

# Changing Belief, Harman and Friedman

Daniel Rothschild, UCL, Term 3, 2021/22

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## 1 Varieties of belief change (pre-theoretic)

Some paradigmatic normal cases of changes in belief:

**Garden variety learning** You don't know what the capital of Samoa is. You google and learn that it is Apia. Your beliefs change.

You also gain *knowledge* but that's not particularly our focus.

**Probabilistic adjustments** You think Trump is unlikely to be president. On election day the returns start coming in and you think it is likely (but not certain) he will be president.

Updating information by conditioning on new evidence.

They aren't, in some vague sense, *revisions* in your beliefs. Of course, that is a change in belief but on one way of thinking this is just by virtue of *adding* a new belief while *keeping* the old ones.

Here are some more genuine *revisions* in belief.

**Correct a false belief** You used to think Lori was your aunt, but then your mother tells you she is just an old family friend. Other beliefs also might need to change, e.g., who else Lori is related to, how many aunts you have ....

How many beliefs need to change depends on what counts as a belief. Harman [1986] relies on the explicit/implicit distinction to cover this.

**Correct a probability** You had thought that there was a 90% chance of rain, but then you are told that in fact you misread the weather report, rather there is a 9% chance of rain.

Not clear that this case is really different from a standard probabilistic learning case.

There are many other different types of cases:

**Forgetting** Yesterday I knew  $\pi$  to 10 decimal points, today I only know it to 9 decimal points.

Of course, if we assume logical omniscience this example doesn't work. I curse you, philosophical pedantry!

**Losing justification** You believe you have a special aptitude for art based on an aptitude test you when you were 4, but now you learn that the results of the test were actually determined at random as part of a social psychology experiment.

**Kuhnian Paradigm Shift** Kuhn [1962] argues a *perceptual* shift accompanying radical change in belief:

Kuhn was never entirely comfortable with the radical view adumbrated here, but its implicit anti-realism was gleefully adopted by many.

The historian of science may be tempted to claim that when paradigms change, the world itself changes with them. Led by a new paradigm, scientists adopt new instruments and look in new places. even more important, during revolutions, scientists see new and different things when looking with familiar instruments in places they have looked before. It is rather as if the professional community had been suddenly transported to another planet where familiar objects are seen in a different light and are joined by unfamiliar ones as well.

Belief change is here at a group level, something ignored in most readings we look at

In addition to perceptual changes, Kuhnian paradigm shifts might also come with an *incommensurable* conceptual scheme.

### **Religious conversion** Paul's conversion on the road to Damascus:

And as he journeyed, he came near Damascus: and suddenly there shined round about him a light from heaven:

And he fell to the earth, and heard a voice saying unto him, Saul, Saul, why persecutest thou me?

And he said, Who art thou, Lord? And the Lord said, I am Jesus whom thou persecutest: it is hard for thee to kick against the pricks.

...

And Ananias went his way, and entered into the house; and putting his hands on him said, Brother Saul, the Lord, even Jesus, that appeared unto thee in the way as thou camest, hath sent me, that thou mightest receive thy sight, and be filled with the Holy Ghost.

And immediately there fell from his eyes as it had been scales: and he received sight forthwith, and arose, and was baptized.

...

And straightway he preached Christ in the synagogues, that he is the Son of God.

Acts 9:1-20

See James [1902, chapter IX and X] for a classic discussion of conversion experiences.

## **2 What are beliefs?**

We might try to get some clarity on what it is that changes (or doesn't) in all these examples. Let me suggest some perspectives on the nature of belief and map out some of the consequences for our view of change on these different perspectives.

### **2.1 Propositional models of belief**

The characteristic of this approach is that we a) take belief to be an all-or-nothing affair and b) allow ourselves to speak of individual beliefs.

Some theorists do discuss the *strength* of different beliefs, but this can often be reduced to some other property, such as centrality to ones theories.

### **2.2 Individual relational view**

This view is usually characterized by a belief-box kind of picture. We distinguish between implicit and explicit beliefs.

We could talk about beliefs of sub-personal systems, but our interest here is in personal-level beliefs: those that subjects recognize and use rather than just information processing at lower levels.

Fodor [1975], Harman [1973] are early examples.

Canonical explicit are ones that are arrived at by conscious reasoning, implicit is ones one has a disposition to make explicit should you consider. Explicit does not mean occurrent.

