

- Posner MI (1980) Orienting of attention. *Quarterly Journal of Experimental Psychology* **32**: 3–25.
- Posner MI and Petersen SE (1990) The attention system of the human brain. *Annual Review of Neuroscience* **13**: 25–42.
- Shiffrin RM (1988) Attention. In: Atkinson RC, Herrnstein RJ, Lindzey G and Luce RD (eds) *Steven's Handbook of Experimental Psychology: Volume 2, Learning and Cognition*, pp. 739–811. New York: John Wiley & Sons.
- Shiffrin RM and Schneider W (1977) Controlled and automatic human information processing: II. Perceptual learning, automatic attending, and a general theory. *Psychological Review* **87**: 127–190.
- Yantis Y and Johnston JC (1990) On the locus of visual selection: evidence from focused attention tasks. *Journal of Experimental Psychology: Human Perception and Performance* **16**: 135–149.

## Self

Intermediate article

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*Viewed from the perspective of cognitive science, the self is a knowledge structure representing one's declarative knowledge of oneself. This knowledge, in turn, may be classified as semantic knowledge of one's physical, personal, and sociocultural characteristics, episodic knowledge of one's past actions and experiences (and, perhaps, prospective memory of one's future actions and experiences as well), and metaknowledge of one's repertoire of mental and behavioral skills.*

### INTRODUCTION

Usually we think of cognition in third-person terms, in terms of how people (and other systems) acquire, represent, store, and use knowledge about the world outside themselves. This is also true for social cognition, which has to do with how we perceive, remember, and think about other people, their behaviors, and the situations in which we encounter them. At least for humans, however, cognition also turns inward, representing people's knowledge about themselves. A sense of self is critical to our status as persons. In fact, philosophers often use the terms *self* and *person* interchangeably: a capacity for self-awareness is necessary for full personhood. One has a sense of self if one is able to entertain first-person thoughts, and if one

possesses first-person knowledge. The eye cannot see itself, but the self somehow knows itself: the simultaneous status of self as subject and object of awareness is one of the enduring problems of philosophy. (See **Social Cognition**)

In philosophy, self-awareness is often taken as a primitive, uninformed by reflection or any other form of conceptual thought. Self-awareness is also often taken as privileged. According to Sydney Shoemaker, first-person statements are immune to error through misidentification: they cannot be mistaken, and they cannot be contradicted; we cannot tell someone that he or she doesn't believe in God, feel depressed, or want a hamburger. Shaun Gallagher notes that there is a difference between the minimal self of immediate experience, and a more coherent narrative self that extends in time from the past through the present into the future. For example, amnesic patients will have a sense of their experiences in the immediate here and now, but no sense of their past experiences. In either case, the self is at the root of our sense of agency (i.e., that we are the causes of our actions) and our sense of ownership (i.e., that we are the ones who are having an experience). Further, as Kihlstrom has noted, the self is critical to both the monitoring and controlling functions of

consciousness. In cognitive social psychology, the self is construed simply as one's mental representation of oneself – that is, one's idea or mental picture of one's physical, psychological, and sociocultural attributes, of one's own cognitive, affective, and conative states, and of one's own behavior. (See **Self, Psychology of; Consciousness, Philosophical Issues about; Consciousness and Higher-order Thought; Implicit Cognition; Consciousness, Function of; Consciousness and Attention; Consciousness, Cognitive Theories of; Consciousness, Sleep, and Dreaming; Consciousness, Stream of; Consciousness, Animal; Consciousness, Unity of; Self, Philosophical Issues About; Self-consciousness**)

## MENTAL REPRESENTATIONS OF SELF

A central problem in cognitive science is knowledge representation. In general, we may distinguish between meaning-based knowledge representations, which store propositional knowledge about the semantic relations among objects, features, and events, and perception-based knowledge representations, which take the form of mental images representing the physical appearance of objects, and the configuration of objects and features in space. Self-knowledge can be construed in both terms: the cognitive view of the self as a knowledge structure is anticipated in ordinary language when we refer to the self-concept and the self-image, and there is some value in taking such terms literally, and exploring their ramifications in cognitive theory. What does it mean to say that the self is a concept? That it is an image? (See **Imagery; Spatial Cognition, Psychology of**)

