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Self-Consciousness

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To be self-conscious is to be aware of oneself. This deceptively simple formulation raises a host of important questions that have long been a central focus within philosophy. Some of these questions are metaphysical, to do with what sort of object, if any, a self is. Others are epistemological, to do with the special ways we have of finding out about ourselves. Finally, and intersecting with these, are questions about the functional role of self-consciousness. What level of cognitive sophistication does it require? Which ways of thinking and behaving does it make possible? These questions have all been explored and significantly illuminated within cognitive science, which began to take more of an interest in self-consciousness as part of the *consciousness turn* of the 1980s and 1990s. Self-consciousness has proved more tractable to empirical investigation than sensory states and perceptual consciousness, and cognitive scientists have explored many new dimensions of self-consciousness in humans and other animals. These include how perception yields self-specifying information; self-recognition in infants and animals; the mechanisms and phenomenology of bodily awareness; and the interdependence of self-consciousness and consciousness of others in theory of mind.

History

Issues connected to self-consciousness have been central to modern philosophy at least since the seventeenth century, and some key moments from the history of modern philosophy will help situate and contextualize contemporary discussions. The traditional narrative begins with René Descartes (1596–1650), who famously found a bedrock of certainty in his knowledge of his own mind and current thoughts, and consequently concluded that his true self was an immaterial mind. Although this view of the self can be found throughout late antiquity and the medieval period, what was (arguably) original to Descartes's approach was how closely he connected metaphysical issues of what selves are with epistemological questions concerning how we know about them.

A similar interlocking between metaphysics and epistemology is to be found in John Locke (1632–1704), who defined selfhood in terms of self-consciousness. In his *An essay concerning human understanding*, Locke defines a person (i.e., a self) as “a thinking intelligent Being, that has reason and reflection, and can consider it self as it self, the same thinking thing in different times and places” (II. xxvii.9; [Locke, 1689/1975](#)). Unlike Descartes, Locke extended the boundaries of selfhood to include the body. He writes: “Thus the Limbs of his Body is to every one a part of himself: He sympathizes and is concerned for them. Cut off an hand, and thereby separate it from that consciousness, we had of its Heat, Cold, and other Affections: and it is then no longer a part of that which is himself, any more than the remotest part of Matter.” (II.xxvii.12) Locke's basic idea, which has proved very influential in recent discussions, is that our sense of self is not purely psychological, but rather extends with our embodied capacity to feel sensations and other affective and homeostatic states.

Immanuel Kant (1724–1804), echoing an insight of David Hume (1711–1776), denied that introspection presents us with any sort of self-as-object. However, it is a condition of all thought that it be self-conscious

in the sense of being attributed to a thinker—one cannot think without thinking that one is oneself thinking. As he put it in the *Critique of pure reason*, “the ‘I think’ must be able to accompany all my representations” ([Kant, 1781/1998](#)). Moreover, in his “Transcendental deduction of the categories,” Kant introduced the powerful idea that self-consciousness is interdependent with consciousness of an external objective world. One can only be aware of oneself to the extent that one experiences an organized world of objects that interact causally and predictably.

Issues concerning self-consciousness were more or less completely absent from the early decades of cognitive science, which were dominated by computational approaches to the mind. In this respect, self-consciousness is very different from consciousness, which was actually studied, but under a different label. Many early discussions of attention, for example, were really discussions of consciousness, because attention research in effect studied how stimuli become foci for conscious awareness. The emergence of self-consciousness as a significant issue in cognitive science was due to a combination of new experimental techniques, attention to psychopathology, and new theoretical approaches.

Among experimental techniques, the mirror self-recognition test ([Gallup, 1970](#)) was particularly influential. Seeing whether animals can use a mirror to identify bodily marks that cannot be detected without it is widely accepted as an operationalization of self-awareness in non-human animals as well as in young children and infants [see [Animal Cognition](#)]. Perhaps more important than the test itself is how its application formed part of a growing sense that self-consciousness is a much more widespread phenomenon both phylogenetically and ontogenetically than has been accepted in the philosophical literature.

