Intentionality, Representation, and Anticipation

Helena De Preester

Ghent University, Department of Philosophy
Blandijnberg 2, B-9000 Gent, Belgium
helena.depreester@rug.ac.be

Abstract. Both Brentano and Merleau-Ponty have developed an account of intentionality, which nevertheless differ profoundly in the following respect. According to Brentano, intentionality mainly is a matter of mental presentations. This marks the beginning of phenomenology’s difficult relation with the nature of the intentional reference. Merleau-Ponty, on the other hand, has situated intentionality on the level of the body, a turn which has important implications for the nature of intentionality. Intentionality no longer is primarily based on having (re)presentations, but is rooted in the dynamics of the living body. To contrast those approaches enables us to make clear in what way intentionality is studied nowadays. On the one hand, intentionality is conceived of as a matter of formal-syntactical causality in cognitive science, and in particular in classical-computational theory. On the other hand, an interactivist approach offers a more Merleau-Ponty-like point of view, in which autonomy, embodiment and interaction are stressed.

Keywords: Brentano, Merleau-Ponty, representation, intentionality, interactivism.

1 INTRODUCTION: PHENOMENOLOGY AND THE STUDY OF INTENTIONALITY

Both Brentano and Merleau-Ponty have developed an account of intentionality. Although they both stand in the phenomenological tradition, their views differ profoundly in the following respect. According to Brentano, intentionality mainly is a matter of mental presentations. This marks the beginning of phenomenology’s difficult relation with the nature of the intentional reference. Merleau-Ponty, on the other hand, has situated intentionality on the level of the body, a turn which has important implications for the nature of intentionality. Intentionality no longer is primarily based on having (re)presentations, but is rooted in the dynamics of the living body and is inherently anticipatory.

To contrast these approaches enables us to make clear in what way intentionality is studied nowadays. On the one hand, classical cognitive science has a Brentano-like conception of intentionality, which entails internalism with regard to intentionality. On the other hand, more recent approaches in the study of cognition take a critical stand against the classical approach and focus, in their account of intentionality, on embodiment, situatedness and interaction.

First, an outline of Brentano’s account of intentionality is given, to point out that his account encounters some serious problems. Moreover, these problems are, in important respects, similar to (notorious) problems classical cognitive science faces.

Secondly, we will turn to the early work of Merleau-Ponty in order to give an alternative approach to intentionality. This will be compared to more recent approaches, especially with regard to their radical criticism on representation and their stress on embodiment, situatedness and interaction as an alternative.

In so updating phenomenological insights, we pursue a coherent frame in which the main shortcomings and possibilities of classical and recent models of intentionality can be accounted for.

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1 Research Assistant of the Fund for Scientific Research – Flanders (Belgium) (F.W.O.-Vlaanderen).
2 Christensen and Hooker indicate the possibility of such a comparison. See for example, An interactivist-constructivist approach to the evolution of intentionality (to appear).
2 FRANZ BRENTANO’S ACCOUNT OF INTENTIONALITY

In Brentano’s psychology, every mental phenomenon, in contrast to physical phenomena, contains its object within itself. “Every mental phenomenon is characterized by what the Scholastics of the Middle Ages called the intentional (or mental) inexistence of an object, and what we might call, though not wholly unambiguously, reference to a content, direction toward an object (which is not to be understood here as meaning a thing), or immanent objectivity.”

Brentano does not make a distinction between two senses of “object”, the immanent object and the external object or referent. For him, an object is a mental content. Consequently, he only focuses on the Vorstellungen (ideas), which have, as for Descartes and the British empiricists, a central role to play: they are the basis of any mental activity.

Although Brentano does not deny that physiology and genetic psychology (which is mainly physiological in character) are important disciplines, he wants to delimit the field of his ‘descriptive’ psychology to the realm of the mental. Therefore, the mental and the physical are regarded as distinct phenomena, and psychology is exclusively the science of mental phenomena.

