On the empirical psychology of success semantics for pragmatic representations

Gordon R. Foxall & João Pinheiro

Abstract

Psychology's emphasis on empirical investigation has long benefited from conceptual developments taking place in its intellectual community, but also from cognate areas in Philosophy. This paper explores the implications for empirical psychology of a recent conceptual proposal advanced within the philosophy of perception by Bence Nanay (2013). In particular, Nanay proposes that "pragmatic representations", *i.e.* perceptual representations of the properties of objects necessary for the successful completion of actions, are the rightful target for a success semantics. A success semantics is, roughly speaking, a theory of contents according to which the truth conditions of representations are to be identified with the success conditions of actions guided by the representations. The problem arises for Nanay's proposal in that the empirical scrutiny of the contents of a pragmatic representation requires that one first ascertains their content, but it is not at all clear whether this could possibly be done given the non-linguistic character of pragmatic representations on the one hand, and the linguistic character of third-personal verbal data acquired through an heterophenomenological methodology on the other. This and other concerns raise worries about the empirical scrutability of Nanay's proposal.

Keywords: pragmatic representation; success semantics; scientific psychology; beliefs; perception; heterophenomenology.

1. Introduction

Insofar as psychology tends toward being an empirical rather than a theoretical discipline, it stands to gain from philosophical development of concepts which can drive forward its research program. This paper examines one such conceptual development, *pragmatic representation* (Nanay, 2011, 2012, 2013a, & 2013b), by exploring the kind of empirical investigations to which it might lead.

Briefly, Nanay proposes pragmatic representations as the immediate mental antecedents of action,[1] perceptual depictions of the properties of objects that are necessary to actions involving them. As perceptions, Nanay argues that they are nonpropositional but can be accurate or inaccurate depending on the degree of success with which they guide action.

Further to this, Nanay proposes that pragmatic representations' being perceptual renders their content amenable to understanding in terms of a success semantics. Success semantics (as first proposed by Ramsey, 1927/1990, and later developed by Whyte, 1990, 1991, 1993, 1997) are any theories of meaning according to which the content of a belief is given by the success conditions of consequent actions.[2] This is particularly interesting in the context of scientific psychology since it conceptualizes content naturalistically, as subject to empirical, third-personal testing.

Since perceptions are not readily empirically available for scientific analysis (i.e., in the form of data that are directly empirically available for third-personal scrutiny), their content can be revealed only in the form of corresponding propositional attitudes such as

---

[1] Nanay's proposal is further related to his argument that the traditional *desires x beliefs* model of action determination (e.g. Davidson, 1980) might be abandoned in favor of a perception-based model of explanation, according to which explanation of action by reference to beliefs can be superseded by a simpler account based on perceptions.

[2] Nanay formulates success semantics as claiming that success conditions "fix" truth conditions, hinting that they somehow determine them. But, in fact, success semantics *equates* truth conditions with success conditions, provided certain caveats are met.

beliefs. One more immediate possibility for empirical research is to treat pragmatic representations as constituting knowledge-by-acquaintance which is perceptual experience that can become publicly knowable only to the extent that it can be expressed as knowledge by description (Russell, 1912). The scientific evaluation of mental constructs relating to first-personal experience requires neurophysiological or behavioral data from which subsequent actions can be predicted; since knowledge-by-description consists in verbal expressions of subjective experience, it provides a basis for empirical research.[3] Establishing the content of pragmatic representations so that they can participate in a scientific analysis, therefore, requires that the content of their corresponding beliefs be expressed by means of the sampling of verbal behavior. If this possibility is to be taken forward, then beliefs remain, *contra* Nanay, integral to the explanation of action. Not least, in explanations of actions, beliefs provide insurmountable evidence for the contents of pragmatic representations, whilst their contents remain somehow distinct from those of the latter, and are not themselves the cause of the actions they co-represent

However, a methodology for establishing the described content of pragmatic representations and thereby of propositional attitudes based upon them, which could enter into empirical research, is suggested by another aspect of Nanay's project, namely the success semantics approach which claims that the content of a belief is the success conditions of consequent actions.

In this paper we examine the feasibility of an empirical psychology of pragmatic representations understood along the lines of success semantics. In particular, we explore whether the concept of pragmatic representation can contribute to the empirical psychological investigation of perception and behavior unless it resembles knowledge-by-acquaintance, and

---

[3] Provided self-reports are reliable enough – this might constitute a methodological problem because individuals are often bad at reporting themselves, as they are biased, and might even lack the necessary linguistic skills.

argue that it cannot. Further to that, we then argue that the contents of knowledge-by-acquaintance can only be ascertained by determining that of corresponding knowledge by description in the form of beliefs. The logic of Dennett's heterophenomenology would ascertain this content by providing third-personal verbal data revealing the beliefs that share the content of first-personal pragmatic representations. It would then be the case, however, that *contra* Nanay beliefs would be indispensable to the scientific validation of pragmatic representation. If, in response to this conclusion, it were argued that pragmatic representations constitute too fine a perceptual inference to warrant their being knowledge-by-acquaintance, it would not be feasible to establish the cognitive propositional attitudes that possess identical content, and pragmatic representations would constitute an inference from the behavior which they purport to explain.

2. Pragmatic representation

According to at least one influential theory of action, the essence of an action inheres in its having been instigated and shaped by a mental event or necessitating explanation in intentional terms (e.g., Hornsby, 1980; cf. Wilson & Shpall, 2012). Those mental events or states that are the immediate precursors of bodily movements must *inter alia* represent in various ways the nature of the action to be performed (see Nanay 2013, §2), the dimensions of the task this entails, and the capacities its expected successful execution will require. Hence, before an individual can carry out a simple motor task such as grasping a cup, they must be able to represent certain properties of this object to themselves.[4] When they are

---

[4] Faced with this suggestion, one may wonder what to say about a robot that is capable of successfully carrying out a simple motor task such as grasping a cup. We could claim that such a robot does not perform actions, or else we could claim that it does, but then we either claim that there is a notion of mental events and representation that applies to the robot, or else that mental events and pragmatic representations clearly are not necessary for the performance of actions, as the robot would make do without them. This potential counter-example serves to

perceptually represented, Nanay (2013a) refers to the attribute properties of objects – their weight, shape, or distance, for instance – as *action properties*. These are whatever aspects of an object must be represented in order that an agent can carry out actions vis-à-vis that object. The representations themselves are *pragmatic representations* and they are responsible for making actions actions rather than mere bodily movements or behaviors. In a nutshell, "…pragmatic representations attribute properties, the representation of which is necessary for the performance of an action"; they are perceptual – "genuine perceptual states." Hence, "we perceptually represent those properties the representation of which is necessary for the performance of an action" (Nanay, 2013b, p. 29). Moreover, these pragmatic representations are the perceptual constituents of the mental operations that immediately precede action. They do not fully constitute the immediate precursors of action but they are an indispensable component thereof.[5]

Nanay argues, then, that pragmatic representations are perceptual, the representational component of the immediate mental precursors of action. He is, moreover, concerned with *basic actions*, those that do not require any other action in order to be performed. So, booking an online rail ticket to Inverness is not a basic action but clicking the computer key that completes the booking is. Much less is travelling to Scotland by train a basic action but

highlight that these two foundational ideas of Nanay's theory, namely, that mental events precede and are a cause of actions on the one hand, and that they must represent the action being undertaken on the other, are sometimes disputed, but we will not take issue with them here.

