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Ruth Barcan Marcus on Believing Without a Language

Abstract

In her 1990 article entitled "Some Revisionary Proposals about Belief and Believing", Ruth Barcan Marcus reviews the various limitations and puzzles generated by a language-oriented account of belief. The present chapter discusses an extension of Barcan Marcus' revisionary proposal; granting that believers do not need to express their beliefs linguistically, is it justified to consider that a believer may form *reflexive epistemic beliefs* without needing to express them linguistically? Evidence collected in Comparative Psychology suggests that some nonhuman animals can evaluate their own ability to correctly perform a mental task (such as categorizing, or remembering). Granting that this evidence is sound, this raises the question of the representational format in which metacognition has developed in non-humans. The hypothesis developed and discussed here is that metacognition is represented in a non-conceptual, feature-based system, whose function is to evaluate a mental affordance as being incident at a time.

In her 1990 article entitled "Some Revisionary Proposals about Belief and Believing",[1] Ruth Barcan Marcus reviews the various limitations and puzzles generated by a language-oriented account of belief. If "believing that S" is equivalent to "holding a certain sentence true", as Davidson proposes, non-language users cannot have thoughts, a "baffling claim" indeed (134). Another controversial claim of Davidson's is the view that a creature can only have a belief if she can grasp the possibility of being mistaken – only if she possesses the concept of belief. How then, Ruth Barcan Marcus observes, can a preverbal

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1 See also Barcan Marcus (1981), (1983), (1995).

child be disappointed when she realises that the footsteps she hears are not those of the anticipated person? It seems *prima facie* unjustified to deny a non-verbal organism a disposition to form beliefs, or to feel pains, simply because it cannot express them linguistically. Granting that language is necessary for these mental states to be made reflexively available (we will see that this claim too is controversial), why should it be the case that one can only have beliefs, or pains, if one can be reflexive about the fact that one has them? Another version of the linguistic view on belief is offered by Jerry Fodor, who takes belief to be an attitude towards sentences in the language of thought – "linguistic entities placed squarely in the mind" (137). Fodor, Ramsey and Davidson, as well as any proponent of the linguistic account of beliefs and other attitudes, Barcan Marcus observes, have a hard time dealing with unconscious beliefs and acratic actions; these sit uneasily with the view that beliefs have the form of assented sentences (whether in a public or a private language), for an acratic action is more readily explained by the absence of a conscious formulation of the belief guiding the action. Non-verbal behavior seems often to express our implicit beliefs, and help us discover what we actually believe. Thus giving linguistic assent to the sentence expressing P cannot constitute what it is to believe that P.

In a sequence of papers, Barcan Marcus offers an alternative semantic theory of belief contents, in which

> Believing is understood to be a relation between a subject or agent and a state of affairs (not necessarily actual) but which has actual objects as constituents. (1990, 139)

On this view, the contents of beliefs are constituted by states of affairs understood as "ordered structures of actual objects", including individuals, properties and relations. The dispositional account offered on this basis stresses the connection of belief to behavior: believing is a disposition to *act as if* a state of affairs *obtains*:

> D: X believes that S just in case under certain agent-centered circumstances including x's desires and needs as well as external circumstances, x is disposed to act as if S, – an actual or non-actual state of affairs – obtains. (1990, 140)

In contrast with Russell and Stalnaker, who take contents of beliefs to be truth-evaluable propositions – respectively analysed as structured entities and as the set of worlds in which the belief is true, – Barcan Marcus takes the relevant semantic predicate to be one of a state of affairs "obtaining". The idea is to allow semantic evaluation of belief to proceed even in the absence of sentences as truth bearers. This definition allows us to sidestep the various shortcomings of the linguistic conception of belief. The definition deals with unconscious types

of belief, which make it more likely for one to act in a certain way, without needing to make one's reasons explicit. It offers a more natural account of rationality, in which coherence of behavior is what drives the need to have coherent beliefs rather than conversely. An interesting consequence of the definition is that in a case of the "London is pretty" variety, the believer does not need to believe a contradiction. She believes in an impossible state of affairs; more exactly, "she is on D disposed to act as if an impossible state of affairs obtained". (1990, 149) This possibility is quite compatible with the subject being rational and attentive to evidence. Given that a believer is not omniscient, it is quite predictable that she may claim to believe some impossibilities, describable as such in a more encompassing belief system (which may become the believer's own system after the necessary revision is made).