## The Self as Concept

A concept is a mental representation of a category, a set of objects whose members share some features in common that are somehow distinct from objects in other categories. In the classical Aristotelian view, concepts are proper sets, defined by a list of features that are both singly necessary and jointly sufficient to identify an object as an instance of a category. From the classical point of view, then, the self-concept is identified by a set of features that are singly necessary and jointly sufficient to identify oneself as different from all others. The classical set view of the self as a set with only a single instance aptly recognizes our experience of ourselves as unique – that we are not the same as anyone else. Research by William McGuire and

his colleagues has found that people who are in the minority with respect to age, birthplace, gender, ethnicity, and other physical, social, and demographic features are more likely to mention them when asked to describe themselves. Apparently, people notice aspects of themselves, and incorporate these attributes into their self-concepts, to the extent that these features render them distinctive. Along the same lines, Hazel Markus and her colleagues have suggested that the self-schema incorporates those features that are important to one's self-concept, not merely those that are descriptive of the self.

On the other hand, philosophers and cognitive scientists have identified a number of problems with the classical view of concepts as proper sets that have led to the progressive elaboration of a number of revisionist views. Chief among these alternatives is the probabilistic view of concepts as fuzzy sets represented by summary prototypes whose features are only imperfectly correlated with category membership. Instead of sharing some set of singly necessary and jointly sufficient defining features, instances of a concept are related to each other by a principle of family resemblance. This view of the self as a prototype has won wide acceptance within social cognition, but the notion of family resemblance suggests that there must be more than one self. Actually, the multiplicity of self makes sense from a social-psychological point of view. Despite our tendency to describe each other in terms of stable traits, human social behavior is widely variable across time and place, and our self-knowledge must represent this kind of variability. Perhaps, then, the self-as-prototype is abstracted from multiple, context-specific, mental representations of self. Clinical cases of multiple personality disorder (also known as dissociative identity disorder) bring the multiplicity of self into bold relief. In normals, autobiographical memory creates a continuity between the mental representation of self-in-one-situation and self-in-another that is destroyed by the amnesic barrier between multiple personalities. (See **Conceptual Representations in Psychology; Prototype Representations**)

Just as problems with the classical view of concepts led to the prototype view, so problems with the prototype view have led to further revisionist views. While the classical and prototype views construe concepts as some kind of summary of the features of category members, the exemplar view denies that we have any such summary at all. Instead, we represent concepts as a collection of instances. While the classical, prototype, and exemplar views are all based on a principle of similarity,

the theory-based view holds that concepts are based on a theory of the domain in question. The instances of a category are not related by any kind of similarity but only through some theoretical explanation. Applied to the self-concept, the exemplar view would imply that there is no unitary self at any level of representation: all we have are context-specific selves. The theory view, in turn, would imply that our self-concept is a theory about ourselves – how we became what we are, and why we do what we do, rather than a list of features or instances. As yet, however, neither of these views of conceptual organization has been applied systematically to the self-concept.

### The Self as Image

Perception-based representations have not been much studied in social cognition, but this is what the notion of ‘self-image’, taken literally, would entail. The rudiments of the self-image may be found in the body schema postulated by Henry Head to account for the ability of animals to maintain stability of posture and adjust to our physical surroundings. In addition to verbal knowledge about our characteristic features, then, we appear to possess analog representations of our own bodies and their parts, independent of immediate sensory stimulation. Distortions and other aberrations of the self-image are often observed in cases of acute schizophrenia, anorexia, bulimia and other eating disorders, body dysmorphic disorder, and phantom limb pain. The neurological syndrome known as autotopagnosia is characterized by an inability to localize the parts of one’s own body on demand; it is associated with focal lesions in the left parietal lobe. Outside the psychiatric and neurological clinic, experimental subjects prefer left–right reversals of photos of themselves, while they prefer unreversed photos of others. The fact that our picture preferences match the way we view ourselves in the mirror indicates that the self-image preserves both spatial relations and visual detail. (See **Schemas in Psychology**)