[5] Nanay (2013a, p.157; 2013b, pp.19-20) offers us little in the way of comparing his concept of pragmatic representations with previously existing concepts in the literature that perform a similar semantic role. Later we will see that Nanay associates a success semantics with pragmatic representations, and it would have been interesting to explore why other authors, such as Millikan (2004), have rejected a success semantics while adopting a concept similar to pragmatic representations.

sitting down in one's train seat is. Avoiding an accident is accomplished by depressing the brake pedal but it is pressing the pedal that is the basic action.

Consistent with this, Nanay further defines pragmatic representations (a) in terms of their guiding bodily movements, (b) being contentful without being propositional (or, perhaps more aptly, without being linguistic),[6] and (c) being capable of being correct or incorrect[7]. The first of these is what transforms bodily movements into actions: they are mentally directed activities rather than behaviors automatically determined by genetic causation or stimulus control. The second demarcates pragmatic representations as perceptual and therefore intentional: they embody content about the world but, unlike desires and beliefs, are not propositional. Not only do they not conform to the syntactical structure of propositions as they are typically expressed in the vehicles of representation we call beliefs; they also defy description as sentences inscribed in a mental language. This, in turn, seemingly warrants the inference that they are the outcome of knowledge by acquaintance rather than knowledge by description (Russell, 2012; McGinn, 2004).

Finally, pragmatic representations can be adjudged correct if they guide bodily movements advantageously and appropriately, incorrect if they accomplish the reverse[8]. This

---

[6] To our mind, it is not clear whether Nanay's concerns relate to the (non)propositional character of perceptions, as his arguments depend solely on the ontological framing of perceptions as non-linguistic or non-syntactical representational entities, and are mute with respect to the epistemic possibility of expressing their contents in sentences. Indeed, as we will see, this epistemic possibility is seemingly crucial to our contention in this paper. (Comparatively, all success semanticists except Nanay maintain a commitment to propositions being the bearers of contents.) However, we recognize that the ontology of propositions and representation is a complicated affair outside the scope of this essay, so we will try to be as faithful as possible to Nanay's theoretical commitments throughout.

[7] Nanay says nothing by way of argument in favour of adopting a theory of accuracy rather than a theory of truth, but the fact is that he abandons all talk of truth in favour of speaking of correctedness.

[8] To our mind, Nanay fails to observe that incorrect or false perceptions can be useful by accident, something other success semanticists have long emphasised.

last suggests a connection with the success semantics methodology of determining the *correctness* of both propositional and, arguably, nonpropositional perceptions (insofar as perceptions truly are nonpropositional).[9] By contrast with the desires and beliefs that are to the fore in decision processing explanations of action, mediating sensory inputs and motor outputs, Nanay argues that pragmatic representations perform this function in the case of the vast majority of actions people perform and almost all of the behaviors of non-human animals. That the *desire x belief* model applies assuredly to those human actions that are highly intellectualized is, he says, taken as license by cognitive theorists to apply the model generally. Nanay argues that, for most of our actions, pragmatic representations rather than beliefs and desires mediate sensory input and motor output. Moreover, even when beliefs and desires are involved in the production of action, pragmatic representations are nevertheless involved.

Nanay's (2013a & 2013b) emphasis on perception as the determinant of action is intended to replace the traditional model in which action is determined by propositional attitudes, desires and beliefs, that generate an intention to act in a particular manner which in turn brings about the action. This sequence, with its reliance on computation of the probabilities and outcomes of competing courses of action, is, he argues, comparatively rare; more common is the guidance of action by means of pragmatic representations, and even in those cases where computation and propositional syntax is present, there will still be a pragmatic representation which is the immediate precursor of the action. Reasonably

---

[9] It should be noticed, however, that Ramsey never speaks of correctedness nor of non-propositional perceptions. This is Nanay's (2013a, p.156) own interpretation of Ramsey. It is also unclear whether Ramsey would agree that success semantics cannot possibly apply to beliefs. What Ramsey does say is: "But without wanting to depreciate the importance of this kind of belief [referring to a chicken's belief, defined causally], it is not what I wish to discuss here. I prefer to deal with those beliefs which are expressed in words, or possibly images or other symbols, consciously asserted or denied; for these, in my view, are the most proper subject for logical criticism" (1927, p.59).

assuming that a great deal of human action resembles that of other animals in resulting from immediate perceptions (cf. Nanay 2014), there is no need, in seeking to explain it, to resort to the temporally extended deliberation assumed by the *desire x belief* model.[10] Whilst not denying outright that some decision making requires cognitive processing, Nanay (2013b, Chapter 5) draws attention to the many instances where this is not required. Hence, he advocates a model of action-representing perception that relies on the relatively fast-acting review of future alternatives that occurs within "pragmatic mental imagery" rather than a process of extended problem solving. The inescapable import of this argument is that, *ceteris paribus*, perception ought to supersede belief in the explanation of action.

The proposal of pragmatic representation represents an important advance in the philosophy of mind: it is a practical means of implementing the consequences of an argument found more widely in the philosophy of mind. Searle, for instance, writes that

> [I]t is a mistake to think of beliefs and desire as the primary forms of cognition and volition, wrong because they both lack the internal causal self-referentiality which connects cognition and volition to their conditions of satisfaction. Biologically speaking, the primary forms of Intentionality are perception and action, because by their very content they involve the organism in direct causal relations with the environment on which his survival depends. (1983, pp. 104—5)

Dissatisfaction with the *desires x beliefs* approach has been expressed frequently (see also Carlson, 1997) but it is comparatively rare for a positive conceptualization of the

---

[10] In fact, there may be good reason to suspect that, evolutionarily speaking, it might not always be economically viable to have a belief-based system controlling our actions, when more simple systems could do it more efficiently. As Dennett's slogan version of a principle of economy suggests, "Competence without comprehension is Nature's way" (2017, p.84; cf. also p. 336). This, in turn, fares well with Nanay's (2013b, §2) idea that pragmatic representations are economical.

perception—action connection which this entails to be advanced[11]. Pragmatic representation offers a valuable means of conceptualizing a relationship which philosophy has anticipated as well as a potential methodological direction for the cognitive social psychology of attitude—intention—action consistency. The latter depends, however, on there being a route from the conceptual level of analysis to the empirical investigation of perception—action connections.