Kripke (1979) in introducing the Pierre puzzle, used the disquotational principle in virtue of which x assenting to a sentence S entails that x believes that S (when conditions of sincerity, competence and reflectiveness obtain). Because Pierre assents to both "Londres est belle" and to "London is not pretty", Pierre is taken to believe both that London is and is not pretty. Barcan Marcus revises this strong version of the disquotational principle. In virtue of D, x can actually be disposed to act on the belief that S even though she sincerely assents to a sentence S' incompatible with S. Assenting to a sentence is neither a necessary condition for believing (for a believer may lack verbal language), nor a sufficient condition (for a believer may not be aware of the beliefs that are actually guiding her behavior, and offer false, although sincere reports). Therefore Pierre may well assent to incompatible sentences, while not having the corresponding beliefs. His assent, in this particular case, "does not carry over into a belief" (1993, 60). He might only claim to have those beliefs, and, if he discovers that they are contradictory, revise his claim to this effect.

As already noticed by Pascal Engel (1998), Barcan Marcus' proposed revision of the definition of belief in turn raises the question of a taxonomy of epistemic states that is implicit in the very distinction between a behavior- and a language-centered view. As Engel convincingly shows, on a line similar to Stalnaker's (1986), acceptances must be recognized as a new variety of propositional attitudes, distinct both from beliefs in Marcus' sense and from assents to sentences. Acceptances include an agentive dimension which is lacking in believing and assenting. Accepting is a mental action, in which a thinker deliberately takes a certain content as a premise in her reasoning or planning. Acceptances are thus context-sensitive and may in various circumstances override a more powerful belief the agent has, but that needs to be prevented from influencing reasoning for various reasons (for example because the goal of

reasoning is a *reductio*, or because a piece of information needs to be ignored, for example when reconstructing someone else's thinking). Accepting is a capacity that is closely associated with various reflective practices, involving principles of fairness in interpreting others, or the development of prudential modes of thinking and deliberating.

Extending D to reflexive epistemic beliefs

I will discuss another type of consequence of D by raising the following question: once it is recognized that a believer does not need to express her beliefs linguistically, is it justified to consider that a believer may form *reflexive epistemic beliefs* without needing to express them linguistically? The problem here is admittedly of a different nature. For in the original conception of D, a believer collects information about states of affairs in the world, concerning the properties that accrue to objects, the relations that hold between them, etc. Believing is an information-based disposition to *behave*, i.e. to act physically in a certain context, given one's motivations. The direction in which I am interested in extending D is one in which the disposition to act is mental and self-directed. Why is this way of testing the definition of belief a natural one? In brief, the answer is that evaluating the margin of reliability of one's own mental dispositions is the basic function needed for a cognitive system to flexibly control and monitor uncertainty (whether in belief, reasoning, planning, etc.). Managing this kind of uncertainty leads to the selection of certain courses of action, that is, it influences the agents' dispositions to act in the world. This can be shown by considering the association of belief with action which D emphasizes; this pragmatic conception can be recast as saying that the function of belief is to reduce uncertainty concerning the states of affairs that, from the agents' viewpoint, are relevant to their needs and actions. Uncertainty, however, includes two varieties, as Hume observed. Objective, or factual, uncertainty is the source of uncertainty generated by variations in the external world. It is reduced by collecting evidence on the way the world is. A second source of uncertainty, Hume hypothesized (*Treatise*, I, 4, 1), comes from evaluating one's past ability to reach true judgments: having often been mistaken in drawing conclusions reduces the force of one's belief in a particular judgment, adding its own additional probability of error to objective world variability. Let us use the term "subjective uncertainty" for the additional source of uncertainty generated by variations in a thinker's ability to achieve her cognitive goals (forming true beliefs, perceiving, retrieving facts from memory).

