Phenomenology, Imagination and Interdisciplinary Research

Julia Jansen

Introduction: Staking Out the Field

The concept of imagination is notoriously ambiguous.[1] Thus one must be cautious not to use 'imagination' as a placeholder for diverse phenomena and processes that perhaps have not much more in common than that they are difficult to assign to some other, better defined domain, such as perception, conceptual thought, or artistic production. However, this challenge also comes with great opportunities: the fecundity and openness of 'imagination' appeal to researchers from different disciplines with different approaches and questions, and it draws together fields of enquiry that are initially considered far apart. Hence, arguably, the field of imagination is particularly poised for interdisciplinary enquiry. In the section on Imagination in Interdisciplinary Research, I will talk about some of the issues that have already entered that field of interdisciplinary inquiry.

This field becomes considerably larger if we also use the term 'imagination' for basic activities which go beyond the mere processing of perceptual data but are still considered integral to perception (e.g. because they occur in the absence of perceptual stimuli). In this respect, Hume's and Kant's accounts in particular are still reflected in contemporary research, albeit in ways which are not always explicit (Lohmar 1998). I will say something about this in the section on Imagination in Interdisciplinary Research too.

Before I turn to the matter of interdisciplinary research, however, I will first, in a section on Imagination in Phenomenology, sketch a general phenomenological position on imagination. I will mainly focus on Husserl's account of phenomenology because it provides a solid reference point for understanding the context from which phenomenological contributions to interdisciplinary research on imagination are put forward.

J. Jansen
Philosophy, University College
Cork, Ireland

[1] Stevenson (2003) identifies thirteen different ways in which imagination is taken up in ordinary language and academic research.

D. Schmicking and S. Gallagher (eds.), *Handbook of Phenomenology and Cognitive Science*,
DOI 10.1007/978-90-481-2646-0_8,

The bulk of Husserl's investigations have only just been translated into English (Husserl 2005) and even in the German original they have only been available since the publication of Husserl's lecture notes on "Phantasy, Image Consciousness, and Memory" in 1980 (Husserl 1980). This has meant that while many of Husserl's observations on imagination had already been known – mostly via Sartre (2004) and, in the analytic tradition, via Warnock (1976) and more recently McGinn (2004) – very few readers would have been aware of them as *his*. Thus it is also in order to rectify this situation somewhat that I will give considerable space to Husserl's analyses.

Most phenomenological contributions to interdisciplinary research, however, are not made by interpreting specific phenomenological texts or authors (although they might be cited in support of particular claims) but by approaching issues in philosophy of mind, psychology, cognitive science and the neurosciences from a generally speaking 'phenomenological' perspective. In this sense, current interdisciplinary work is arguable much closer to the original experimental spirit of phenomenology than any exegesis of textual sources can ever be.

Imagination in Phenomenology

In phenomenology, the concept of imagination has always played a prominent role. It was heralded by Husserl as the 'vital element' of phenomenology (Husserl 1983: 160); appropriated by Heidegger as the ecstatic nature of Dasein[2]; identified by Sartre as "an essential and transcendental condition of consciousness" (Sartre 2004: 188). It has been central to the work of philosophers as diverse as Bachelard (2005),[3] Ricoeur (1977),[4] Castoriadis (1994, 1998).[5] Casey (1976) and others (most recently Marc Richir 2004).

Husserl describes imagining[6] as an act of intuitively (i.e. quasi-perceptually), experiencing something in the mode of 'inactuality' or 'irreality.' He thus distinguishes imagining from a mere supposing or a 'thinking of' (which are intuitively 'empty' acts), but also from remembering (which involves belief in the past reality of the remembered), from expecting (which involves belief in the future reality of the expected), and from perceiving (which involves belief in the present reality of the perceived). The essential differences between imagining and those other acts

[2] For an insightful account of Heidegger's engagement with imagination see Elliot (2005).

[3] Bachelard combines an interest in the creative potential of imagination with an ethical and metaphysical committment to imagination as a principle of freedom and transcendence (Kaplan 1972).