### The Self as Memory

John Locke (1632–1704), the English philosopher, famously identified the self with memory: a person’s identity, which is to say selfhood, extends to whatever of a person’s past he or she can remember. Modern cognitive theories often distinguish between two forms of knowledge stored in memory. Declarative knowledge is our fund of factual knowledge about the world; it can be

represented as sentence-like propositions. Procedural knowledge is our repertoire of rules and skills by which we manipulate and transform declarative knowledge; it can be represented as productions specifying the actions that will achieve some goal under specified conditions. Viewed as a memory, the self is usually thought of as declarative in nature, although certainly we can have declarative metaknowledge about our cognitive skills and abilities. Declarative memory, in turn, takes two basic forms. Episodic memory is autobiographical memory for the events and experiences of one’s past, and its relevance to Locke’s concept of the self is obvious. Our sense of self is very much tied up with the ‘story’ of how what we have experienced has made us who we are, and how who we are has led us to do what we have done. By contrast, semantic memory is more generic, context-free knowledge about the world. With respect to the self, semantic memory is tantamount to the self-concept and the self-image. (See **Skill Learning; Metacognition**)

Cognitive psychologists have only recently begun to study autobiographical memory, in the sense of people’s memories for events and experiences occurring in the real world outside the laboratory. The simplest proposal for the organization of autobiographical memory is as a temporal sequence, running from birth to the present, with retrieval based on a serial backwards search. However, the serial record of autobiographical memory is more likely broken up into segments corresponding to the major phases of life: elementary school, high school, and college; first job, promotion, and retirement; first marriage and second. The fact that these phases overlap, and are defined subjectively and redefined retrospectively, makes the organization of autobiographical memory difficult to study except on an individual basis. The earliest years of life are covered by infantile and childhood amnesia: one’s earliest recollection is typically dated between the third and fourth birthdays, and autobiographical memory does not typically achieve any kind of continuity before the ‘five to seven shift’ prominent in studies of child development. ‘Flashbulb’ memories occur where private and public history meet. Autobiographical memory is reconstructive in that our personal histories are shaped by our current theories of who we are and how we came to be that way. It is our ‘story so far’, a narrative that is constantly subject to revision.

In a generic associative network model of memory, the self (or each of a multiplicity of context-specific selves) can be represented as a node linked to other nodes representing corresponding

knowledge about oneself. Considerable research has addressed the question of how episodic memory for one's past behaviors and semantic memory for one's characteristic traits can be represented in such a scheme. According to a conventional hierarchical model, nodes representing traits fan off the central node representing the self, and nodes representing behaviors fan off the traits they exemplify from nodes. An alternative model, related to 'self-perception' theories of social cognition, holds that memory contains only behavioral knowledge with traits known only by inference. A third model is that items of trait and behavioral information are represented by nodes that fan off independently from the 'self' node.

These models can be tested experimentally by means of a priming methodology. If the hierarchical model is correct, asking people questions about their traits should facilitate their answers to questions about their behaviors. If the self-perception model is correct, asking people questions about their behaviors should facilitate their answers to questions about their traits. A series of studies by Klein and his colleagues has revealed priming of neither sort, a consistent null result supporting the third model, of independence. The independence model is also supported by neuropsychological evidence summarized below.

## IS THE SELF A PERSON LIKE ANYONE ELSE?

Viewed as a concept, the self is a fuzzy set of context-specific selves, or perhaps a theory about oneself. Viewed as an image, the self represents both our perceptible features and their spatial configuration. Viewed as a memory, the self represents propositional knowledge about our abstract traits and specific behaviors, including a narrative record of our personal history. Lying behind all these models is the general idea that oneself is a person like anyone else and represented accordingly.

However, social psychological research has revealed a number of differences between cognition about oneself and cognition about others. While we tend to attribute others' behaviors to their internal traits, we are more likely to attribute our own actions to the demands of the situation (the self-other difference in causal attribution). We tend to perceive ourselves as more central to events than we really are (egocentricity), especially if the outcomes were positive (benefectance). On the other hand, it is not yet clear that these biases are intrinsic to self-knowledge. Perhaps they apply

to knowledge about others, as well, so long as we like them (as we tend to like ourselves) and/or know them well (as we think we know ourselves).