Why does any rational agent need to have some way of distinguishing the two sources of uncertainty? Why cannot she, so to speak, treat them at the same level, as merely unwanted noise, or bad luck, that occasionally causes her to fail at a task? The response is obvious: one should not act in the same way when it turns out that the world is abruptly changing, and when it turns out that one is losing a specific cognitive ability that one was exercising before. In the first case, one can learn new regularities, or evaluate the variations with which one will have to cope. In the second, it would be wrong to revise one's beliefs about the world. What needs revision are the beliefs that one has formed about one's own capacities; the rational actions here consist in requesting help, or using cautionary strategies to monitor one's own abilities.

The contrast that we are making does not need to be understood in internalist terms, as Hume tended to do. No Cartesian introspection needs to be invoked in explaining the source of subjective uncertainty. Both types of uncertainty reflect objective properties and states of affairs, and are frequently hard to disentangle in concrete cases. In a physical action, the goal is to transform the world in a way that is sensitive to one's own desires and beliefs. Success in a physical action can be observed when the action is ended. In a mental action, the goal is a mental property, which the agent wants to acquire in order to be successful in her interactions with the world. The mental property in question, then, is of a normative kind. The subject wants to make a correct decision, whether in perception (consider the thought expressed by the words: "Did I perceive well?"), memory ("Is my memory accurate?"), planning ("Am I ready to perform such and such a complex new action?") or reasoning ("Can I solve this problem?", "Was my reasoning sound, adequate?", etc.). Mental actions in this sense are a frequent component of physical actions; planning a trip to Anna-purna is an extreme example of how an agent's capacity to critically evaluate her planning can affect her physical goal (and very survival). Answering these questions requires collecting information of a different kind, based on the dynamics of one's prior abilities, and extracting from it a norm calibrated to the tasks' requirements.[2] Subjective task requirements are states of affairs, relating a kind and level of effort to a benefit. Therefore they can be an object of belief, and even play a prominent role in the critical appraisal of one's beliefs.

Now the similarity with Ruth Barcan Marcus' revisionary argument will hopefully start to emerge. Just as a subject does not need to have the concept of belief to form beliefs, she does not need to have the concept of a mental state to

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2 Cf. Proust (2013).

correctly evaluate her epistemic success in a mental task. The reason that can be offered in both cases is similar: *you don't need to have the concept of a mistake in order to revise a false belief; you don't need to have the concept of a mental failure in order to control your attention, or to monitor your basic cognitive (memorial, perceptual) dispositions in a first order task*. In both cases, the crucial element consists in the notion of a state of affairs that is recognized as obtaining or not. In both cases, the actual obtaining of the relevant state of affairs is a precondition of the success of a given action. Although there might be organisms that only have the ability to represent states of affairs that are world-related, it seems that the definition of belief does not exclude those cases where the state of affairs of interest is a disposition of the believer as a mental agent, such as the ability to perform a given first-order task.

Representational form of belief: A problem

The issue raised above, whether a believer may form *reflexive epistemic beliefs* without needing to express them linguistically, has been pressed on philosophers by evidence collected in Comparative Psychology. "Opt out" paradigms have been developed to test animals' ability to monitor and respond adaptively to their own uncertainty.[3] These paradigms offer animals occasional difficult trials; animals' subjective uncertainty is appreciated in their ability to decline to complete them or to seek additional information before responding. Rhesus monkeys, apes, dolphins often produce data patterns in such tasks that are strikingly like those of humans. Furthermore, they don't need to be trained to seek information adaptively in a food-concealment paradigm. Other animals, such as capuchin monkeys, seem to be totally unable to cope with any task of this metacognitive kind.

Now, it is instructive to see that proponents of a sentential view of higher-order mental state representation tend to reject this evidence (Carruthers, 2008, 2011). The line of reasoning is the following. Granting a propositional representation of states of affairs, subjective uncertainty cannot be expressed in thought without forming recursively a first-order representation (e.g. "this is an F") subsumed under a second-order representation (e.g. "my perceiving/judging/believing that this is an F"), itself having the property of being uncertain with

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3 Smith et al. (1998), Call & Carpenter (2001), Hampton (2004), Kornell et al. (2007), Beran et al. (2012)

degree *p*, or of being comparatively less reliable than some other representation formed in the past. Developing in full what needs to be thought to self-attribute a degree of confidence for some perceptual judgment thus leads to attributing to the thinker the following minimal conceptual equipment:

1. The capacity to form a first-order representation, whose verbal equivalent is "O is F"
2. The capacity to form the metarepresentation of an epistemic or conative attitude directed at that content, such as, "perceiving (believing etc.) that O is F"
3. The capacity to attribute to the metarepresentation a property that qualifies its relation with the first-order representation : (e.g.:"I perceive that there is a visual display of category A")
4. The capacity to judge that I perceive with uncertainty of degree r that there is a visual display of category A
5. The capacity to attribute the first-order, second-order and third-order representations to myself as one and the same thinker of these representations: PA2 (=judging) PA1(=perceiving, with uncertainty r) [formed by self] (that O is F)

This analysis helps clarify the various "mental" concepts (concepts of mental states) that need to be in a thinker's repertoire to make a fully explicit statement of her uncertainty, and to communicate to others her degree of belief. What makes it deeply unattractive, in the case of animal metacognition, is that it is incompatible with what we know of macaques' (and dolphins') metarepresentational abilities. *According to present evidence, macaques have no mental concepts, do not read minds, and cannot metarepresent that they perceive or that they judge that P.*[4]

Now a conception of belief centered on states of affairs, as D is, may seem to escape the problem of having to attribute a metarepresentational capacity in order to have access to reflexive epistemic properties. A natural suggestion would thus be to merely ignore the requirements of a sentential approach. The question then would be that of the representational structure of belief. A first suggestion, endorsed in Stalnaker's (1987), is that the ways in which propositions are represented "don't matter"; propositions do not need to be assembled out of individuals, concepts, and properties in order to have representational

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4 In Proust (2013), I offer various arguments to the effect that metacognition does not need to have a metarepresentational structure.

content. Actually, in the pragmatic picture defended by Stalnaker, the *primary* objects of attitudes are "not propositions but the alternative possible outcomes of agents' actions, or more generally alternative possible states of the world". As Stalnaker emphasizes,

> The form in which beliefs and desires are represented is not essential to their content. Two different agents might have the same beliefs even if the forms in which the beliefs are represented are radically different. The conceptual separation between form and content is, I think, the central feature which distinguishes the conception of thought implicit in the pragmatic picture from the one implicit in the linguistic picture. (1987, 23)

This "possible world" picture has its own classical difficulties, associated with the fact that believers may fail to recognize a given state of affairs as being the same in two different contexts, or fail to grasp the consequences of a possible state of the world in a deductively closed way. It is generally considered that although the possible world approach can go some way towards answering these problems (as does Barcan Marcus' distinction between believing and claiming to believe, as we saw above), it may not be equipped to address fine-grained issues that are raised in explaining perspectival facts influencing behavior.

Barcan Marcus' notion of a structured state of affairs may not suffice to articulate belief content for a similar reason. Let us consider again the comparative evidence summarized above. Let us take two agents, a macaque M and a human being H, each representing to him/herself the fact that she does not remember what the color of an icon was. Is there a single state of affairs that is believed by M and H? Definition D takes it that M and H believe that S if they are disposed to act as if S obtains, namely if they decline to respond; they form a similar subject-centered belief (allowing, of course, for their being different subjects). But there are interesting differences in the way they are disposed to act. The states of affairs that are the object of M's epistemic beliefs are not beliefs about the mental in the same sense as in H's case: they do not generalize to other individuals; they do not motivate new procedures to cope with poor memory, etc. In contrast, H's epistemic beliefs are used to compare memory performance over time and across individuals, to take corrective measures to prevent memory loss, etc. Given the conceptual link that the pragmatic view establishes between belief and disposition to act, it seems that a shortcoming of the "structured state of affairs" view of belief is that it fails to account for the differences between M's and H's dispositions to act.

Maybe a response to this worry could be articulated by taking into account "the agent-centered" and "external circumstances" that determine a disposition

to act: phylogenetic endowment, learning, (etc.) might explain why a given state of affairs can be used differently by M and H. This is certainly a possible and correct response, but one that is importantly incomplete; it leaves it mysterious how learning or evolution might allow a creature to develop a strikingly different set of inferential dispositions for one and the same type of state of affairs – why should M fail to use S in the way H does, against his own best interests?