Dennett [1968]

### **2.3 Total belief states**

A contrasting but still broadly propositional view, perhaps more prominent in contemporary philosophy is the view that beliefs do not primarily consist in a set of individual relations to propositions, but rather as a total mental state locating oneself in logical space. On this picture we do not distinguish between

I associate this view with Hintikka [1962], Stalnaker [1999], Lewis [1983].

implicit or explicit belief. We assume logical omniscience, so that all agents are treated as believing the logical consequences of all of their beliefs.

## 2.4 Bayesian views

Bayesian accounts model belief-states using a single probability function that assigns numbers in  $[0, 1]$  to all propositions.

## 2.5 A bridge view: the Lockean thesis

The Lockean hypothesis is that our all-or-nothing beliefs are simply those propositions in which we have a credence above a certain threshold (possibly context-dependent).

## 2.6 Comments

All these ways of thinking about beliefs come with various questionable pre-suppositions. Those who draw the implicit/explicit belief distinction generally commit themselves to a psychology in which the *belief box* has some reality. The other views take for granted something like logical omniscience, modelling total belief as a region of logical space.

Some find a focus on belief as a subject in its own right problematic as belief can only be understood as either knowledge, or in other cases, as a kind of failed knowledge.

## 3 Change from different perspectives

### 3.1 Non-Bayesian

**ORDINARY CASES** Go back to ordinary learning cases: you learn some new proposition (e.g. *Apia is the capital of Samoa*). You add this to your beliefs. In the individual relation view you simply add this and perhaps along with some other near consequences. In the total belief state you eliminate the possibilities in which it is false (thus adding it and all its logical consequences). These cases are thus not that interesting.

**TRUE REVISION (AND BELIEF LOSS)** Supposing what you want to add is, in some way, incompatible with what you already believe. Then you might think that you need to not just *add* this belief, but also lose some of your previous beliefs. But how to choose which beliefs to lose?

**Example** You believe (of a card game) a) If Alfred has an ace he will win, b) Alfred has an ace. Now you learn that Alfred lost. What do you conclude?

In the framework of AGM there are distinct operations: ‘ $\div$ ’ the operation of

Formally we can either model beliefs by a set of possible worlds, or a set of propositions closed under logical consequence. We tend to think of beliefs as being attributed instrumentally: as the best way of making sense of an agent.

Foley [1992].

Williamson [2000]: ‘Mere belief is to be understood as a deviation from knowledge. To believe is to be in a mental state similar to knowing in its immediate effects on action, but which differs from knowing in other respects. To work with such an account is to understand belief in terms of knowledge, rather than knowledge in terms of belief.’

Compare the picture of context change in pragmatics put forward by Stalnaker [1974] in which an assertion is added to the common ground in a conversation.

This could be logical incompatibility, supra-logical incompatibility as in AGM, or ‘immediate’ inconsistency, as in Harman.

Alchourrón et al. [1985]. AGM, influenced by Levi [1980], treats belief sets as logically closed.

losing a belief, and ‘+’ the operation of adding a belief in a possibly revisionary manner, whereas ‘+’ simply adds a belief and its consequences (whether consistent or not). The so-called Levi identity holds that  $B * p = (B \div \neg p) + p$ .

This framework implements a kind of ‘minimal change’ view, where the  $\div$  and  $*$  operations are mutually defined as operations that move you between logical-consequence closed sets of beliefs (i.e. set of possible worlds) that minimally carry out operations of belief subtraction or addition.

### 3.2 Bayesian belief change

Belief revision seems puzzling and problematic from the propositional perspective. But the move to Bayesian views might seem to eliminate the distinctions and problems that bedevil the full-belief/propositional style views as well as providing principled answers to what seem intractable problems from the propositional perspective.

One way of thinking of the Bayesian picture is to think of it as positing only one perfectly precise principle of belief revision: namely *conditioning*.

The only possibilities of conditioning not applying are a) cases in which evidence does not come in the form of a proposition of total evidence, b) cases in which the event learned was assigned probability zero and so the conditional probability is not defined.

From a certain perspective then things look very good for the Bayesian account of belief revision: once you have a framework in which you can account for degrees of belief (as opposed to all-or-nothing belief) it looks like an account of how you change belief in the light of new evidence (in general) comes for free.