More recently, new light has been cast on the Lockean idea of the embodied self through the rubber-hand illusion ([Botvinick & Cohen, 1998](#)), in which subjects are led to identify with a rubber hand by having their unseen hand stroked synchronously with seeing the hand being stroked. This experimental setup allows what subjects experience as the limits of their body to be manipulated, and with it their sense of *ownership* of individual body parts [see [Bodily Sensations](#)]. Similar manipulations have been possible at the whole-body level in the body-swap illusion, which uses virtual reality technologies to induce subjects to identify with a mannequin ([Blanke & Metzinger, 2009](#)).

These experimental manipulations complement what can be learned about bodily self-awareness in particular, and self-consciousness in general, from psychopathology. Disorders of bodily self-awareness include unilateral spatial neglect (in which brain-damaged patients ignore stimuli on one side, typically the left, often disavowing one side of their own bodies); the related disorder of somatoparaphrenia (in which patients affirm that a paralyzed limb is not part of their bodies), and alien hand syndrome (in which a patient’s hand “takes on a life of its own” and makes unwilled movements that are nonetheless goal directed). In addition to these disorders of bodily self-awareness, much attention has been paid to disorders of thought insertion in schizophrenia and what they might tell us about what it is to experience one’s thoughts as one’s own.

One of the important impacts of the ecological theory of perception (e.g., [Gibson, 1996, 1979](#)) has been a growing awareness not just that perception involves a constant and complex interaction between information about the self and information about the distal environment, but also that important forms of self-specifying information are built into the content of perception, particularly, although not exclusively, visual perception. The ecological approach has drawn attention to multiple different types of self-specifying invariants in the optic array, including different forms of visual kinesthesia (cues specifying the subject's own movement), putting further pressure on the idea that self-consciousness is exclusively a high-level cognitive achievement.

One of the more significant developments in cognitive science during the 1980s was the emergence of the topic of mind reading (how we understand the psychology of others to navigate the social world), initially in developmental psychology, and then, subsequently, more broadly. The two dominant ways of modeling mind reading take very different approaches to self-consciousness ([Bermúdez, 2022](#)). For proponents of the *theory-theory*, as its name suggests, self-consciousness is a theoretical achievement resulting from applying to ourselves the same type of common sense theory that we use to make sense of others [see [Intuitive Theories](#)]. For many simulationists, on the other hand, self-consciousness is more basic for purposes of explanation, because we make sense of others' behavior in different situations by working outwards from what we think we ourselves would do in those situations.

Core concepts

The deceptively simple formulation that to be self-conscious is to be aware of oneself raises two immediate questions. What sort of awareness is under discussion? And how should we understand the self of which the self-conscious subject is aware? The core concepts for thinking about self-consciousness are, in effect, basic principles that govern how these two questions might be answered.

It is standard to make a distinction between two forms of awareness. Object awareness, on the one hand, is, as its name suggests, awareness of a particular object. It need not involve thinking about that object or making any sort of judgment. What matters is that one is, as it were, in epistemic contact with the object—in this case, the object that is the self. In contrast, propositional awareness is awareness that something is the case. To be propositionally aware of oneself is to be aware that one has certain properties.

Many philosophers have denied that self-consciousness can be a form of object awareness. The most radical way of arriving at this claim would be by denying that there are such things as selves. Reductionism about the self has been defended ([Parfit, 1984](#)) but is not a popular view. More widespread is the view that we are never provided in introspection with the self as an object of awareness—we encounter thoughts, emotions, sensations, and other psychological events, but never the self that has them. For obvious reasons, this view has been termed the elusiveness thesis ([Shoemaker, 1996](#)).

One straightforward response to the elusiveness thesis is that we are presented with our own bodies through sensations such as hunger, pain, and thirst, as well as through our proprioceptive awareness of

how our limbs are disposed and our kinesthetic awareness of our own movements. Since we are embodied subjects, why should this not count as a form of object awareness? Proponents of elusiveness are likely to respond that this would not be the right kind of object awareness to yield self-consciousness. It is not enough, for genuine self-consciousness, that one be aware of an object that happens to be the self. Self-conscious subjects have to be aware of themselves as selves. This is not yielded by standard forms of bodily awareness.

The very same issue arises for propositional awareness of the self. One can be unknowingly aware that one has certain properties without that awareness counting as a form of self-consciousness. When Oedipus learned that the slayer of Laius would meet a terrible fate, then there is a sense in which he learned that he, Oedipus, would meet a terrible fate—because he, Oedipus, was in fact the slayer of Laius. But since Oedipus did not know that he had killed Laius, he failed to be propositionally self-aware. The following two sentences report very different situations:

1. Oedipus knew that the slayer of Laius would meet a terrible fate.
2. Oedipus knew that he himself would meet a terrible fate.