An interesting corollary of Nanay's development of the concept of pragmatic representation suggest a way of bridging this conceptual—empirical gap. This is his argument that the contents of these perceptual entities are demonstrably related to the actions that follow from them, and that this accords with a reworked version of Ramsey's (1927/1990) claims for the methodology of success semantics. Nanay argues that, according to Ramsey, success semantics was not supposed to be applied to propositional attitudes as complex as human beliefs, and, indeed, he believes that while beliefs are incapable of fulfilling this idea, simpler mental precursors of action such as the *perceptions* he terms pragmatic representations can do so.

Here we will not contend that Nanay is (un)justified in restricting the scope of application of Ramsey's principle to pragmatic representations (Nanay reconstructs a back and forth between proponents and critics of success semantics worthy of a longer consideration elsewhere).[12] Instead, we wish to argue that insofar as the content of perceptual

[11] For further discussion of the perception—action perspective in philosophy, see for instance: Hutto, 2009; Hutto & Myin, 2017; in the context of archaeological material engagement theory, see Malafouris, 2016; Malafouris & Renfrew, 2010; for a neuro-psychological standpoint, see for example Zanker, 2010.

[12] Interestingly, some forms of representations arguably shared with other animals, like cognitive maps (e.g. Blackburn, 2005), which may similarly guide beliefs while not being obviously linguistic, would classify as pragmatic representations in his terminology. There might be some sophistication to an agent's mental projection of a map which may be lacking in more simple pragmatic representations, yet, cognitive maps could successfully guide an agent that walks half-asleep through their house late night, while it is pitch black and the agent decides not to turn on the light so as not to become so mentally active as not to be able to fall

constructs can play a part in an empirical scientific psychology, it is first necessary to ascertain the content of the individual's desires and beliefs. This renders beliefs indispensable to scientific explanation and has implications for Nanay's proposition that *desire x belief* modeling can be replaced by perceptual constructs.

3. Success semantics

Ramsey (1927/1990) proposed that a belief's content is determined by the success conditions of actions to which the belief leads. (For critical evaluation, see, for example, Bermúdez, 2003; Blackburn, 2005; Dokic & Engel, 2001, 2004; Dretske, 1988; Nanay, 2013a, 2013b; Sahlin, 1990; Whyte, 1990, 1993, 1997.) As Bermúdez summarizes it, Ramsey's claim entails "first, that we need to approach the truth conditions of beliefs through their utility conditions and, second, that these utility conditions should be understood in terms of the satisfaction of desires" (2003, pp. 54—5). In Bermúdez's understanding of success semantics, the ascription of desires and beliefs must be constrained by understanding what conditions would satisfy the desires and what utility the beliefs would have in the satisfaction of the desires through the promotion of particular actions.[13] This is necessary to the formulation of more specific and above all testable predictions. Success semantics is, therefore, consonant with standard scientific method in that it permits the examination of such predictions in light of the outcomes of actions that are publicly observable. It is in this context that we would like to examine some of the ramifications of success semantics,

---

back to sleep. It might similarly be able to guide an agent's action without them knowing how the world is, as when, in Mendes's film *1917* (2019), Schofield's life depends on him trusting Tom Blake to guide him through jumping over a hole while he is temporarily blind. Examples like these Nanay would treat as mixes of proprioception and quasi-representational "pragmatic mental imagery" (cf. Nanay 2013b, p. 29 & §5, or Nanay 2015).

[13] It should be noticed that success semantics was not originally intended as a theory of content *ascription*, although everyone can agree that such theory would make a beneficial contribution.

notably in connection with the arguments that applies to perceptions rather than beliefs and that perceptions ought to replace the *desires x beliefs* model in the philosophy of action and, presumably therefore, theoretical psychology. For Ramsey, the content of a belief is but the success conditions of actions based on the belief; hence, "any set of actions for whose utility *p* is a necessary and sufficient condition might be called a belief that *p*, and so would be true if *p*, *i.e.* if they are useful." (1927/1990, p. 40).

For example, that "it is raining" is the content of a belief, *p*, that is true if it is useful: if, say, holding this belief, an agent holds an opened umbrella above their head. The success conditions of this belief are determined by the usefulness of the action it gives rise to. This supposes that the agent also has an appropriate desire, such as to keep dry. As Whyte puts it,

> Ramsey's Principle _{Whyte}: "A belief's truth condition is that which guarantees the fulfilment of any desire by the action which that belief and desire would combine to cause." (1990, p. 150; see also Whyte 1993, p. 84)

True beliefs, then, are "functions from desires to actions that will cause believers to behave in ways that will satisfy their desires" (Bermúdez, 2003, p. 65). The content of a belief is its "utility condition," *i.e.*, the condition that would need to be brought about in order that the desires associated with it would be satisfied. "In brief, true beliefs cause actions that satisfy desires" (Bermúdez, 2003, p. 68): if an agent believes that *p*, then *p* is the utility condition of the agent's belief.

Bermúdez's (2003) criticism of Ramsey's claim bears on what he sees as a conflation of actions and beliefs. First, Ramsey's statement evinces a commitment to a strong form of behaviorism. According to Ramsey, he notes, the belief that *p* should be identified with those actions whose utility conditions are given by *p*. Ramsey, moreover, defines a belief as a set of actions, going on to claim that a belief is a function *from* desires *to* actions. But if beliefs are actions this cannot make sense. True beliefs cannot, therefore, be "functions from desires to actions." Moreover, actions cannot combine with a desire to form an action. Hence, a belief

must not be seen as coterminous with the actions it purportedly explains (Dokic & Engel 2002 and 2005 are especially clear on this point).

While Whyte's restatement of Ramsey's success semantics, quoted above, avoids the objections raised by Bermúdez, Whyte himself raises an objection of his own to Ramsey's claim. The first is that an action's outcome relies on *several* of one's beliefs; we cannot isolate a single belief the truth of which could be fixed by a particular action coupled with a particular desire. So, in the example of keeping dry, this outcome depends on the belief that it is raining, plus the belief that using this umbrella will keep one dry, plus the belief that falling rain is prevented from reaching one's head by the intervention of the fabric of the umbrella, plus the belief that water is wet… and so forth.

A second objection, raised independently by Perry (1993, p. 202) and Brandom (1994, p. 177), is that the truth of all our *relevant* beliefs cannot guarantee the successful performance of an action because there may be all manner of *unforeseen circumstances* that intervene to prevent it. This can be removed by arguing that we also have the belief that there are no impediments to the completion of the action – following these authors, we may call them *no-impediment beliefs*, as later did Whyte (1997, p. 86).

We may, however, still be motivated to perform an action even if we do not have absolute no-impediment beliefs: we may simply hold that it is *probable* that we shall succeed. Our mental state does not guarantee success; it merely says that success is likely. This, Nanay suggests, is a better way of understanding no-impediment beliefs but, he claims, in the process it renders success semantics vacuous, unless its scope is restricted. Nanay (2013a, p. 156) thus suggests "that the content of some simple mental states could be explained in this manner: the content of *some of* an agent's mental states is fixed by the success conditions of her actions", where by "fixed by" we should interpret as being "identical with". On this basis, he proposes that principles that are similar to but not the same as Ramsey's principle can

apply to relatively simple mental events such as the pragmatic representations with which he is concerned.