[4] Ricoeur's hermeneutical phenomenology approaches imagination in its interconnection not with perception but with language.

[5] Castoriadis explored the political power and effectiveness of a radical 'imaginary.'

[6] Husserl's term is 'phantasy' (Phantasie) (Husserl 2005). In order to make this article more readible but also in order to preserve the connections to other discourses, I decided here to use the term 'imagination' and its derivatives 'imagining,' 'imagined' etc. instead.

are thus not differences amongst their *contents* (nor, as Hume had it, of their differing degrees of vivacity or intensity) but instead differences in the way (or 'form') in which they are experienced (Husserl 1984: 624). For example, whereas in perception "the object appears to us, so to speak, 'in person,' as itself present," in imagination the object appears as represented or possible; "it is as though it were there, but only as though." (Husserl 2005: 18 (16)).

According to Husserl, imagination shares this 'non-positing' character, i.e. the lack of belief in the existence of its object, with what Husserl calls 'picture-consciousness.'[7] This inclines us to think of imagination in analogy with picture-consciousness, that is, with 'seeing something in a picture', hence in terms of 'mental images' that are analogous to pictures. However, as Husserl tries to show, imagining is in a crucial respect very unlike, even essentially different from, 'seeing something in a picture.'[8]

When I look at a picture and see something 'in it,' the object I experience involves three distinct moments: (1) the *physical* picture, i.e., the canvas painted and framed, the patches of colour distributed on the canvas, etc., (2) the *picture-object*, i.e., the image which *appears* through a certain distribution of colours and shapes, and (3) the *picture-subject*, i.e., what is *depicted* or represented by the image.[9] The crucial difference between imagination and picture-consciousness is, according to Husserl, that picture-consciousness requires the perception of an actual picture, while imagination does not.[10]

> If our imagination playfully occupies itself with angels and devils, dwarfs and water nymphs ( ), then the appearing objectivities are not taken as picture objects, as mere representatives, analogues, pictures of other objectivities ( ). The word 'imagination,' the talk of 'mental

[7] Brough translates 'Bildbewusstsein' as 'image consciousness' (Husserl 2005). In order to make it more obvious that Husserl refers to pictures (and not to mental images) I will use 'picture consciousness' instead.

[8] This is perhaps the most important difference between Husserl's and Sartre's accounts. See Stawarska (2005). In this paper I can only allude to the aspects of picture-consciousness that are directly relevant to this distinction. For detailed discussions see Brough (1992, 2005), Marbach (1993), Volonté (1995), Lotz (2007).

[9] For example, when we look at a picture and say "this looks just like her!" we do not mean the physical picture (which looks like other physical pictures rather than like a real person), but we mean the picture object, i.e., the image that appears in the picture. On the other hand, the picture object clearly is not the depicted real 'her' who is probably of a different size and color, three-dimensional, moving, etc. (Husserl 1980: 121f. (112)).

[10] It "seems most appropriate to speak of 'pictoriality,' of 'pictorial apprehension' only in cases in which a picture, which for its part first functions as a representing object for something depicted, actually appears. Hence in the case of simple imagination, in which this does not occur (however great the temptation to assume that the situation is the same), it is best to use a different term" (Husserl 2005: 94 (87)). – Initially, Husserl thinks of imagination in pictorial terms. My summary is based on Husserl's mature account. For the considerable changes he made to his earlier position see Jansen (2005).

> images' and so forth, ought not mislead us here any more than the talk of 'perceptual images' does in the case of perception (Husserl 2005: 92 (85); translation slightly modified).

Just as one does not, in perception, apprehend a perceptual representation as an image of the perceived object, one does not, in imagination, apprehend a 'mental image' that represents the imagined object. In perception as well as in imagination "the intention aims at the thing itself" (Husserl 2005: 192 (161)). Husserl thus identifies a parallelism between imagination and perception (not between imagination and picture-consciousness). Consequently, he vehemently rejects any 'image-theory' of imagination that would use a "crude talk of internal images (as opposed to external objects)" (Husserl 1985: 437).