## THE SELF AND ITS BRAIN

As philosophers and psychologists became interested in the biological substrates of mental life, and brain-imaging techniques have permitted us to watch the brain in action, many cognitive scientists have evolved into cognitive neuroscientists. Taking cognitive neuropsychology as a model, Klein and Kihlstrom have argued that neuropsychological studies of brain-injured patients, and brain-imaging studies of normal subjects, may provide new solutions to old problems and afford new theoretical insights for personality and social psychologists as well. Consider, for example, the relation between self and memory. If, as Locke argued, our sense of self is intimately tied up with our recollection of our past, what is the sense of self for an amnesic patient? H.M., the famous patient with the amnesic syndrome, cannot consciously remember anything that he did or experienced since the operation that destroyed his medial temporal lobes. H.M.'s anterograde amnesia is virtually complete, and hence his sense of self may be confined to whatever memories he has from before his surgery. Moreover, Locke did not fully appreciate the distinction between episodic and semantic memory. Amnesic patients retain some ability to acquire new semantic knowledge, and this dissociation may permit their self-concepts to be based on 'updated' semantic knowledge, even if they are lacking a complete record of autobiographical memory. (*See Amnesia*)

Such questions have not been asked of H.M. himself, but they have been asked of other patients. For example, the patient known as K.C., who suffered a severe head injury as a result of a motorcycle accident, has both a complete anterograde amnesia covering events since the accident, and a complete retrograde amnesia covering his life before the accident. K.C. has no autobiographical memory at all, but research by Endel Tulving reveals that he has a fairly accurate self-concept. The same accident that caused his amnesia also resulted in a profound personality change: the pre-morbid K.C. was quite extraverted, while the post-morbid K.C. is rather introverted. When asked to rate himself as he is now, K.C. rates himself as introverted, in agreement with his mother's ratings of him. Interestingly, his ratings of his pre-morbid personality do not agree with his mother's.

K.C. has acquired semantic knowledge about himself, but he has not retained in episodic memory the experiences on which this self-knowledge is based; and his newly acquired semantic self-knowledge has effectively replaced that which he possessed before the accident.

Similar results were obtained by Klein and his colleagues in a study of W.J., a college freshman who suffered a temporary retrograde amnesia, covering the period since her high-school graduation, as a result of a concussive blow to the head. Asked to describe herself, W.J. showed a good appreciation of how she had changed since matriculating, as corroborated by her boyfriend's ratings of her. Findings such as these lend strength to the conclusion, based on experimental studies of priming, that semantic (trait) knowledge of the self is encoded independently of episodic (behavioral) knowledge.

Amnesic patients typically suffer damage to the hippocampus and related structures in the medial temporal lobes, leading to the conclusion that these structures constitute a module, or system, for encoding consciously accessible autobiographical memories. Is there a similar structure responsible for the sense of self? Recently, F. I. M. Craik and his colleagues used positron emission tomography (PET) to image the brain while subjects rated themselves on a list of trait adjectives. As comparison tasks, subjects rated the prime minister of Canada on the same traits; they also judged the social desirability of each trait, and the number of syllables in each word. One analytic technique, statistical parametric mapping, revealed no differences in brain activation between the self- and other-ratings tasks. While this finding would be consistent with the proposition that the self is a person like any other, a partial least squares analysis showed significant self-other differences in the right and left medial frontal lobes, and the middle and inferior frontal gyri of the right hemisphere. Further studies of this sort are obviously in order. (*See Neuroimaging*)

So is the self in the right hemisphere? Probably not. Self-referent processing may be performed by a module or system localized in the right frontal lobe, but control is critical in these conditions, and it may well be that other-referent processing is performed by the same system, provided that the other is well liked and/or well known. Although cognitive neuroscience has generally embraced a doctrine of modularity, the neural representation of individual items of declarative knowledge is distributed widely across the cerebral cortex. Self-reference may be localized, but self-knowledge is

widely distributed over the same neural structures that represent knowledge of others. (*See Modularity; Modularity in Neural Systems and Localization of Function; Learning and Memory, Models of; Memory Models*)

## THE DEVELOPMENT OF SELFHOOD

Development can be viewed in two ways: ontogenetically, in terms of changes in individual organisms across the life cycle from birth to death; and phylogenetically, in terms of changes in species across evolutionary time.