Nanay's reformulation of success semantics deviates in two ways from Whyte's. First, Nanay (2013a) maintains that success semantics is relevant to no more than a subset of mental events, namely pragmatic representations. Second, the accuracy of these mental states gives no assurance of the success of any action.[14] A first approximation of his position is that the accuracy of a pragmatic representation increases the probability of the successful performance of the action of which this pragmatic representation is the immediate precursor. The content of the perceptual pragmatic representation is therefore expressed probabilistically, rather than being well-determined. Hence, even an accurate pragmatic representation does not ensure a successful outcome: rather, if the pragmatic representation is correct, then the *probability* of, say, an agent correctly picking up and holding the pen and writing with it (if this were the agent's desires) will increase. The accuracy of an agent's pragmatic representation increases the likelihood of their succeeding in the action which it immediately antecedes.

The import of this reasoning is that success semantics apply only to some mental events, namely pragmatic representations. The more correct a pragmatic representation is, the greater the likelihood that an action of which this pragmatic representation is the immediate precursor will be successful. The correctness of the pragmatic representation increases the probability that the action of which it is the immediate antecedent will succeed.

However, Nanay further points out that this resolution can be viewed in either a weak sense of probability raising and a strong sense of probability raising. In the weak sense in which such probability raising can occur, *any* mental event can increase the probability of

---

[14] Unfortunately, Nanay does not develop a theory of the contents of desires, nor does he explore the conative elements of action, although he does claim that no action is ever completely non-emotional.

success, as long as there is no additional mental entity that can impede the successful performance of actions that would be consistent with the pragmatic representation. (In this, Nanay follows Blackburn, 2005.) In this case, which is that of the original success semantics, we can conclude that even a *belief* is such a mental event as long as we assume that there is nothing else of a contradictory nature going on in the mind, nothing that would override the belief and thwart the action. But we cannot make such an assumption and a success semantics based on this weak portrayal would be very limited if not useless.

In the strong view, a mental state raises the probability of success of whatever action is based directly upon it irrespective of what else is happening in the actor's mind. By this, we understand Nanay to mean that whatever else might be going on in the actor's mind must be of such a nature that it cannot interfere with the mental event that is the focus of our analysis, that whose accuracy enters into the determination of the success of an action to which it directly leads.[15] Nanay adopts this strong view, arguing that it is the case for pragmatic representations: "The correctness of a pragmatic representation, R, is C if and only if C raises the probability (strong sense) of the success of the action R is the immediate antecedent of" (Nanay, 2013a, pp. 160—1). But, since there are *several* actions the success of which is raised, in this strong sense, by a pragmatic representation, Nanay further refines his proposal by arguing that C is the correctness condition of the pragmatic representation, R, if and only if C increases the probability (in the strong sense) of the success of the action of

---

[15] This strong empirical claim is argued for in a footnote (2013a, fn.9) (and again at greater length in § "Pragmatic Representations" of his 2013b). Although strong empirical claims require strong evidence, Nanay admits in this footnote that there are conflicting interpretations of the studies on which he basis this claim. For the sake of his general argument, we will assume this empirical premise holds true – an appreciation of the evidence in favour of this premise would demand a lengthier exposé than we can offer in this essay, and is probably due given that the studies on which Nanay justifies his claims date more than 20 years.

which R is the immediate precursor *and* this action is not the proper part of any other action the probability of whose success is raised by R.

We may ask, for example: If the immediate mental precursor of the action of picking up the pen in front of the agent is R, what is the content of R? The correctness of R is the factor that increases the probability that the action of picking up the pen will be successful. It does so, however, only in the weak sense, since, if an agent has the wrong notion of how to pick up a pen, their action will not succeed. R's accuracy increases the probability of their picking up the pen in the strong sense, but it increases that of their holding it or of writing with it only in the weak sense. This is because there is a single action, the probability of the successful completion of which R is likely to increase. If they have the wrong notion of how to hold the pen or to write with it, the probability of their successful execution of these actions is unaffected by the accuracy of R.

Having pointed out that there can be no suggestion that the success of the action is guaranteed, Nanay is clear that, anyway, his claim applies only to one sort of mental event, namely pragmatic representations. But he argues that by imposing these limitations on the original success semantics he can overcome Whyte's objections. First, by basing his claim singularly on the success conditions, C, of the mental event that immediately precedes the action, that is the appropriate pragmatic representation, R, he avoids the charge that any other mental events that may be in the actor's mind could interfere with the efficacy of this representation. Second, he avoids the charge that the success of an action might be subject to unforeseen circumstances; since a pragmatic representation does not assure the success of the action but simply increases its probability of occurrence, there is no suggestion that Whyte's no-impediment beliefs, with all their implications, are necessary.

Nanay thus believes that unforeseen circumstances are not a problem. However, like Dokic & Engel, we are not so sure this solves the problem. Alas, Nanay pays no mention to their work, but they express the belief that "[t]he cognitive overload objection also

jeopardises a weaker, probabilistic version of RP, according to which the truth of our beliefs raises the probability that actions caused by them will be successful" (Dokic & Engel 2002, p. 66), for the set of no-impediment representations of relevance to even probabilistically increase the success of our actions is a set with potentially infinite-many members.[16] But let us grant Nanay's solution to Perry & Brandom's problem for the sake of the argument.

However, even assuming the success of these replies, it is not clear to us whether a probabilistic understanding of success semantics can be made successful, especially if Nanay avoids determining what contributes to increasing or decreasing probabilities (except from claiming on minimal evidence that beliefs are not involved in that determination process). The consequence of such move is, quite naturally, reflected in the contents of pragmatic

---

[16] To be fair, we should take notice that, according to Dokic & Engel, pragmatic representations cannot possibly accept a probabilistic success semantics, as they make clear in this passage which we found relevant to quote at length, where they speak of affordances: "let us consider the beliefs immediately justified by the perception of affordances. Normally, they are "absolute" instrumental beliefs, in the sense that they lack probabilistic elements. In a normal context, in which my perception of a chair is clear and distinct, my experience justifies the "absolute" belief that there is a chair in front of me. It would not be plausible to suppose that it can only justify the weaker belief that it is quite probable that there is a chair in front of me. If all that my perception could justify is this weaker belief, it would not count as a perceptual experience of a chair. Similarly, my perception normally justifies the belief that I could sit on the chair if I were to do such and such movements, and not merely the belief that these movements would quite probably result in my sitting on the chair. The perception of affordances yields information about real possibilities of action and reaction. The door appears to me as if it can be opened, and when it cannot be opened, my surprise indicates the presence of an illusion or misinformation. If perceptual affordances justify instrumental beliefs, the latter are most often of the form "If I do p, then q" rather than of the form "If I do p, then probably q"." (Dokic & Engel, 2002, p. 69). In case you might worry whether affordances are at all like pragmatic representations, be assured that Nanay (2013b, p.12) believes that they are (cf. also Witzel, 2020, p.151). Indeed, the literature subsequent to Gibson approximates even more the concept of affordances to pragmatic representations, as ecological psychologists have forlorn the problematic Gibsonian metaphysics of direct realism (as Nanay does), and have come to speak of affordances as action potentialities (see also Bickhard 2009, pp. 570-1).

representations, which must remain underdetermined (cf. de Prado Salas 2018, p. 18, for a similar development of these criticisms)[17]. Moreover, the source of this underdetermination must extend beyond the pragmatic representations themselves, for Nanay tells us that they do not constitute the totality of the immediate precursors of actions, so we similarly need an account of the contribute of other precursors.

