you should trust them.)

[skip:This leader-type, Adam-like, individualist, Ida, may in a curious moment go through Eric’s abstract argument showing that an evaluator (deferring to an expert) gets a positive effect from witnessing successful prediction. However, believing this will not affect her degrees of belief in any theory. This is not a breach of rationality – as it would be for the stubborn sort of individualist]
who must not register the correlation because he has endorsers all around him that he would then be obligated to take seriously – because Ida has no experts or endorsers to look up to. She can believe the correlation and remain an individualist because she has no opportunity to use the correlation.]

It seems to me there is already a place for this character in Eric’s story, since he made no assumption that Peter or Alex – those Eva is deferring to – was depending on the endorsements of others. Both of them might be on their own, and the equations would be the same. (This is the point in my story where Ida is going to undergo a sex change and become Peter.) Eric’s analysis looks for pluralist predictivist effects in the effects on Eva’s beliefs as she takes on certain aspects of either Peter’s or Alex’s set of beliefs and watches Peter’s prediction. I am going to look at the effect of successful prediction on the individualist by asking what advantage Peter’s successful prediction gives to Peter over what Alex’s accommodation gives to Alex. Then I will compare what Peter, the individual, gets out of his successful prediction with what Eva the onlooker gets out of the same thing. It will turn out that on Eric’s view Peter does have advantages over Alex, and that Eva has counterparts to those advantages and more besides. But the explanations of these effects are the most interesting part.

I will restrict myself to the virtuous predictors and accommodators, and discuss the two thought experiments Eric draws out. In both experiments Peter has a higher prior for the theory T than Alex does, which follows from his being a predictor and Alex an accommodator. Peter also has background beliefs that support T more than Alex’s background beliefs support T, which also follows by definition, since that is how Peter got a higher confidence than Alex has in T when neither of them had yet seen N. There are two possible ways the situation could unfold if we assume that Peter’s prediction of N is successful. In the first, corresponding to the first thought experiment, the two have the same likelihood ratio for N and T. Then, since Peter’s prior for T is higher than Alex’s his posterior must be higher too. In the other case, the second thought experiment, the two guys have the same posterior degree of belief in T. (skip: Why couldn’t we allow
the possibility that Alex’s is higher?} Since Peter has a higher prior than Alex, the equal posterior means that Peter’s likelihood ratio is lower.

Leaving Eva out of it for the time being, we want to know whether an individualist can be better off than another individualist in virtue of having done a successful prediction that the other didn’t do. In other words, are Peter’s degrees of belief with respect to T positively affected in a way that Alex’s are not? It turns out, on my calculations, that Peter does have advantages over Alex. In the first thought experiment, he has a higher posterior probability for T than Alex does as I just said, and he has a greater confirmation of his background beliefs than Alex does. In the second thought experiment, Peter has again a greater confirmation of his background beliefs than Alex has of his. So, I think Eric has sold his view short in what predictivist advantages it implies for the individualist. An individualist’s own successful prediction positively affects his/her degrees of belief on matters around the theory.

Maybe Eric had wished there was no real predictivist effect on the individualist’s beliefs in order to uphold a strong claim that the predictivist effect depends essentially on pluralism. But I don’t think he needs that in order for pluralism to be adding something that the individualist can never get. This would be so as long as the pluralist got strictly more advantages out of a successful prediction than the individual who made it could. That is what I think follows from Eric’s view.

We can see this in a list of advantages that Eva gets when she trusts a predictor like Peter over what she gets when she trusts an accommodator like Alex. This is the difference Eric has drawn out that successful prediction makes to the pluralist. (Then we are going to compare Eva trusting Peter to Peter himself.) Eva gets the pluralist counterpart of all of Peter’s advantages—she has those advantages when trusting Peter over trusting Alex. [skip?Where in the first experiment Peter has a higher posterior for T than Alex does, Eva has a higher posterior for T when she is trusting Peter than she does when she is trusting Alex. Likewise, where Peter’s background beliefs, Kp, are more confirmed than Alex’s,
Ka, Eva gets greater confirmation for Kp when she is trusting Peter than for Ka when she is trusting Alex. In the second experiment, Peter had a greater confirmation of his background beliefs, Kp, than Alex had of his, Ka. In that experiment Eva also gets greater confirmation of Kp in the scenario where she trusts Peter, than she does of Ka in the scenario where she is trusting Alex.

Eva gets a pluralist analog for each thing Peter gets out of that successful prediction, but she gets an effect he doesn’t get a counterpart of. In the second experiment she always gets a higher posterior for T when trusting a predictor than when trusting an accommodator, whereas Peter has the same posterior degree of confidence in T as Alex.

For the broader discussion of predictivism it is worth noting one thing that Eric’s view implies that neither Peter the individualist predictor nor Eva the pluralist evaluator gets out of Peter’s successful prediction, namely, a greater degree of confirmation for the theory than the corresponding accommodator or person trusting an accommodator does. In the second experiment, Peter necessarily gets a lower degree of confirmation of T than Alex does, and Eva trusting Peter gets a lower degree of confirmation than Eva trusting Alex. In the first experiment Peter gets the same as Alex, and the corresponding thing holds for Eva.