Locke viewed a sense of self as essential for personhood, but nonhuman animals may also have a sense of self. In a classic study, Gordon Gallup painted an odorless, nontoxic red mark on the foreheads of anesthetized chimpanzees. In the absence of a mirror, the chimps showed no awareness that their appearance had been altered. When exposed to their reflections in a mirror, however, the animals often examined the spot in the mirror, touched the spot on their foreheads, and then inspected and smelled their fingers. They appeared to recognize a discrepancy between what they thought they looked like, and what they actually looked like – suggesting, in the process, that they possessed at least a rudimentary self-image. The same effect has been found in some orangutans and bonobos, but not in gorillas (except perhaps for the famous Koko), monkeys, and other primates, or in nonprimate species. However, it should be noted that not all chimpanzees pass the self-recognition test, and alternative means of testing may well reveal self-recognition in other species.

By the time they are 18–24 months old, most human infants also pass the mirror-recognition test. However, if the infants are shown a videotape of themselves after a delay as short as three minutes, most fail to recognize themselves on the monitor; most four-year-olds pass this more difficult test. By the age of two, then, human infants have at least a minimal sense of self, but it takes a while longer for them to develop a narrative sense of themselves as extended in time – that they are the same person now that they were a while ago. Similarly, children younger than four years old seem unable to recognize that their current knowledge and beliefs differ from those they held in the past. Interestingly, age four is about the time that children achieve a capacity for episodic memory – the ability to recognize that a current mental state is in fact a representation of a past mental state. (*See Theory of Mind*)

## PATHOLOGIES OF SELFHOOD

Whatever the findings in infants and animals, a sense of self is part and parcel of the conscious experience of all normal human adults. However, a number of pathological conditions appear to involve disruptions in self-recognition and self-awareness. For example, some prosopagnosic patients fail to recognize their own faces as well as others, while some individuals with Capgras syndrome will identify themselves, as well as others, as imposters. Patients with frontal lobe damage often show a reduced capacity for self-reflection or impaired feelings of self-continuity. Frontal lobe damage can also impair episodic memory, in which self-reference is critical. (See **Prosopagnosia; Face Perception, Psychology of; Frontal Cortex**)

Within psychiatry, some theorists have suggested that schizophrenia involves a breakdown in the neural substrates of self-reflection and self-monitoring, while some dissociative disorders appear to involve a disruption of self and identity. While patients with psychogenic amnesia retain a sense of self (they simply cannot remember a period of their lives), patients with psychogenic fugue lose their identity as well as their memories. In multiple personality disorder, both identity and autobiographical memory shift back and forth from one 'alter ego' to another. Children with autism, a pervasive developmental disorder, appear to have a limited capacity for self-reflection, personal agency, and personal ownership. Whether these deficits in social cognition are limited to the sense of self, or extend to other people as well, is a topic of much current investigation. (See **Disorders of Body Image; Autism; Autism, Psychology of; Williams Syndrome**)

## SELF-KNOWLEDGE INTO ACTION

While cognitive psychology tends to study mind in the abstract, social psychology studies mind in action. Mental representations of self, others, and situations do not exist for themselves but as guides to social behavior. How we behave towards others depends not only on how we perceive them but also on how we perceive ourselves. Erving Goffman, E. E. Jones, and others have argued that people often engage in strategic self-presentation to shape others' impressions of them in an attempt to gain or retain control over the social situation. Many social interactions are characterized by what Robert K. Merton would call a 'self-fulfilling prophecy' – in which, for example, a person who believes that someone is aggressive may treat that

person in a manner that evokes aggressive behavior that may not have occurred otherwise. A strong sense of self may promote strategic self-presentation, but it may also militate against others' self-fulfilling prophecies concerning oneself. If people do not define themselves as aggressive, perhaps they will be less likely to act aggressively, regardless of how they are treated. From a social-psychological perspective, then, the self is not just something that knows and is known; it is also something that one does. That is to say, the self is actively constructed and reconstructed, maintained, tested, and revised, presented and re-presented to others, in the course of ongoing social interaction.