Let us summarize the difficulty. With a view on which beliefs are propositions with a quasi-linguistic structure, we cannot account for the evidence of metacognitive beliefs in non-humans. Given a view on which beliefs have no structure, or have a structure inherited from a corresponding state of affairs, we cannot account for the fact that non-humans don't use their metacognitive beliefs as humans do. A way out of this problem that is worth exploring is that there are two varieties of belief having as their contents one and the same state of affairs, differing however in the form they take and, therefore, in the inferential pattern they have.

States of affairs, propositional and non-propositional contents[5]

One way of trying to solve the difficulty summarized above is to hypothesize that metacognition in non-humans is conducted in a representational format that does not license conceptual generalization as it does in humans. Although the same states of affairs form the content of belief in M and H, these beliefs do not influence the inferential system in the same way. Possession of a different way of accessing content and a different way of influencing behavior would justify the claim that there are two forms of epistemic attitudes. Let us see how such a justification might go.

Let us consider first how the issue of having two different formats for expressing the same content can be addressed. Frege and Strawson have emphasized, in their different styles, that the logical structure of predication comes with a metaphysics: the world appears to be composed of independent particulars as bearers of properties and relations, which themselves are dependent universals. A propositional format offers a general framework for referring to

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5 This section summarizes a discussion about animal cognition, which appeared in 2009 in Lurz (ed.) and in Proust (2013).

objects, and to truth values, in a unified spatio-temporal system. Strawson therefore calls forms of languages with this structure "particular-based representational systems" (from now on: PBS).[6]

Thanks to propositional representations, humans can recognize the same objects, or agents, including themselves, at different times and locations, and thereby stabilize their knowledge into rich inferential patterns. They can draw on this inferential structure to control their desires, to justify their beliefs, and to plan or explain their actions. Thus propositional thought is an adequate, and probably unique medium for applying concepts to perceptual experience, for combining them into plans and theories, for inferring unobserved properties and events, for articulating the reasons for one's actions, and for expanding one's knowledge.

Rudolf Carnap examined the possibility of having languages with different representational capacities. "Enrichment" is the process through which a thought that is formed in a more basic format is redescribed in the terms of a more sophisticated one, i.e. offering more expressive and conceptual possibilities in terms of descriptive and inferential scope. For enrichment to proceed, there must be a syntactical correlation mapping the representational elements of one structure to the other:[7] the two structures have to be isomorphic under a certain interpretation scheme. Such an interpretation scheme, however, may miss some aspects of the original representational structure, having to do with its relation to context, or to its specific ways of parsing content.

Carnap's notion of enrichment can be generalized to cases in which mental contents don't need to be expressed linguistically. It is quite natural to assume that the analysis of animal metacognition in metarepresentational terms, described above, is a case of enrichment, relative to another, still hypothetical, format. Let us see why this alternative format does not belong to the propositional variety.

The way animals represent states of affairs can be contrasted with that of humans in two respects. At least some animal species may not have any way of re-identifying objects (or themselves as individual beings) as the same over time: their representational system does not respond to the *principle of objectivity*. Let us use the term 'protoconcepts' for the protosymbolic classifiers that

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6 Basic particulars are reidentifiable, independent entities: material objects or persons. Universals are either sortals (often expressed by common nouns allowing one to count particulars, as in "three apples") or characterizing universals (expressed by verbs and adjectives, which are used on the basis of some prior categorization principle). Strawson, (1959), 168.
7 See Carnap (1937), 224.

these animals use to categorize properties and events, and to possibly infer from them other properties without meeting the objectivity constraint. Protoconcepts, by definition, fail to subsume individual entities because animals cannot re-identify independent objects. If, however, protoconcepts do not apply to individual, numerically distinct property-bearers, they fail to be "strictly determined", as concepts normally are (*vague* attributes excepted). As Frege made clear (following Kant), for any individual, it must be the case that either it falls, or it does not fall, under a given first-order concept. Vague concepts do not have this property; that is why they pose a serious problem for propositional thinking. *Protoconcepts, having no individuals in their scopes, present a property similar to vagueness: they fail to be "well-determined"*. Having no clear-cut boundaries, they possess, rather, similarity-based conditions of application. The protoconcept of [prey], for example, will apply to visual patterns similar to a prototypical prey pattern. This in turn makes it questionable to say that a protoconcept *truly* applies to some particular (currently perceived) pattern. It would be more adequate to say that protoconcepts are more or less efficient classifiers: they have conditions of efficiency, without being truth-evaluable.