Until the moment when Oedipus discovered that he had in fact killed Laius, statement 1 was true, but statement 2 was not. Only statement 2 describes genuine self-awareness/self-consciousness.

What is reported of Oedipus in statement 2 would naturally have been stated by Oedipus in direct speech using the first-person pronoun: “I will meet a terrible fate.” This sentence expresses a first-person thought: it is a thought that can only be thought by means of the first person pronoun or a similar device of self-reference. So, one might be tempted to conclude that genuine self-consciousness is linked to being able to think, and perhaps utter, first-person thoughts.

This line of thought connects to the influential theory of the essential indexical ([Perry, 1979](#)). One way to mark the distinction between statements 1 and 2 would be to say that only statement 2 reports knowledge with direct implications for action. For a long time, Oedipus knew that the slayer of Laius would meet a terrible fate, but it was only when he discovered that he himself would meet a terrible fate that his behavior changed (and he blinded himself, so the myth goes). Generalizing, one might conjecture that self-conscious thought needs to be understood in terms of its unique role in generating intentional action. Only thoughts about oneself that one would express using “I” are genuinely self-conscious because it is only those thoughts that feed directly into action.

One might reasonably think, however, that this type of account is circular. The problem is that it is not clear how to understand the ability to use the first-person pronoun “I” either in thought or in speech without bringing in the very notion that we are trying to explain. The first-person pronoun “I” is not just a device for self-reference. It is a device for self-conscious self-reference. So, appeals to self-reference still leaves the challenge of explaining self-consciousness. The circularity has been termed the paradox of self-consciousness ([Bermúdez, 1998](#)).

A characteristic of the thought reported in statement 2 is that it contains information about Oedipus, the thinker of the thought, such that Oedipus cannot fail to recognize that that information is about him. This is in stark contrast to statement 1, in which Oedipus can, and for a long time does, fail to recognize that he is the slayer of Laius. Since it is possible to articulate what it is to have information such that one cannot fail to recognize that it is about oneself, sensitivity to the following types of information has been said to be key to self-consciousness ([Shoemaker, 1968](#); [Evans, 1982](#); [Bermúdez, 1998](#)):

- the deliverances of introspection
- self-locating and self-specifying information in perception (e.g., about one's position relative to distal objects)
- ways of representing one's position in space (e.g., through cognitive maps)
- autobiographical memories
- information about the body through proprioception and bodily sensations

These sources of information are distinctive because they provide information that is guaranteed to be about the self. My autobiographical memories, for example, cannot but be about me.

This way of thinking about self-consciousness has two important consequences. First, it bridges the gap between longstanding philosophical discussions and contemporary work in cognitive science. Second, and relatedly, it opens the door to thinking of self-consciousness as coming in degrees and much more widely distributed than has generally been thought.

Questions, controversies, and new developments

Ecological perception

As indicated in [Core concepts](#), perception is an important source of information for self-consciousness. Perception is fundamentally perspectival. The notion of a point of view is often used metaphorically to describe what it is to be a self-conscious subject. That it also sheds light on self-consciousness when taken literally is an important insight of ecological approaches to perception ([Gibson, 1979, 1996](#)).

A basic thesis from this perspective is that all perception involves co-perception of the self and of the environment. As Gibson ([1979](#), p. 116) puts it, “information about the self accompanies information about the environment, and the two are inseparable.” He develops this thesis primarily from an analysis of visual perception in terms of optical flow, which is the pattern of movement in the ambient optical array. While the pattern of optic flow is constantly changing as the perceiver moves through the environment and as the environment itself changes, it also contains certain invariant features. Gibson describes some of these invariant features as *self-specifying structural invariants*. One marker of bodily extremities, for example, is that they subtend visual angles that cannot be reduced below a certain minimum, unlike non-bodily physical objects. And, due to motion parallax, the nose has the highest relative velocity of all objects in the visual field. At the same time, through what Gibson described as *visual kinesthesia*,

information specifying the subject's movement is available in the optic flow. The optic flow originates from a particular point, for example, and that point is the aiming point of movement.