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## Further Reading

- Gallagher S and Shear J (eds) (1999) *Models of the Self*. London: Imprint Academic.
- Kihlstrom JF (1997) Consciousness and me-ness. In: Cohen J and Schooler J (eds) *Scientific Approaches to Consciousness*, pp. 451–468. Mahwah, NJ: Lawrence Erlbaum.
- Kihlstrom JF, Beer JS and Klein SB (2002) Self and identity as memory. In: Leary MR and Tangney J (eds) *Handbook of Self and Identity* (in press). New York, NY: Guilford.
- Kihlstrom JF and Klein SB (1994) The self as a knowledge structure. In: *Handbook of Social Cognition, vol. 1: Basic Processes*, 2nd edn, pp. 153–208. Hillsdale, NJ: Lawrence Erlbaum.
- Klein SB (2000) A self to remember: a cognitive neuropsychological perspective on how self creates memory and memory creates self. In: Sedikides C and Brewer MB (eds) *Individual Self, Relational Self, and Collective Self*. Philadelphia, PA: Psychology Press.
- Klein SB and Kihlstrom JF (1998) On bridging the gap between social-personality psychology and neuropsychology. *Personality & Social Psychology Review* 2(4): 228–242.
- Neisser U (ed.) (1994) *The Perceived Self: Ecological and Interpersonal Sources of Self-Knowledge*. New York, NY: Cambridge University Press.
- Neisser U and Fivush R (eds) (1994) *The Remembering Self: Construction and Accuracy in the Self-Narrative*. New York, NY: Cambridge University Press.
- Neisser U and Jopling D (eds) (1997) *The Conceptual Self in Context: Culture, Experience, Self-Understanding*. New York, NY: Cambridge University Press.

- Snodgrass JG and Thompson RL (eds) (1997) *The Self Across Psychology: Self-Recognition, Self-Awareness, and the Self Concept*. New York, NY: New York Academy of Sciences.
- Suls JM (1982) *Psychological Perspectives on the Self*. Hillsdale, NJ: Lawrence Erlbaum.
- Suls JM (1993) *Psychological Perspectives on the Self: The Self in Social Perspective*. Hillsdale, NJ: Lawrence Erlbaum.
- Suls J and Greenwald AG (eds) (1983) *Psychological Perspectives on the Self*, vol. 2. Hillsdale, NJ: Lawrence Erlbaum.
- Suls J and Greenwald AG (eds) (1986) *Psychological Perspectives on the Self*, vol. 3. Hillsdale, NJ: Lawrence Erlbaum.
- Tesser A, Felson RB and Suls JM (2000) *Psychological Perspectives on Self and Identity*. Washington, DC: American Psychological Association.

## Self, Philosophical Issues about Intermediate article

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*The concept of the self*

*Historical background*

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*Multiple concepts of the self present a variety of philosophical problems, including questions about ontological and epistemological status, relations between self and consciousness, self-consciousness, memory, and body. These issues are related to the question of determining the proper methodological approach to the self.*

### THE CONCEPT OF THE SELF

Currently there is no philosophical definition of the self that has drawn consensus. The concept is characterized in a variety of ways throughout the literature. The disparity of conceptions can be glimpsed by considering an incomplete inventory of terms that have come to proliferate in philosophical and psychological accounts:

- material self, social self, spiritual self (James, 1890);
- ecological self, interpersonal self, extended self, private self, conceptual self (Neisser, 1988) (*See Perception: The Ecological Approach*); and
- autobiographical self, cognitive self, conceptual self, contextualized self, core self, dialogical self, embodied self, empirical self, fictional self, minimal self, neural self (see, e.g. Damasio, 1999; Strawson, 1999).

This disparity, which is both problematic and productive, is directly related to the variety of methodological approaches taken within philosophy and in related interdisciplinary studies of the self.

These include introspection, phenomenological analysis, linguistic analysis, the use of thought experiments, empirical research in cognitive and brain sciences, and studies of exceptional and pathological behavior. In this light, one problem is whether different characterizations of self signify diverse aspects of a unitary concept of selfhood, or whether they identify different and unrelated concepts. This problem of 'inter-theoretical coherency' is addressed below. Regardless of how one responds to this problem, however, the variety of approaches and definitions found in studies of the self productively reinforces the idea that human cognition involves complex and varied aspects that are not easily reducible to one set of principles. (*See Self*)

### HISTORICAL BACKGROUND

The modern set of problems concerning the self emerged in a definitive way in the seventeenth century from a background that involved theological controversies concerning immortality and the concept of multiple persons in a trinitarian god. The question of personal immortality, which stretches back to ancient times, is no less contentiously debated in contemporary, and mostly secular, discussions about the survival of the self. The question of the unity of the self, even across