Physical phenomena are the object of external perception, and they are mere phenomena, which means that we have no right to believe that they exist in the same way as they appear to us. They are the object of the natural sciences. Of mental phenomena, in contrast, we have an immediate insight on the basis of inner perception, in such a way that we have clear knowledge and complete certainty of their existence. The relation between mental and physical phenomena is stated in the following: “We have seen what kind of knowledge the natural scientist is able to attain. The phenomena of light, sound, heat, spatial locations and locomotion which he studies are not things which really and truly exist. They are signs of something real, which, through its causal activity, produces presentations of them. They are not, however, an adequate representation of this reality, and they give us knowledge of it only in a very incomplete sense.”

To reduce psychology to physiology, nevertheless, will never be possible.

According to Brentano, presentations are the sole basis for any mental act, such as judgements, recollections, expectations, inferences, convictions, and all kinds of emotions. Oskar Kraus, adherent and editor of Brentano’s work, adds the following footnote to Brentano’s conception of mental phenomena: “Brentano consequently understands “mental phenomenon” to mean the same as “mental activity”, and what is characteristic of it, in his opinion, is the “reference to something as object”, i.e. being concerned with something. With this the word φαντασία has become mere “internal linguistic form”. Although his remark is somewhat surprising, Brentano’s conception surely is easily reconcilable with Kraus’ (interpretative) remark. We will return to this.

Every mental phenomenon is not only directed to a primary object (i.e. a physical object, for example a sound), but also to itself (the act of hearing a sound). A mental phenomenon thus takes itself as secondary object, which provides the inner experience of our mental act. We do not only hear a sound, but also experience that we hear a sound. For short, there not only is a Vorstellung of the sound, but also a Vorstellung of the Vorstellung of the sound.

Moreover, every mental act is accompanied by a judgement, the inner perception, which is an immediate and evident cognition of the act. There also is a third kind of consciousness related to it, a feeling which refers to the act, such as pleasure or displeasure. In summary: “Every mental act is conscious; it includes within it a consciousness of itself. Therefore, every mental act, no matter how simple, has a double object, a primary and a secondary object. The simplest act, for example the act of hearing, has as its primary object the sound, and for its secondary object, itself, the mental phenomenon in which the sound is heard. Consciousness of this secondary object is threefold: it involves a presentation of it, a cognition of it and a feeling toward it.” But also the primary object can be present in consciousness in a threefold way.

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3 This account is mainly based on Franz Brentano’s (1995 [1874]). Brentano does not use the term ‘intentionality’.
4 Ibid., p. 88.
5 Ibid., p. 19.
6 Concerning the relation between the mental and the physical (sciences), Brentano says the following in the context of sensation: “The investigation of the primal mental elements is mainly concerned with sensations, since sensations are undoubtedly a source of other mental phenomena, and more than a few scientists assert that sensations alone are the source of all phenomena. Sensations are effects of physical stimuli. Their origin is thus a psychophysical process. It is for this reason that physiology, especially the physiology of sense organs, provides appreciable help to psychology here.” Ibid., p. 46.
7 Ibid., footnote, p. 79.
8 As the Vorstellung and the Vorstellung of the Vorstellung form a single mental phenomenon, and only are conceptually divisible into two, this does not lead to an infinite regress or the acceptance of an unconscious.
10 A negation cannot occur in reference to the secondary object, as inner perception (which is a judgement) is evident. But we can deny qualities or combinations of qualities of primary objects.
In general, Brentano says that “presentation deserves the primary place, for it is the simplest of the three phenomena, while judgement and love always include a presentation within them.”\(^1\) The Vorstellung is the most independent of the three, since it is the foundation for all other mental phenomena.