A third form of self-specifying information is directly perceived in the form of *affordances* [see [Affordances](#)]. In Gibson's (1979, p. 117) words, "the affordances of the environment are what it offers the animal, what it provides or furnishes, either for good or ill." These are higher-order invariants in the optic array that specify the organism's potentialities for action—the presence of prey, for example, or shade. The ecological analysis of perception can be used to illuminate the notion of essential indexicality (see [Core concepts](#)). The basic insight in theories of essential indexicality is that acting within the world requires self-locating information. Ecological psychology is an empirically well-grounded and robust way of explaining one important form of self-locating information.

Bodily awareness and ownership

Forms of bodily awareness through, for example, proprioception and kinesthesia can provide object awareness of the self in virtue of providing information only about the self. Recent work in cognitive science has developed this idea by focusing on the role that bodily awareness plays in a subject's sense of *ownership* for their bodies and individual body parts.

Ownership is a somewhat slippery theoretical construct. The most neutral characterization is in terms of judgments of ownership—judgments to the effect that this body, or this body part, is mine.

Correspondingly, judgments of disownership, as when a patient suffers from hemispatial neglect or alien hand syndrome, occur when a patient denies that some body part belongs to them. Various experimental paradigms have been developed for eliciting and manipulating judgments of ownership. The best known is the rubber-hand illusion ([Botvinick & Cohen, 1998](#)), in which patients are presented with a rubber hand while their own hand is hidden. They see the rubber hand being stroked with a brush at the same time as they feel their own hand being stroked. It is a robust result that subjects report feeling the touch of the seen brush, referring their tactile sensations to the rubber hand. Similar manipulations have been achieved at the whole-body level using virtual reality technology ([Blanke & Metzinger, 2009](#)).

One widely held idea is that judgments of ownership derive from a feeling of ownership, which is sometimes described as a primitive and prereflective feeling of "mineness" that is an ineliminable part of our experience of our own bodies ([De Vignemont, 2007](#)). One challenge for this idea is that there is, in effect, a specific sensation (often called a *quale*, plural = *qualia*) of ownership is the difficulty of getting qualia to do meaningful explanatory work. If the quale of ownership is understood purely as a sensation, then how can it carry information about ownership? But if, on the other hand, the feeling of ownership is understood representationally (as some sort of feeling that this is a part of my body, for example), then the feeling of ownership seems in danger of collapsing into the judgments of ownership that it is trying to explain.

There are approaches to ownership and bodily awareness that take the phenomenology of bodily experience seriously without relying on unverifiable claims about feelings of ownership. One possibility would be the neo-Lockean view that the sense of ownership coincides with the extent of direct, personal concern and that it is closely tied to agency ([De Vignemont, 2018](#)). Another possibility would be to emphasize the distinctive way in which the space of the body is experienced ([Bermúdez, 2018](#)).

Operationalizing self-awareness through self-recognition

One of the earliest tools for studying self-awareness was the mirror self-recognition test, initially prompted by observing how chimpanzees responded to their images in mirrors. In particular, after initially reacting to the image in the mirror as if it were another chimpanzee, chimpanzees begin to use the mirror to engage in various types of self-directed activities (e.g., grooming parts of themselves that were only visible in the mirror). Does the emergence of such self-directed behaviors reflect the animals developing a form of self-awareness, i.e., an awareness that they themselves are the animal reflected in the mirror?

This question can be operationalized by the following test ([Gallup, 1970](#)): While a chimpanzee is under anesthetic, a red mark is placed on a part of their face that they cannot see except through the mirror and that they cannot smell or detect through any other modality. The test observes how they behave when they see themselves in the mirror. The results are dramatic. The chimpanzees go from not showing any awareness of the red mark to touching and rubbing it when they are in front of the mirror. Many have drawn the conclusion that chimpanzees share with humans the capacity for self-recognition. Since such abilities have been found in three species of monkey (stump-tailed, rhesus, and macaque), it is conjectured that this ability was confined to the great apes. The mirror self-recognition paradigm has been extensively applied to multiple species of primates, broadly confirming this hypothesis (see [Gallup & Anderson, 2020](#), for a critical review of claims of self-recognition in other species of animals, such as elephants), as well as to human infants, who typically start to display self-directed behaviors between 18 and 24 months ([Bertenthal & Fischer, 1978](#)).