## 4 Ideas from *Change in View*

We chose *Change in View* as a representative of the view of belief revision from the perspective of the *individual relational view* of beliefs, as well as an excellent and readable starting point for getting a feel for the kind of issues that arise in the study belief revision.

CHANGE IN BELIEF AND LOGIC. Harman argues that the role of logic in managing ones beliefs is more limited than often thought. Something being a logical consequence of ones beliefs is not an infeasible reason for believing it: belief is not *closed under logical consequence*. Also we do not always want to give up beliefs just because they are inconsistent.

To see that the Logical Inconsistency Principle has its exceptions, observe that sometimes one discovers one’s views are inconsistent and does not know how to revise them in order to avoid inconsistency without great cost. In that case the best response may be to keep the inconsistency and try to avoid inferences that exploit it.

NORMATIVE VERSUS DESCRIPTIVE Harman rejects the idea of a purely

A natural comparison point is Lewis’s [1979] problem of permission.

*Conditioning*: given that you learn  $E$  your new beliefs are given by the conditional probabilities of your old beliefs on  $E$ .

We’ll discuss generalizations of conditioning next week.

$$p(E|H) = \frac{P(H\&E)}{P(E)}$$

We can avoid b) by not allowing probability 0 to be assigned to anything but conceptual truths. We can also take conditional probabilities as primitive in some manner or other thus allowing definitions of conditional probability when you condition on events with probability 0.

See p.13 for his discussion of implicit and explicit belief and rejection of behaviorism and interpretationism.

Note that Harman rejects Bayesianism explicitly in chapter 3. We’ll discuss his arguments later in term.

This is a Harman hobby horse, see also Harman [1995].

Here (pp. 12-13) he depends strongly on his notion of explicit belief as he posits one does not want to *clutter* up one’s beliefs.

His examples is the T-scheme leading to the liar paradox.

normative theory of belief revision.

Actually, normative and descriptive theories of reasoning are intimately related. For one thing, as we will see, it is hard to come up with convincing normative principles except by considering how people actually do reason, which is the province of a descriptive theory. On the other hand, it seems that any descriptive theory must involve a certain amount of idealization, and idealization is always normative to some extent.

**COHERENTIST AND FOUNDATIONALIST REVISION.** A foundationalist policy is to continually prune from your beliefs all of those that do not have justification. The coherentist rather says that one ought to effect *minimal changes* in revising ones beliefs.

Foundationalist views (in this sense) seem obviously wrong: I know many things even though I have forgotten my justification for them. No reason to give them up.

Harman, though, notes that the view has surprising consequences: one keeps beliefs that have no justification even when one learns about the absence of justification (if connection is forgot). Harman also posits a very strong conservativity principle that goes beyond coherentism. He tries to mitigate this problem by suggesting a *principle of positive undermining*.

Harman sketches then what you might take to be his theory of ‘belief’: belief is ‘full acceptance’ in the sense that acceptance ends inquiry. He suggests that full-acceptance is the default attitude because it is easier: things we tentatively accept we must track our justification for and continually reevaluate.

**PRINCIPLES OF BELIEF REVISION.** Since Harman thinks that in some circumstances one *can* have inconsistent beliefs, he cannot simply define the problem of belief revision as the problem of how to recover from having inconsistent beliefs. He does suggest a kind of minimality to belief revision, but not such a minimal revision as to be useless. In particular, it’s not sufficient just to eliminate the immediate inconsistency rather than things that less immediately imply the inconsistency.

Harman recognizes that determining what a minimal change in belief is a problem. One can simply count: but there are problems with this and it obviously doesn’t apply if we reject the explicit belief model.

In general, the principles he posits *Interest Condition*, *Interest in not Being Inconsistent Get Back Principle*, *Coherence*, don’t seem very unified or that principled.

## 5 Friedman on Inquiry

Perhaps useful to start with is this quote from Harman [1986]:

The point is rather that, even if the evidence for *P* is overwhelming, one should not add *P* to one’s beliefs unless one is interested in whether *P* is true.

See Carr [forthcoming] for a recent discussion, we’ll return to these issues.

Harman on standard epistemology: “But the theories I am concerned with are not precisely the same as the corresponding philosophical theories of justification, which are not normally presented as theories of belief revision. Actually, I am not sure what these philosophical theories of “justification” are supposed to be concerned with.”