These challenges notwithstanding, the logic of success semantics provides a means by which the philosophical conception of pragmatic representation might be of value to the psychology of perception since it suggests a methodology for empirical research. We propose that if the content of pragmatic representations can be ascertained by sampling individuals' corresponding beliefs, then the relationship between pragmatic representation and behavior can be observed. In §4 we describe this methodology on the understanding that the content of such beliefs, and by implication of their corresponding pragmatic representations, are empirically available.

4. The indispensability of belief

In this section we will argue that conceptual knowledge plays a vital part in the explanation of action in terms of perceptual experience. While accepting Nanay's argument that success semantics applies to perceptual pragmatic representations, it seems likely, contrary to his general thesis that conceptual reasoning can be supplanted by perceptual in the explanation of action, that both desires and beliefs still play an important role in the process

---

[17] Nanay (2013a, p.160) also drops off truth-based terminology for correctedness-based terminology, in the process making of success semantics not a truth-conditional semantics (contrary to what he says), but an accuracy-conditional semantics. It might be the first time that such a theory has been suggested, alas, he does not develop the theme. It would be particularly interesting to explore what are these mysterious entities that are the bearers of accuracy for pragmatic representations if they are not to be understood as propositions.

of ascertaining the content of pragmatic representations by reference to the success of the actions based upon them.

We shall illustrate this principally in the context of beliefs since these are the propositional attitudes with which Nanay specifically contrasts pragmatic representations and which he seeks to displace as the foci of success semantics. But previous to that, a few words on the indispensability of desires are also in order. Moreover, both desire and belief are essential components of the use of the logic of success semantics in the third-personal psychological evaluation of perceptual constructs such as pragmatic representation.

As we have previously shown, at the foundations of success semantics is Ramsey's Principle. But if success semantics is reformulated, as Nanay proposes, in terms of a perception such as pragmatic representations rather than a belief, and if desire is retained as a necessary precursor of the framing of the pragmatic representation,[18] then we shall have to understand the success semantics claim as

> Ramsey's Principle Nanay: the truth-condition of that perception which is the
>
> immediate precursor of action is that which increases the probability of the
>
> fulfillment of any desire by the action which, combined with that desire, the
>
> perception would cause.

This restatement incorporates Nanay's proposals that pragmatic representations rather than beliefs are the subject of the success semantics claim and that they increase the probability of an action without necessarily entirely determining or guaranteeing it. However, its acceptance entails that we accord desires a role in the explanatory process. Invoking pragmatic representation in the explanation of an action would make no sense unless a desire to perform the action were entertained. This inclusion of desire in the process of explicating

---

[18] We should take notice that Nanay's work on success semantics is almost entirely silent about the relationship between desires and pragmatic representations, but surely, as we shall see, motivational elements are required for the successful completion of any action.

action is the first argument in favor of referring to the actor's conceptual knowledge in order to explain their actions.

While perceptions entail knowledge by acquaintance, beliefs take the form of knowledge by description (Russell, 1912). Knowledge by acquaintance emerges through direct experience, as in an agent's sensing the warm water on their face even before they realize that there is a summer shower; knowledge by description, by contrast, consists in propositional statements such as an agent's announcement that it is raining. In the first case, the agent's knowledge is non-propositional: they just know how things are; in the latter, it is propositional: all within hearing of the agent (including the agent), now know that p. For all that knowledge by acquaintance is nonpropositional, it is genuine knowledge: it is through knowing by acquaintance that we understand at all what consciousness is. Knowledge by acquaintance is a prerequisite to knowledge by description and propositional knowledge would be impossible without it. It is knowledge by acquaintance which, by providing implicit understanding of the mental phenomena, legitimizes our using mental language to make our own and others' behavior intelligible, to the extent that the limitations of our introspection permit. Knowledge by acquaintance is, therefore, prior to knowledge by description. Even if an agent is, say, a research biologist, their knowledge of photosynthesis is by description; but, whoever that agent is, their knowledge of their elation is by acquaintance. As McGinn (2004, p. 8) puts it, "No propositional knowledge would be possible unless we know some things in a non-propositional way." We propose, therefore, that Russell's distinction is sufficient to distinguish perceptions like pragmatic representations from propositional knowledge as it is expressed linguistically in beliefs, and that knowledge by acquaintance is logically prior to knowledge by description. It is based on these reasonable assumptions of empirical psychology that we will mount our criticism of Nanay's application of success semantics to pragmatic representations.

A crucial premise of our criticism is that perceptual experience is an abstract entity which, even if it be real and conscious to the person whose experience it is, has no third-personal availability. This is an acknowledgement of the status of perceptual experience as *autophenomenal* rather than *heterophenomenological*.

Heterophenomenology is a procedure for obtaining a third-personal account of the first-personal (hence, subjective and private) thoughts and feelings which are an individual's personal responses to environmental cues (Dennett, 1991; see also, within a large literature on heterophenomenology, Dennett, 1982, 2005.) This attempt to translate subjective experience into a public form that can be employed in scientific analysis comprises the following sequence: (a) conscious experiences, (b) beliefs about these conscious experiences, (c) verbal expressions of these beliefs, and (d) the spoken and/or written utterances that make the subject's knowledge by description of their experience publicly available. The point of heterophenomenology is to generate data from conscious experience, or about the qualia of individual's phenomenological responses, which exists only as knowledge by acquaintance. This data can then be employed by trained interpreters in the quest for an account by which hypotheses about the individual's actions can be tested, and explanation thereof proffered. While (a) consists in knowledge by acquaintance, (b) is the individual's knowledge by description thereof, which then becomes verbalized (c), and is finally transformed into the knowledge by description of the investigator (d) which forms the primary (third-personal, public, amenable to scientific inquiry) data required for heterophenomenological analysis.

The import of this is that perceptual experience itself remains an empirically unavailable entity (except to the person whose experience it is) that cannot enter directly into scientific analysis. It is an abstraction derived from a statement of belief. As such, it belongs, heterophenomenologically, to (a) conscious or unconscious experience which is knowable, if at all, through the expression of (b) beliefs about this experience and (c) verbal expression thereof. Although pragmatic representation is therefore a conceptual necessity for

20

understanding and defining action, exactly as contingency-representation is, neither is an experimental or directly discernable entity for scientific analysis (as there are no agreed upon observations of them).