A second difference concerns the scope of protoconcepts. Protoconcepts with no objectivity cannot fulfill the generality constraint,[8] i.e. the capacity to generalize predicates across particulars, and reciprocally. If an animal cannot represent negation, quantification, hypothetical reasoning, in association with the generality constraint, its dispositions to act will be substantially reduced even if the same state of affairs is believed to obtain.

These two differences are compatible with the hypothesis that the representational system used in ancestral representational processes is *featural* rather than propositional. Having dealt with this hypothesis in Proust (2009, 2013), I will summarize it here in order to discuss a plausible extension of D to this format. "Placing a feature" has been identified as a basic cognitive competence that can be exercised without concept possession, generality, or objectivity[9]. A feature, as opposed to a property, can be represented as exemplified or "incidental"[10] with no sense of a contrast between a representing subject and a represented object. A minimalist view of features takes them to be close to Gibson's "affordances", i.e. informational patterns with survival significance. Features, qua affordances, belong to an ontology where no subject-world

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8 See Strawson (1959), Dummett (1973), and Evans (1982).

9 See Cussins (1992), Campbell (1993), Dummett (1993).

10 Glouberman, (1976).

division is operational.[11] These patterns inform the animal that something valuable or dangerous needs to be acted upon in a certain way (captured, ingested, fled from). A standard example of a feature-placing sentence (FPS), offered by Strawson, is

    (1)   "there is (little, much) water"

In this type of sentence, a mass-term ("stuff X") is presented as holding at a given time and at a given place – no individual referent can be specified, no 'completeness' (understood as 'saturatedness'), no place-identification is presupposed. Sortals, also called "count nouns", cannot be expressed in this format. You cannot, for example, count "water". What you can do, however, is evaluate the degree to which an affordance is present.

The representation expressed by (1) is not *a truth-evaluable* belief, for it is not structured propositionally: it cannot be true or false. But, as a representation, it still can be misapplied: it has success conditions, depending on whether the corresponding state of affairs obtains. One can suggest, then, the following basic structure for (1):

    (2)   "There is here and now some (much, little) drinking affordance".

What kind of belief, then, can an animal have in a FPS? It identifies an affordance at a place, categorizes it for its intensity on a gradient scale, and triggers the associated motor programs.

Our present problem is, however, not to know how objectivity and spatial thinking interact, for metacognition has very little to do with spatial information. We can transform an FP system in order to express what is needed to exercise metacognition. What we will call a "feature-based" system (FBS) *evaluates a mental affordance as being incident (at a time);* the state of affairs represented now is a mental affordance, with a given intensity, such as "I don't

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11 Affordances are relational, rather than being objective or subjective properties. As Gibson observes, "An important fact about the affordances of the environment is that they are in a sense objective, real, and physical, unlike values and meanings, which are often supposed to be subjective, phenomenal and mental. But, actually, an affordance is neither an objective property nor a subjective property; or it is both if you like. An affordance cuts across the dichotomy of subjective-objective and helps us to understand its inadequacy." (Gibson 1979, 129). In contrast with Gibson's antirepresentationalism, however, we consider an affordance to be an *informational* pattern.

remember the color of the icon! I will reject the task!" Expressed in words, an example of a FB representation would be something like

(3) "There is (poor, excellent) A-ing affordance".

Although A-ing actually represents a current mental disposition (to be exercised as part of a task: perceiving, remembering, calculating, planning, etc.), it does not need to be represented "as mental". The animal may simply represent the degree of the mental affordance through a specialized feeling, which motivates the associated disposition to act. Metacognitive features are presumably presented non-conceptually; the human "tip of the tongue" phenomenon provides a good analogy of what these specialized feelings are like, presenting as they do a situated intensive affordance.

On the proposed view, a featural representational system (whether of the FP or the FB variety) includes a notion of normativity, albeit one that involves neither truth, nor success conditions that are taken to apply to propositions.[12] For certainly some dispositions to act are more efficient than others and tend to be selected because they are more efficient. Therefore, sensitivity to norms of adequacy need to emerge in FPS and FBS for these systems to achieve stability.