Let us now have a look at the following question: How can I affirm, in Brentano’s theory, that something exists? Brentano answers: “But absolutely the only thing which is presented [in a person judging that thing exists] is a person who is making the judgement concerned [i.e. that a certain something exists], and we judge that insofar as we are thinking of such a person, we are thinking of someone who judges correctly.”\(^2\) Brentano’s reasoning is not just odd, but reveals his epistemic position. Brentano does not, and cannot, hold a correspondence theory of truth, because a judgement is not compared to reality, but knowledge is compared to knowledge. A judgement is true if it is evident or if it can be reduced to an evident judgement. In the case of external perception (of physical phenomena), a comparison to reality is impossible; in the case of inner perception there is no need to compare, because consciousness has a direct knowledge of itself.\(^3\) Brentano’s theory of evidence is entailed by his view on the intentional object, which does not resemble reality, but merely is a “sign” that there is something in the outside world that eventually causes the intentional object.\(^4\)\(^5\) That the English translators chose ‘presentation’ and not ‘representation’ for the German ‘Vorstellung’ relates to the fact that Brentano does not endorse a correspondence theory of truth.

Consequently, truth is primarily a matter of judgement and the predicate ‘true’ has to refer to the act of judging, not to what is judged. The immanence of consciousness cannot be solved: a mental act refers to an inner content of consciousness; the relation to the outside is not present. Therefore, Brentano’s view can be considered as internalist: there is no way out of the immanence of consciousness.

### 3 BRENTANO AND CLASSICAL COGNITIVE SCIENCE

Classical cognitive science considers representation as a basic concept. Cognition is explained by means of theories in which representation has a central role to play. Representations guarantee meaning and the intentional relation. In general, representations re-present (part of) the external world and are based on sensations.

Representation is, as the Vorstellung in Brentano’s account, the basic unit in the explanation of cognition and provides a means for answering questions about how systems can have knowledge about the world and act in it. Nevertheless, the focus is almost exclusively on what happens inside the mental apparatus, which leads to a form of internalism, both in Brentano and classical cognitive science.

In Brentano’s case, the reference relation is situated between a mental act and a Vorstellung, and this idea or presentation is to be situated inside the realm of the mental. The object of consciousness, the presentation, is something within the structure of consciousness. The mental subject refers to its Vorstellung and the intentional relation does not transgress the border of the mental.

In classical cognitive psychology, the stress is on internal mental operations, and the concrete environmental circumstances of the mental system is hardly or only in a very abstracted way taken into account. The external environment is represented in the system, in the form of an isomorphic representation, and/or as a representation based on perceptual input in order to update the model of the environment. There is an intermediary between system and environment, and the system thinks and acts on the basis of this intermediary. As in Brentano, this intermediary should be conceived as the actual term to which the intentional relation refers. The fact that the system receives sensory input is as less significant as it is in the case of Brentano. To make up for the lack of relation between the Brentano-like content and the external world by adding a sensory cause for the appearance of mental presentations is therefore not very helpful.

Such a classical approach runs into well-known problems for representation-based theories. The most important problem here concerns the grounding of representations or the symbol grounding problem. Let us first consider Brentano. Brentano does not give an account of how a system acquires Vorstellungen, but only of how

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1. Ibid., p. 266.
2. Ibid., p. 293-294. Oskar Kraus says in a footnote to this: “I affirm that a certain thing exist” could mean the same as “I believe that someone affirming a certain thing cannot be in contradiction with someone making an evident judgement; anyone who affirms it, is making a true judgement.” Ibid., p. 294.
4. Ibid., p. 13.
5. This does not fit with the view of Christensen and Hooker, that Brentano conceptualises intentionality as a reference-like correspondence relation. Nevertheless, one can still say, as Christensen and Hooker do, that the intellectual heritage of Brentano included a philosophical concern with a.o. iconic representation.
consciousness is related to the mental contents\textsuperscript{16} which are already there. To ask for the origin of mental presentations, will eventually lead him into a problem similar to the problem of classical cognitive science: how does a system acquire a semantic interpretation of the representational mental symbols? How are ideas or representations related to the external in a way meaningful to the system itself? Although the presentations are connected, via sensory processing, to an external domain, the system has no \textit{intrinsic} qualities by which it can acquire a meaningful or semantic access to its own representations.

In this sense, the symbol grounding problem is of course related to the frame-of-reference problem: in order to solve the symbol grounding problem, one of the conditions is that the frame of reference should be the one of the system and not that of the observer.