Here perhaps it’s easiest to think about in terms of knowledge.

‘One is justified in continuing fully to accept something in the absence of special reason not to.’

See Karen examples starting on page 33.

One should stop believing *P* whenever one positively believes one’s reasons for believing *P* are no good.

Ch 5. See Friedman [forthcoming] for some related ideas.

Again, limitations of memory/cognitive power play a big role for Harman, relating to his critique of Bayesianism.

In the AGM tradition it is basically understood this way.

He posits the *get back* principle: ‘One should not give up a belief one can easily (and rationally) get back.’

Compare to Bayesianism, where there is really just one principle.

Friedman [2020] argues that such lines of thought run in tension with standard views in contemporary epistemology.

Her first way of setting this up is to state this epistemic norm:

**EP** If one has excellent evidence for  $p$  at  $t$ , the one is permitted to come to judge  $p$  at  $t$ .

She argues these traditional epistemic norms with are in tension with what she calls *zetetic* norms, governing inquiry. Such as this (deliberately simple one):

**ZIP** If one wants to figure out  $Q?$ , then one ought to take the necessary means to figuring out  $Q?$ .

The tension is as follows: ZIP might require you not to judge things you have excellent evidence since the means to the end of an inquiry require concentrating on something else. But EP means you are permitted to judge this.

Friedman herself suggest this tension may be dissolved by thinking about *state-based* version of the EP norms:

**EP(s)** If one has excellent evidence for  $p$  at  $t$ , the one is permitted to have  $p$ -believe at  $t$ .

There might be no tension now as while one might not be permitted to form the belief (the action) one can be permitted to have it.

Stepping back Friedman's more general point is that work in contemporary epistemology about rationality of belief, tends to ignore interests of inquiry (the kind of things Harman focused on):

Among other things, these tensions make clear that we really cannot read the norms of inquiry off of our familiar contemporary epistemic norms. That it's permissible or obligatory to form or have some belief at a time according to our familiar epistemic norms, tells us very little about whether making the judgment that would result in having that belief at that time is permissible or obligatory from the perspective of the norms of inquiry. Epistemic permissibility as characterized by the norms in CE we've been focused on so far is not a guide to zetetic permissibility. And epistemic obligatoriness as characterized by the norms in CE we've been focused on so far is not a guide to zetetic obligatoriness.

Friedman moves on to question whether norms like EP are genuine epistemic norms.

Here is a way to think of that space of options. First, are the epistemic and the zetetic closely connected? If yes, then can widespread normative inconsistency be tolerated? If no, then one should either say that ZIP is not a genuine norm of inquiry or that the P-norms (and the O-norms) are not genuine epistemic norms (or both). Of course, one might feel the best landing spot is one where we say "no" to (at least) one of those first two questions, i.e., where we tolerate normative incoherence or pull apart the epistemic and the zetetic. As I've said, my main goal in this section has been to lay out the terrain and show the difficulties

ZIP makes coming to judge/know something impermissible but EP says it is permissible

Friedman actually argues this reply still leaves a tension as one is permitted to have beliefs one is not permitted to form, but I'm not sure how much of a problem this is.

Note that Harman's avoid clutter principle might make even having some of these beliefs impermissible, see Friedman [2018].

Recall Harman's puzzlement over what epistemologists talking about justification are talking about

in navigating it. I assume different readers will have different views about the size and scope of the costs and benefits along the different paths given their other normative and meta-normative commitments.

My own leanings are towards epistemic revision, i.e., the path on which we re-think even the P-norms. While there are clearly details to be worked out on this path, and some difficult decisions to be made, the revisions it forces are theoretically well motivated and help to ground epistemic normativity in a satisfying way. One way to think of at least part of what's been revealed in this paper is that the norms in CE we've been investigating—O and P alike—really aren't zetetic norms. That is, they aren't the sorts of norms that a rational inquirer will conform to. But what grounds these norms then? Why should epistemic subjects conform to them at all? If we let go of any putative epistemic norms that can't be zetetically grounded, then while we'll certainly have to do some revising, the picture of epistemic normativity we'll be left with will be both tidy and theoretically robust.

Friedman seems to be advocating a Harman style non-ideal epistemology to replace standard contemporary epistemology.

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