This is a matter of revealing the nature of perceptual experiences such as contingency-representations, even when they are conscious (which they may not necessarily be): they are not empirically available for scientific analysis. They cannot be made available publicly in the third-personal manner which science requires. They consist in knowledge by acquaintance and their communication to ourselves and others requires their translation into knowledge by description. Knowledge by acquaintance is, moreover, prerequisite to knowledge by description: perception is necessarily prior to belief (cf. McGinn, 2004).

Making empirical sense of pragmatic representation, therefore, requires us to make a distinction between two kinds of content which we hereby dub the *stated* and the *manifest.* The *stated* content of the perception is expressed by the belief that is inferred from the perception, while its *manifest* content is that which is revealed to us by the success conditions of our actions as they are guided by our pragmatic representations. Where perception is unconscious and not therefore capable of giving rise to articulated beliefs, it may be inferred causally from the nature of the action in which it is theoretically implicated. Expectedly, the stated and the manifest content may differ while referring to the same things, but some degree of resemblance between the contents must be preserved which allows for the identification of the percept.

We must distinguish between the *stated* content of perceptions, i.e., what they refer to when they are verbalized, and their *manifest* content which is that which is established by the success conditions of the actions to which they give rise. So, an agent's perception may be that it is raining and this may be expressed verbally as the belief that it is raining. So, the agent takes an umbrella when they go for their morning walk and as a result they do not get wet when it rains.

21

Admittedly, if we are to use success semantics to evaluate pragmatic representations or, more to our intentions, contingency-representations, we must conceptualize them as perceptions rather than beliefs. But we can only know their stated content by their conceptual expression as beliefs. When we use the stated content of pragmatic representations in order to arrive at their manifest content as conceived by a success semantics, we are attempting to determine the manifest content of the perception rather than the belief. How does this formally accord with scientific practice?

Scientific explanation requires that the dependent and independent variables that feature in the formulation and testing of a hypothesis be amenable to third-personal observation and agreement. Perceptive experience of the kind presumed by the concepts of pragmatic representation and contingency-representation is, therefore, not amenable to direct scientific analysis since it consists in knowledge by acquaintance which is available only to the experiencer. Perceptual knowledge/experience can be evinced in the explanation of action only if its content can be included in a hypothesis that can be tested by the nature of the action that follows from it (Figure 1).
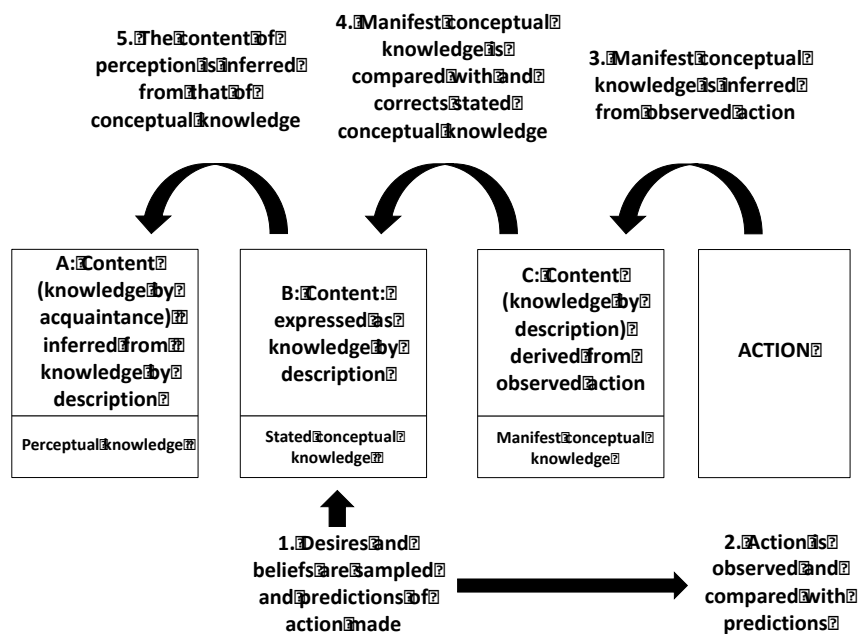
Figure 1. The determination of the content of perceptual knowledge: scientific (steps 1, 2, 4) and interpretive (steps 3,5) procedures.

The scientific element of this procedure, that which relies on third-personal observation, comprises steps 1, 2, and 4, inheres in the sampling of desires and beliefs and their incorporation into predictions of action, the observation of the requisite action, and the determination of the veracity of the predictions as expressed by beliefs. This involves the compilation of the knowledge by description that comprises conceptual knowledge and its comparison with the action that follows from the beliefs and desires that comprise this knowledge. It also requires the correction of the stated content of the respondent's desires and beliefs in light of the nature of the observed action. As part of the concomitant interpretive procedure, which is aimed toward the heterophenomenological establishment of the content of the knowledge by acquaintance that comprises the individual's perceptual experience, the manifest content of the mental precursors of the action are inferred from the action itself (step 3) and this is compared with the stated content obtained by psychometric means which it corrects *as a preliminary to further scientific testing* (step 4).

However, the possibility that pragmatic representation may provide a basis for empirical psychology is complicated by the possibility that it may not be amenable to knowledge-by-acquaintance. For Nanay (2013b, §2) challenges the view that pragmatic representations are for the most part conscious. As he puts it, "[p]ragmatic representations are not normally accessible to introspection" (2013, p. 80). Rather they are to be inferred from behavior, albeit "fine grained motor behavior and not verbal behavior" (personal communication). Now, this restriction of the kind of perception that is relevant to the use of success semantics to determine the truth-condition of pragmatic representation is problematic from the viewpoint of an empirical psychology since it does not allow perceptual content to be ascertained independently of its inference from the action of which it is the cause. To

suppose *a priori* that the execution of an action necessarily requires particular pragmatic perceptions of which the individual is unaware and then to employ these in the explanation of the actions is far removed from the kind of empirical psychology which has characterized behavioral science over the last century, though this practice may be more common in some fields of cognitive neuroscience (see, for instance, Gazzaniga *et al.,* 2019). Moreover, whilst we can theoretically ascertain perceptual content in the case of a pragmatic representation of which the individual is conscious, even if at a most minimal level of awareness, it is not possible to do so in the case of an unconscious perception, despite the reasonable assumption that they will similarly have action properties. This means that pragmatic representations, for the most part, cannot be shown relevant to the causation of action except on the basis of an assumption that these fine-grained perceptions must necessarily precede successful actions such as lifting a cup or reaching for a gear stick.