But the representational account has the advantage that it can account for anticipatory behaviour. As a future state of the world cannot be provided by means of sensory input, the system has to act on the basis of plans. On the basis of sensory input, an internal model of the world is constructed. Second, there is a goal that describes the desired state of the world, and via mental operations, such as the logical manipulation of representations, a plan to achieve that state is constructed. At the heart of this account is the modelling capacity of the system to model or to form representations. However, the execution of the plan encounters again some difficulties. First, if one is to implement this account in a system that acts in the real world, the actual behaviour turns out to be very brittle. One aspect of this is found in the frame problem: how can the system make a distinction between relevant and irrelevant implications of action? The system that model simply gets lost in inferring deductions irrelevant to the achievement of the goal and does not arrive at acting. Secondly, for performing real behaviour, there are too many things that need a precise instruction.\textsuperscript{17}

The frame of classical cognitive science has a number of presuppositions that prevent a solution for such problems and lead to a conception of intentionality similar to the one of Brentano. First, they assume the existence and usefulness of representations. Second, representations mainly are to be interpreted as formal-linguistic (syntactic) entities.\textsuperscript{18} Third, the need for an external observer in the symbol grounding problem points to a very narrow conception of ‘agency’. The agent is profoundly disembodied, the only important processing is situated in the mental, and any bodily implementation is just a technical device for exerting the output of computational processing on symbols or representations. For short, the narrow conception of agency is related to the fact that those systems are not situated, disembodied and not truly interactive.

To take representations as the basis for intentionality leads, in the case of Brentano, to a form of internalism and in the case of classical cognitive science to the symbol grounding problem, the frame of reference problem, the frame problem and the ‘instruction’ problem. Internalism is the attempt to model a system entirely in terms of internal entities and relations that are characterisable separately from system-environment interaction, capacities and processes, and to characterise its nature as constituted intrinsically of distinctive internal operations.\textsuperscript{19} An alternative solution may provide a way to escape these problems. We can find an alternative in the early work of Merleau-Ponty, who stands in the same phenomenological tradition, which Brentano inaugurated.

\section*{4 MERLEAU-PONTY ON INTENTIONALITY}

The main change Merleau-Ponty has made regarding the concept of intentionality, is to situate intentionality on the level of the living body, and no longer on the level of the purely mental. This has entailed a severe criticism on the usefulness of the concept of representation. "(...) we are invited to recognize between movement as a third person process and thinking as a representation of the movement, an anticipation or a grasp of the result, assured by the body itself as a motor strength, a movement project (\textit{Bewegungsentwurf}), a “motor intentionality” (...)"\textsuperscript{20} Or more explicit: "The basis of movement is not a representation externally associated or connected to the movement itself, it is immanent to movement, it animates and supports it at every moment, the kinetic initiation is for the

\textsuperscript{16} Brentano uses “content” and “object” as synonyms, later he preferred the term “object”.
\textsuperscript{17} Fred Keijzer calls this the “instruction problem”. Cf. His (2001).
\textsuperscript{18} For the relation with Brentano: Oskar Kraus remark hints in that direction (cf. section 2). Moreover, for Brentano, intelligence and knowledge are a matter of judgement, and judgement is logical-linguistic.
\textsuperscript{19} C. Hooker, lecture: \textit{The crucial interactivist nature of the resolution of the fundamental problem of intelligence: problem definition}. Interactivist Summer Institute, Bethlehem, PA, July 2001.
subject an original way of referring to an object, (…)”

According to Merleau-Ponty, consciousness is originally not a ‘cogito’ but an ‘I can’. Locomotion is the original and initial form of intentionality, and not the ‘servant of consciousness’. Merleau-Ponty criticises classical philosophy, in which to acquire a new skill is a matter of mental activity, of ‘intellectual synthesis’. He does not deny that to acquire a new skill is to grasp a new meaning, but this meaning is a motor meaning, a grasping of meaning through the body. In short, intentionality originates in a bodily and meaningful relation to the environment, without there being representations involved.

How comes that Merleau-Ponty’s characterisation of intentionality is so different from Brentano’s account? To answer this, one has to look at Merleau-Ponty’s framework, which differs profoundly from the one of Brentano.