It remains an open question, however, how self-recognition relates to self-consciousness. The chimpanzees and infants who succeed in the task can map what they see in the mirror to their own bodies. But does that mean that they are aware of themselves as subjects, with a distinctive perspective on the world? More work is required to elucidate the cognitive abilities involved in mirror self-recognition.

Self-consciousness and mindreading

Within cognitive science, *mindreading* is a neutral term referring to the complex of skills that human beings and various other species use to make sense of each other's behavior and to navigate the social world. Plainly, self-consciousness has a mind reading dimension, often referred to as self-knowledge or self-understanding.

Initial interest in mind reading began in developmental psychology, where mind reading abilities were initially operationalized in terms of the ability to pass the false-belief test (i.e., to be able to understand that another subject might have false beliefs about the world), but has become a focus of interdisciplinary attention across cognitive science. The mainstream approach to mind reading sees it as the product of an implicit common sense psychological theory (theory of mind, typically abbreviated as ToM) that emerges in stages during childhood [see [Theory of Mind](#)] ([Gopnik & Wellman, 1994](#)). The bases of ToM are mental states, such as beliefs, desires, hopes, fears, and so on, and the guiding idea is that we understand other social beings and predict their behavior by attributing mental states to them and exploiting our implicit knowledge of how these mental states interact with each other and generate behavior. Understanding others, and social coordination in general, is a type of theoretical understanding.

It is a natural corollary of the so-called theory-theory that self-consciousness should be viewed as the application of ToM to oneself so that our self-understanding is equally a theoretical achievement ([Nichols & Stich, 2003](#)). Gopnik and Meltzoff ([1994](#), p. 168), for example, maintain the following: “Even though we seem to perceive our own mental states directly, this direct perception is an illusion. In fact, our knowledge of ourselves, like our knowledge of others, is the result of a theory, and depends as much on our experience of others as on our experience of ourselves.”

Many would react to this suggestion that it seems to ignore the fundamental first-person/third-person asymmetry that makes self-consciousness interesting and important. While it may be simplistic to hold that we have access to our own mental states directly, we plainly have ways of finding out about ourselves that are fundamentally different from how we find out about other people. That, after all, is the whole point of the discussion of information sources with the immunity property. Moreover, knowledge of our own mental states is only a part of self-consciousness, and perhaps not the most important part.

This line of reasoning motivates the simulationist approach to mind reading. According to the dominant version of simulationism, we make sense of other people and coordinate with them by working outwards from our own forms of decision-making and our own understanding of ourselves ([Heal, 1986](#); [Goldman, 2006](#)). We start with judgments about other people’s mental states, which are derived by analogy from the mental states that we think that we would have in comparable situations. Those judgments then serve as inputs into our standard decision-making processes, which are run offline to yield a prediction of how others will behave. Whatever the merits of this approach as an account of mind reading and social coordination, it seems to presuppose an account of self-knowledge and self-understanding rather than contribute towards providing one.

The principal challenge in this area is how to do justice simultaneously to two basic facts that are not easy to reconcile with each other. First, our psychological self-understanding exploits the very same concepts that we apply to others. In fact, it is very plausible that nobody can properly grasp these concepts unless they can apply them both to themselves and to others. Psychological concepts can neither be solipsistic, nor purely directed by the other. At the same time, though, we are able to attribute these concepts to

ourselves as a function of types of information that we do not have, and cannot have, about others. In other words, there is both a symmetry between the first-personal and the third-personal, and a corresponding asymmetry.

Broader connections

The topic of self-consciousness has ramifications for, and is potentially impacted by, multiple areas in cognitive science. There are also implications for disorders of self-representation in psychiatric disorders such as schizophrenia (Campbell, 1999), as well as neurological conditions such as unilateral spatial neglect (Mograbi et al., 2024). There are connections to the cognitive neuroscience of self-representation and self-awareness (Lou, Changeux, & Rosenstand, 2017), how animals (human and non-human) monitor and regulate their own cognitive and affective states (Carruthers, 2011), and the role of agency and memory, particularly autobiographical memory, on self-consciousness (Campbell, 1994). Finally, it is of major interest to understand the development of self-consciousness in humans, especially in infancy (Butterworth, 1992), as well as the potential for applying notions of self and self-consciousness within robotics and artificial intelligence (Floridi, 2005).

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