Now, reaching for a gear stick and changing gear raises a further consideration. These are actions that are often undertaken unconsciously at the time. An experienced and accomplished driver is often unaware that they effected such a change; however, they are capable of recapturing the action when this is pointed out – for example, if they are asked how come the engine is in third gear. A philosophically-inclined driver could respond to such a challenge by adumbrating the various feats of judgment that must have been inherent in their actions. If, as Nanay proposes, pragmatic representations are generally not of this kind, i.e., a kind that can be brought to mind, but involve permanently unconscious perceptual events, then it is difficult to imagine how they would feature in any program of psychological research conducted within the logic of success semantics which would establish the empirical relationship between a pre-behavioral perception and a subsequent action[19]. Unravelling, counterfactually or experimentally, the causal relations in which unconscious pragmatic

---

[19] This same concern would therefore similarly apply to Blackburn's 2005 proposal of applying a success semantics to cognitive maps and other structural representations.

representations operate, so as to approximate their contents, is, at best, methodologically embarrassing. Making the situation worse, it might so happen that pragmatic representations do not repeat themselves in the same way, or that their contents mutate as we bring our attention to them (after all, it seems to be fair to hypothesize that such bringing to our consciousness of a pragmatic representation would at least inflate their content by adding more texture to the representation).

In §3 we considered Nanay's argument that the content of those pragmatic representations of which the individual is capable of achieving consciousness can be ascertained in order to be of value to success semantics. Realistically, following the heterophenomenological methodology proposed by Dennett, the only hope of providing pragmatic representation with content is to take those perceptions which take the form of knowledge-by-acquaintance and allowing them to be translated into knowledge-by-description and hence the verbal behavior required to establish beliefs. We can then take the perceptual pragmatic representation with the identical verbal content as the basis of an empirical test based on the logic of success semantics. However, this is to suppose that pragmatic representation is consciously available to the individual as knowledge-by-acquaintance and that they can thereafter represent it as knowledge-by-description in the form of beliefs. By contrast, the "fine-grained motor behavior" by which Nanay proposes that pragmatic representations are constituted is so defined as to be unlikely to be detectable at all by either third-personal observation or first-personal reportage. If, therefore, the content of pragmatic representations cannot be empirically determined, perhaps by application of the methodology we have outlined, we are left with a conception the content of which is determinable only as an inference from the behavior it is intended to elucidate or even explain.

5. Discussion

Nanay's (2013b) conceptualization of pragmatic representations is closely bound up with his understanding of the nature of actions themselves. He first espouses the commonplace idea that what differentiates actions from other bodily movements is that actions are triggered by mental events. He goes on to point out that, whatever these antecedent mental states may be, they must represent the properties of the perceptual object that are necessary for the action. That is, they are representational. All actions, intentional or nonintentional, are therefore preceded by pragmatic representations. Before we can designate actions as intentional or autonomous, we need to be able to define what it is that makes them actions, something that can be done only in terms of their immediate mental precursors, pragmatic representations.

> Pragmatic representations are genuine mental representations: they represent objects as having a number of properties that are relevant for performing the action. As a result, pragmatic representations can be correct or incorrect. If they are correct, they are more likely to guide our actions well; if they are incorrect, they are more likely to guide our actions badly (Nanay, 2013a, pp. 157—8).[20]

Crucially, he argues that they are not beliefs, for, if they were they would be sensitive to other beliefs; but they are not.

As representations which mediate sensory input and motor output, pragmatic representations make it possible to carry out actions such as picking up a pen from the table. More accurately, they are "the representational components of the immediate mental antecedents of action" (Nanay, 2013b, p. 3). As perceptions, they have representational content, that is, their content is a portrait of the world in which we act. Lacking linguistic

---

[20] Notice that speaking of a representation as "having a number of properties" makes it suspiciously propositional; especially so if we consider properties to be expressible in predicates.

syntax and not being expressed neither in the form of propositional attitudes nor of a language of thought, they can nevertheless be right or wrong, and their accuracy inheres in their capacity to guide actions well or badly. In the case of the agent picking up a pen from the table in front of them, their pragmatic representations embody such properties as the spatial position of the pen, its size, weight, and so on: all factors that make it more or less probable that the agent's actions of reaching out and grasping will succeed in relocating the pen appropriately. In Nanay's terminology, these properties are action-properties, and an important function of pragmatic representations inheres in the attribution of these properties (Nanay, 2013b, p. 4). Their very corrigibility renders them open to scientific evaluation.

Nanay proposes that pragmatic representations' being perceptions renders their content amenable to determination by means of success semantics. However, since perceptions are not empirically available for scientific analysis, their content can be revealed only in the form of beliefs, desires, and other propositional attitudes derived from them: the knowledge by acquaintance in which perceptual experience inheres is publicly knowable only by its expression as knowledge by description. This stricture clarifies the nature of pragmatic representations as logical inferences from action including verbal actions that embody beliefs. There is, therefore, a need to distinguish the "stated" content of pragmatic representations, which depends on considerations of logical inference, from their "manifest" content, which flows from the success conditions of actions derived from such beliefs and, by extension, from their underlying perceptual experience. The beliefs and perceptions whose content is being tested must be stated prior to the performance of the actions based upon them. This is the stated content. The success conditions of the actions determine the manifest content of beliefs and perceptions which correctly prefigure the actions. If the stated content

is identical to the manifest content, then the beliefs and perceptions bearing this content are true.[21]

Therefore, making empirical sense of pragmatic representation requires also an acknowledgement that the stated content of perceptual representations can be ascertained either by deriving beliefs from them (when the perceptions are conscious and can be publicly articulated) or from a logical analysis of the kinds of perceptions that would be necessary for the performance of particular tasks. If, as Nanay points out, the method of success semantics applies solely to pragmatic representations and to no other representational vehicles, we are dependent upon either the heterophenomenological method and/or a logical deduction from the nature of actions in order to determine the nature of the perceptions we assume in order to complete our scientific analysis.

This reasoning does not invalidate Nanay's conclusion about the susceptibility of perceptions, but not beliefs, to analysis in terms of the success of the actions to which they give rise as long as we accept that perception is a logical precursor of action and acknowledge that we need to establish the stated content of pragmatic representations through analysis of beliefs presumed to derive from them and/or a logical regression from the nature of actions to their perceptual requirements. It does, however, clarify the nature of pragmatic representations, contingency-representations, and other conceptions of perceptual experience. They are inferences, concepts employed to aid explanation but not able in their own right to enter into a scientific analysis. They are inferred on the basis of individuals' verbal (or other behavioral) responses to environmental stimuli and/or a logical analysis of the perceptual operations that would be necessary for the discharge of a particular action.

---

[21] However, given the way language constraints our expression of what we perceive, we wonder whether the stated content could in principle ever be identical to the manifest content – and we suspect this might only become more problematic if one is to be understood non-propositionally and the other propositionally, as Nanay would have it.

Nor does this analysis in and of itself invalidate Nanay's drawing attention to the importance of including perceptions in the explanation of action, a proposition he does not in any case present as a call for the exclusive reliance of researchers on non-cognitive mental precursors of action.[22] In any case, making a case for the indispensability of desires and beliefs in accounting for action, as we have attempted to do, remains a far cry from substantiating *desire x belief* modelling as an exclusive source of explanation. It does, however, identify an instance in which his proposal that beliefs and other cognitive variables may sometimes be necessary to account for aspects of complex action might be realized. Though one might be found wondering whether, as in common with other proposed alternatives to desire x belief psychology, "one ends up explaining something different than what belief-desire psychology explains" (Orlandi, 2014; cf. also Ward, 2015), as his emphasis on actions like the unconscious grabbing of a pen could perhaps be considered a mere movement and not a putative case of an action (cf. Nanay 2013, §4.3.2-3).