According to Merleau-Ponty, the world is not an objective datum, but must be perceptually acquired. Accordingly, an object is the correlate of my body and is constituted in the grasp the body has on it. An object is not in the first place a mental meaning, but a structure explored by the body. Moreover, sensations have a vital meaning and perceptions are always incorporated in a certain *behaviour*. From this point of view, Merleau-Ponty criticises the scientific perspective on behaviour: “In the scientific study of behaviour, one has to reject as subjective all notions of intention or utility or value, because they don’t have a basis in objects and are not intrinsic determinations.” In contrast to this, Merleau-Ponty says that an organism is not a passive device, but submits external influences to its own descriptive *norms*. The meaningful relations in the environment actually are the result of the organisation of the organism.

In this account, the relations between an organism and its environment are not a matter of linear causality, but of *circular* causality. The environment is constituted according to the proper nature of an organism, and the reaction of an organism is dependent on the vital significance of the stimuli, rather than on the material properties. In a certain environment, an organism is always searching for the realisation of equilibrium, which is determined from the inside out. The intentional behaviour of an organism therefore is goal-directed, implicit or explicit. “What we have seen is sufficient in order to make clear that the possession of a representation or the exertion of a judgement, is not co-extensive with conscious life. Consciousness rather is a sequence of significant intentions, now clear for themselves, now, in contrast, rather lived than known.”

In the account of Merleau-Ponty, cognition on the level of the body is not conceived of as a classical kind of knowledge, but as a ‘practognosis’. This means that the body has a world or understands a world without having representations, i.e. without being dependent on a symbolic or objectifying function. The moving body can only have a perceptual function so far as movement itself testifies of an original intentionality, i.e. a relation to an environment, which is different from classical forms of knowledge. The body is the capacity to do something, and does not belong to the order of an ‘I think’ but to that of the ‘I can’. According to Merleau-Ponty there is a proper intentionality present in the order of the ‘I can’; i.e. the body knows the world and the organic relation between body and world. Brentano’s problem of internalism, entailed by his mentalist view on intentionality, does not appear.

5 Merleau-Ponty and the Alternative Approach to Cognition

Merleau-Ponty’s view is not without implications for the study of cognition and intentionality. The interactivist approach to cognition and intentionality explicitly states its affinity to Merleau-Ponty and its dismissal of a Brentano-like conception of intentionality. “The focus on systems and interaction translates into an embodied skill-oriented approach to intentionality more akin to that of Merleau-Ponty than the abstract, linguistically-oriented

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21 Ibid., p. 128. “Le fond du mouvement n’est pas une représentation associée ou liée extérieurement au mouvement lui-même, il est immanent au mouvement, il l’anime et le porte à chaque moment, l’initiation cinématique est pour le sujet une manière originale de se référer à un objet (…)”


23 Ibid., p. 187. “Ce que nous avons dit suffit à faire voir que la possession d’une représentation ou l’exercice du jugement, n’est pas coextensive à la vie de la conscience. La conscience est plutôt un réseau d’intentions significatives, tantôt claires pour elles-mêmes, tantôt au contraire vécues plutôt que connues.”


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approach of analytic philosophy stemming from Brentano."

The emphasis is on bodily action and interaction, and it is no longer assumed, as in classical cognitive science, that representation is prior to directed action. Intentional relations are not representational and/or language-like, but are seen in terms of the ‘aboutness’ of adaptive interaction processes. Concerning anticipation, it is claimed that anticipatory behaviour can do without goal-representing mechanisms. As behaviour is conceived of as the goal-achieving activity of an embodied agent and as the system is embedded into a particular environment, embodiment, situatedness and interaction play a key role in the account of cognition and intentionality.

In this account, autonomy – and not representation – is the basic term. Autonomy and intentionality are fundamentally related in the following way. Actions are intentional if they are in service of the satisfaction of constraints. The most fundamental constraint is the maintenance and ongoing generation of the integrity of the system. Autonomy is the capacity to act according to the fundamental constraint of survival. This implies a normativity, which is non-derivative, i.e. it is determined from the inside out. Merleau-Ponty has already emphasised this feature of an organism: organisms that act intentionally, act according to their own, i.e. self-generated norms.