It’s important to note also something that Eva does not get out of trusting the successful predictor. She does not end up absolutely better off than Peter. The type of advantage Eva trusting Peter has over her Alex-trusting self in the second experiment and that Peter does not get over Alex, namely, higher posteriors for the theory, cannot give Eva a higher posterior probability than Peter gets for the theory. (diagram to make this clear:

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P \leq A \quad \text{Effects for Peter vs. Alex} \\
E(P) > E(A) \quad \text{Effects for Eva trusting Peter vs. Eva trusting Alex}
\]
The facts that $E(P) > E(A)$, and $P$ is not greater than $A$, do not imply that $E(P) > P$. In fact $E(P)$ is never greater than $P$ for posteriors on the theory or degree of confirmation of the theory. I.e.,

$$[v^*1(T/N) \leq v^*1(T/N.Kp)]$$

The same is true of confirmation of background beliefs. Eva’s degree of confirmation of $Kp$ and posterior degree of belief in $Kp$ can never be greater than Peter’s.

This is because Eva’s effects derive from the extent to which she takes on the background beliefs of the predictor and accommodator, respectively, whom she is trusting. Her posteriors can never get higher than Peter’s do because (or to the extent that) she never has more confidence in his background beliefs than he does. Even if his confidence in $Kp$ is not 1, so that there is logical room for hers to be higher, that doesn’t (seem to) make sense. Now, this implication of Eric’s equations makes it look like the pluralist effect is derivative from, a kind of shadow of the individualist effect: the quantities of Peter’s individualist absolute predictivist effects put an upper limit on Eva’s pluralist, absolute predictivist effect.

However, this isn’t quite right. We have to wonder how these two things could be, that Eva does have a kind of effect that Peter never gets, and yet her effect never puts her in an absolutely better position than Peter has with respect to the confirmation of the theory or his background beliefs. This may sound contradictory, but it is not. We have a model for it in the so-called pseudo-forces of classical physics, which are somewhat badly named because the motion in question and its effects are far from fictitious: everyone has learned by now that a hurricane is no illusion. The motion of the water and wind of a hurricane is very real, but there is no independent force that causes it. That’s why one gets corrected when using the term “Coriolus Force” rather than “Coriolus Effect.” It is a consequence of the linear motion of the ocean and air around the equator of the earth combined with the rotation of the observer, or victim as the case may
be. Its cause is called a pseudo-force because no such effect appears in the inertial frame, the one that is not rotating. In the case of the hurricane, the rotation in our frame is due to the rotation and curvature of the earth; since we cannot escape these we do not experience the inertial frame in question.

The very real, essentially pluralist effect of successful prediction is like the Coriolus effect. The inertial frame on our side of the analogy is the situation of the individualist Peter, and Eva’s extra predictivist effect is, like the Coriolus Effect, not available to him. The equations also support the conclusion that Eva would lose those extra effects too if she trusted Peter’s background beliefs to the same extent that he trusts them, that is, if she moved exactly with him in his frame of reference. Eva’s extra advantages are in this sense a consequence not only of the force of Peter’s successful prediction for himself, but of her frame remaining distinct from his frame, from her maintaining her own non-inertial motion with respect to him. In fact her extra effects are in a way an experience of her own motion. So, it is important to see that it is not that Peter is giving to Eva something that he does not himself possess. She gets something extra not from him but from not trying to be him. What is her non-inertial motion? I think it is her use of her own background beliefs to assess how far to take on Peter’s background beliefs. It is when she does not do that but takes on his beliefs without assessing him, that she gets no extra effect.

This aspect of Eric’s model has a nice confirmation in something we know intuitively, about the so-called wisdom of crowds. A crowd that defers completely to one dictator does not have any information that he (for it usually is a he) doesn’t already have. But if you have a crowd of independent minds that nevertheless do defer to others when on their individual best judgment other people have more information than they do, that community as a whole will have more information than its subset of experts does. Now, why does that independent judgment of the non-experts add information? I think it is because, or to the extent that, they are using their background beliefs to judge how far to trust a given expert. There can be information in the background beliefs of the
independently thinking, deferring parties that there is no reason to believe the dictator or expert has. In just the same way, Eva gets extra effects because there is information in her background beliefs that give her guidance on how far to take on Peter’s and Alex’s background beliefs.

In summary, I disagree with Eric in so far as I think that his account implies that the pluralist effects are partly dependent on the predictivist phenomenon that pertains to the individualist. However, I agree with him completely that there are kinds of essentially pluralist effect that go beyond the individualist effects, that they are generated out of the relation between the expert and the evaluator – namely, out of the relative motion generated by the evaluator’s combination of trust and independent judgment – and that the pluralist effects are as real as a hurricane, despite also being very much like the effects of a pseudoforce.