To be fully convincing, the case for a featural representation of metacognitive states should be grounded in a set of formal rules. Such rules might include some principles of decision relative to the cut-off point where it is reasonable to act on a feature with a given intensity in a given context. They might also include how to handle negation, or its equivalent. It should be intuitively evident that predictively combining features proceeds through integration of intensities and/or differential equations, and allows for very narrow, context-bound inferences, while predictively combining concepts allows generalization of inferences across contexts. Although this point deserves to be discussed at length, I must leave this to another occasion.

One might object that the distinction between a propositional and a feature-based format is only an "ad hoc" hypothesis meant to justify animal metacognition, and to insulate it from a metarepresentational capacity. There are various arguments, however, that independently speak in favor of this distinction. One argument is related to the need to understand how flexible use of information emerges in phylogeny. Even those non-human animals that, like spiders, have no sense of objectivity, and, therefore, no ability to represent an independent

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12 Success conditions can be used in a semantic theory. See Stalnaker (1987) and Bermudez (2003). But success semantics for a non propositional format has not been offered yet.

world, can recognize when a state of affairs obtains, and act flexibly on this basis.[13] Therefore they have to be granted some form of representational structure, allowing them to store and retrieve relevant information. Non-human as well as many human forms of control largely rely on perceptual forms of feature-placing.

A second reason for exploring alternative types of representation is that we need to understand how propositional content has evolved. It makes little evolutionary sense to say that propositional thought appeared with the emergence of linguistic abilities, for linguistic abilities themselves require flexible controls to be exercised. It seems difficult to assume that propositionally structured beliefs directly appeared in those animals, – the vertebrates, some cephalopods – that represent the world objectively. Some story must be told about how objectivity could have come about over evolutionary time.

A third argument in favor of recognizing feature-based representational systems is that this assumption puts the issue of non-conceptual content in a new light. Non-conceptual contents might have been the first way in which states of affairs were represented, and have been subsequently enriched into propositional thought.[14]

Conclusion

The present proposal offers an extension of D that is complementary to Pascal Engel's suggestion for including acceptance as an additional form of belief. While Engel considers cases that are downstream from "simple belief", this proposal works upstream. It tries to uncover a primary type of belief that is already implicit in D. In the proposed reading, a definition of belief along the lines suggested by Ruth Barcan Marcus allows us to discuss the similarities and differences between two ways in which one can act as if S obtained. Non-propositional belief would be present when S is represented in a protoconceptual featural representation system; propositional belief would be

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13 One might be tempted to object that animals' behaviors, such as the spiders', don't use representations worth of the name, as their decisions to act are strictly based on conditioning mechanisms. This argument has been shown to be wrong since the late 60s: as contemporary learning theorists have shown, associative learning indeed depends on the information that is represented by an animal, it does not bypass it.
14 See Proust (2013, ch.14).

present either when the featural representation is redescribed through conceptual enrichment, or when the representation is directly built as a proposition.

The case for this distinction is based on recent evidence for metacognition in nonhuman animals. Non-conceptual cues might allow an animal to represent a given physical affordance or mental disposition, without needing to represent it as physical or mental. The interest of the distinction, however, goes beyond the clarification of the particular case of epistemic reflexivity. The introduction of this primary form of belief raises two more general questions. First, what is the role of propositional form in determining the functional role of belief? Is it true that, contrary to one type of pragmatic understanding of D, form does matter to belief? In the present proposal, different forms might lead to different types of belief, in the sense that the dispositions to act are in part structured by formal properties of the representational system. Second, assuming that there are several kinds of attitudes, is language a precondition for entertaining specific kinds of attitudes? Could it be the case, as Engel (1999) suggests, that believing does not require a language, while assenting to a proposition, or accepting it pragmatically, does? The present proposal suggests that certain forms of acceptance, such as deciding to act on the assumption that a slightly uncertain belief – or memory – is reliable, require representation of a feature, rather than assent to a sentence. These are some of the fascinating questions that are raised in the wake of Ruth Barcan Marcus' discussion of belief.

Acknowledgement

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