But there is more. Merleau-Ponty has pointed out that conscious life is not co-extensive with having representations or judging, but rather consists of actions significant to the organism itself. These actions can be clear for the organism itself, but this is not necessarily the case. This means that intentionality is not an all or nothing phenomenon, but is a matter of gradation. Many intentional relations do not have to be differentiated by the system. Merleau-Ponty would say that those relations are ‘lived’ rather than ‘known’. A mosquito, for example, finds blood-hosts by tracking CO₂ gradients, but it does not differentiate that relation. The relation between CO₂ gradients and blood-hosts is implicit. This cannot be modelled as a classic Brentano-like instance of intentionality: the mosquito does not explicitly have a blood-host as the content of its intentional action. Nevertheless, intentional capacity is a matter of degree. Moreover, the mosquito does not modify its behaviour on the basis of an anticipation of outcomes. It shows very simple forms of intentionality, which is dependent on the context, vague, and implicit.

This changes the case where the interaction between the organism and the environment is modified in order to act context-sensitively. Systems that are able to shape their own directed interaction are called self-directed. Self-directedness requires two capacities: anticipation and evaluation. "(...) the central capacities involved [in intentional capacity] are an ability to anticipate the interaction process and an ability to normatively evaluate interaction and use this to modify action." Interaction is used to detect relations, which are important from an affective-evaluative point of view – the organism’s point of view. These relations are then used to reshape the interaction in such a way that it becomes more adaptive. Such organisms are able to learn because of the evaluative feedback (mostly in terms of pleasure and displeasure) from interaction.

The interaction process is modified in such a way that more adaptive effects are anticipated. A hunting cheetah, for example, modifies its hunting technique or targets another prey in cases of unsuccessful action. This entails a view on intelligence, which is different from the classical view. In the classical view, representational symbol processing is the central capacity in intelligence, while in the more recent view, intelligence is seen in terms of adaptive interaction. Intelligence is first of all a bodily and interactive capacity, as in the account of Merleau-Ponty, and accordingly, intentionality is first of all intentional action. The first concern for a living system is to act, and not to represent. According to Christensen and Hooker, it would be a mistake to reify interactive relations as internal semantic content.

The new cognitive science therefore claims that the basic capacity for intelligence is adaptive interaction (i.e. a system is able to satisfy the constraints in the face of many varying conditions) rather than representation. Intentional content should be seen as the formation of anticipation by means of which a living system differentiates aspects of its interaction with the environment. Intentionality is to be thought of in terms of interdependence between action, the system and its environment and intentionality as language-like representational reference is rejected.

6 CONCLUSION: CONSEQUENCES FOR THE STUDY OF INTENTIONALITY

In more recent approaches to intentionality, the focus is on the constitutive nature of agency, instead of on information processing with its emphasis on internal representations. So, instead of opting for intentionality as a Brentano-like relation between a mental act and representations, one opts for interactive effectiveness in the way of Merleau-Ponty. Organisms produce their own meanings, and this is not possible in classical accounts of
intentionality (cf. the symbol grounding problem and the frame-of-reference problem). Such problems are encountered in any Brentano-like conception of intentionality: “Representational theories (...) tie signal informational content to the situation originating the signal, which is (notoriously) ambiguous, and define success as accurate correspondence to the signal origin, which is (notoriously) not system-detectable. It is a system-inaccessible account of information content.”

In the interactivist account, with its emphasis on embodied interaction, meaning is based on normativity, which is rooted in the requirement that a system maintains itself in interaction with the environment, and in the evaluation of this interaction in the face of this requirement. First, this is implicit and vague, but as systems become more self-directed the differentiation of signals and therefore their semantics becomes more articulated and explicit. Intentionality emerges on the basis of anticipatory bodily interaction with the environment and cannot emerge in systems without intrinsic normativity and without a capacity for evaluation.

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