But the most crucial lesson to take home from this essay is that the insistence that pragmatic representation is so thinly constituted as to be imperceptible to human consciousness renders the conception problematic for both empirical psychology and the success semantics to which Nanay has hoped to contribute. Perhaps a more attentive look at the individual success semantics programmes of Papineau (1987; 1990; 1993; 2016), Dokic & Engel (2002; 2005), Bermúdez (2003), Blackburn (2005), and Mellor (2012) (or others still) could reveal further nuances to this debate and to our criticism, but we believe there are no reasons to suspect they would stand in the way of our argument running, as the different programmes are similar in the relevant ways, even if some of these authors also have their doubts on belief x desire psychological models of action (e.g. Blackburn, 2005, pp. 34-6) or

---

[22] Insofar as it is legitimate to speak of perceptions as being non-cognitive (predictive-processing accounts of perception may oppose such a conception).

differ in their scope of application of success semantics. A success semantics simply does not fit well with the empirical psychology of pragmatic representations as understood by Nanay.

Acknowledgements

References

Bermúdez, J. L. (2003). *Thinking Without Words.* Oxford University Press.

Bickhard, M. H. (2009). The interactivist model. *Synthese*, *166*(3), 547-591.

Blackburn, S. (2005). Success semantics. In D. H. Mellor & H. Lillehammer (eds.), *Ramsey's legacy* (pp.22–36). Oxford University Press.

Brandom, R. (1994). Unsuccessful Semantics. *Analysis*, *54*(3), 175–178.

Carlson, R. A. (1997). *Experienced Cognition.* Psychology Press.

Davidson, D. (1980). Mental events. Reprinted in D. Davidson. *Essays on Actions and Events* (pp. 207—227). Clarendon Press.

de Prado Salas, J. G. (2018). Still Unsuccessful: The Unsolved Problems of Success Semantics. *Theoria*, *33*(1), 5–22.

Dennett, D. C. (1982). How to study consciously, or nothing comes to mind, *Synthese*, *53*, 159—180.

Dennett, D. C. (1991). *Consciousness Explained*. Little Brown.

Dennett, D. C. (2005). *Sweet Dreams: Philosophical Obstacles to a Science of Consciousness.* MIT.

Dennett, D. C. (2017). *From Bacteria to Bach and Back: The Evolution of Minds*. W. W. Norton.

Dokic, J. & Engel, P. (2001). *Frank Ramsey: Truth and Success.* Routledge.

Dokic, J. & Engel, P. (2004). Ramsey's Principle Re-situated. In Mellor, D. H. and
      Lillehammer, H. (Eds.) *Ramsey's Legacy* (pp. 8-21). Oxford University Press.

Dretske, F. (1988). *Explaining Behavior: Reasons in a World of Causes.* MIT Press.

Gazzaniga, M., Ivry, R. B. & Mangun, G. R. (2019). *Cognitive neuroscience: The biology of
      the mind. Fifth edition*. Norton.

Hornsby, J. (1980). *Actions*. Routledge and Kegan Paul.

Hutto, D. D. (Ed.) (2009). *Narrative and Folk Psychology.* Imprint Academic.

Hutto, D. D. & Myin, E. (2017). *Radicalizing Enactivism: Basic Minds without Content*. MIT
      Press.

Malafouris, L. (2016). *How Things Shape the Mind: A Theory of Material Engagement*. MIT
      Press.

Malafouris, L. & Renfrew, C. (Eds.). (2010). *The Cognitive Life of Things.* McDonald
      Institute for Archaeological Research.

McGinn, C. (2004). *Consciousness and its Objects*. Oxford University Press.

Mellor, D.H. (2012). Successful Semantics. *Mind, Meaning, and Reality: Essays in
      Philosophy*. Oxford University Press.

Millikan, R. (2004). *Varieties of meaning*. The MIT Press.

Nanay, B. (2011). Do we perceive apples as edible?. *Pacific Philosophical Quarterly,
      92*, 305-322.

Nanay, B. (2012). Action-oriented perception. *European Journal of Philosophy, 20*(3), 430-
      446.

Nanay, B. (2013a). Success semantics: the sequel. *Philosophical Studies, 165*, 151—165.

Nanay, B. (2013b). *Between Perception and Action*. Oxford University Press.

Nanay, B. (2014). Naturalizing Action Theory. In Sprevak M. & Kallestrup J. (eds.), *New
      Waves in Philosophy of Mind - New Waves in Philosophy* (pp.226-241). Palgrave
      Macmillan.

Nanay, B. (2015). Perceptual content and the content of mental imagery. *Philosophical Studies*. *172*, 1723–1736.

Orlandi, N. (2014.07.29). Between Perception and Action. *Notre Dame Philosophical Reviews - An Electronic Journal*. https://ndpr.nd.edu/news/between-perception-and-action/.

Papineau, D. (1987) *Reality and Representation*. Blackwell.

Papineau, D. (1990) Truth and Teleology. In D. Knowles (ed.). *Explanation and its Limits*. Cambridge University Press.

Papineau, D. (1993). *Philosophical Naturalism*. Blackwell.

Papineau, D. (2016). Teleosemantics. In David Livingstone Smith (ed.), *How Biology Shapes Philosophy: New Foundations for Realism*. Cambridge University Press.

Perry, J. (1993). *The Problem of the Essential Indexical and Other Essays*. Oxford University Press.

Ramsey, F. P. (1927). Facts and propositions. *Aristotelian Society Supplementary Volume 7,* 153-170, reprinted in Ramsey, F. P.. (1990). *Philosophical Papers* (D. H. Mellor, ed.). Cambridge University Press.

Russell, B. (1912). *The Problems of Philosophy*. Home University Library.

Sahlin, N.-E. (1990). *The Philosophy of F. P. Ramsey*. Cambridge University Press.

Searle, J. R. (2001). *Rationality in Action.* MIT Press.

Ward, D. (2015). Between Perception and Action by Bence Nanay. *Analysis*, *75* (4), 684-686.

Whyte, J. T. (1990). Success semantics. *Analysis, 50*, 149—157.

Whyte, J. T. (1991). The Normal Rewards of Success. *Analysis*, *51*(2), 65-73.

Whyte, J. T. (1993). Purpose and content. *British Journal for the Philosophy of Science, 44*, 45—60.

Whyte, J. T. (1997). Success again: replies to Brandom and Godfrey-Smith. *Analysis, 57*, 84—87.

Wilson, G. & Shpall, S. (2012). Action. *The Stanford Encyclopedia of Philosophy*.

    https://plato.stanford.edu/archives/win2016/entries/action/.

Witzel, H.. (2020). *A Pragmatic Approach to Agency in Group Activity*. de Gruyter.

Zanker, J. (2010). *Sensation, Perception and Action: An Evolutionary Perspective.* Red

    Globe Press.