The parallelism between imagination and perception underscores the characterisation of imagination as *quasi*-perception. Both intentional acts constitute an object and let it appear; they both have the same intentional structure and are subject to the same spatial and temporal articulation (imagining is an imagining in a *quasi*-here-and-now) (Husserl 1973: 169ff.). In both acts I am also bodily present and thereby have a certain perspective on the intended object, which shows the same horizonal structures in both cases (Marbach 1993: 77).[11] In short, imagination brings to bear the phenomenal aspects of its objects not by conjuring up mental images, which would represent those objects, but by *simulating*[12] experiences of that object.

This simulation can be described phenomenologically in noetic as well in noematic analysis.[13] Noetic analysis shows how, in imagining, a type of experience is reproduced (perceiving visually, perceiving haptically, seeing something in a picture, etc.) while, noematic analysis shows how, at the same time, an object is made present, or represented (Husserl 1969: 128). Strictly speaking, then, in Husserl's view, imagining requires the reproduction of an experience. Or rather, it requires the implication of a possible experience: a simulation.[14]

Imagining is thus essentially different from supposing, which, by contrast, does not imply the simulation of any experiences of the thus supposed objects or states of affairs. It is because we are, in imagination, aware of simulating the experience as well as the object that we notice a "peculiar mediacy" (Husserl 1959: 116), *not* because a doubling up of objects occurs (mental image *plus* imagined object).

Of course, while I'm imagining something, I also actually experience something. For example, while I am imagining (making present) a beautiful beach and imagining (simulating) *possible* ways of experiencing it, namely visually (seeing the white

[11] This holds for all sensory modes: visual, tactile, auditory, olfactory, gustatory.

[12] Husserl does not use the term 'simulation' but speaks instead of 'quasi-experience'.

[13] Noetic analyses describe the experience of imagining; noematic analyses describe the imagined object.

[14] Husserl's use of the notion of implication (instead of the now common 'simulation') only highlights the fact that the 'reproduced' act is not actually performed, the 'reproduced' experience not actually experienced, but only 'implied' as a *possible* experience of the imagined object (Marbach: 1993: 61f).

sand, the blue water, etc.), haptically (feeling the sand running through my fingers), etc., I still, unfortunately, perceive my actual surroundings (the desk I'm sitting at, the rain I can hear lashing on the windows), and I am also actually experiencing my imagining being on the beach. When I lose this anchoring in the actual situation I am not imagining but hallucinating or dreaming (Marbach 1993: 83–85).

Furthermore, the phenomenological distinction between *noesis* and *noema* enables an account of the self-ascription of imaginings. That I experience my imaginings as *my* imaginings, as belonging to the one *I* who is now also perceiving, is anything but trivial since the imaginary world is neither subject to 'the legislation of reason', nor constrained by actual space or time (Husserl 2005: 214f. (178)). *Noematically*, in other words, that which I imagine is entirely independent from the constraints of my actual world of experience. There is no necessary noematic link between what we perceive and what we imagine. Noetically, however, our imaginings, perceptions, memories and so forth are united in our one consciousness by our living through them, or experiencing them (Husserl 1975: 175f).

In summary, according to Husserl, imagining lacks belief and reality (it is 'non-positing', 'inactual' or 'irreal') and is in this sense a 'neutralized' representation.[15] It involves a *quasi*-performance or simulation of experiences, such as perceiving, judging, feeling, etc. (Husserl 2005: texts 15, 18a). These experiences are, Husserl observes, implied as possible experiences of the imagined objects. As he repeatedly emphasizes, however, we are not aware of the simulation of such possible experiences as mental representations, but we enact them in our experiences of imagined objects. Any experience can be thus simulated I may imagine myself perceiving, judging, thinking, feeling something and so forth, that is, the imaginative modification is universal.[16]

Husserl advances his theory of imagination not only against contemporary versions of 'image theory' but also against the Kantian notion of a transcendental imagination. Unlike Heidegger, Husserl condemns the 'transcendental imagination' as an unnecessary by-product of Kant's faculty psychology. Especially in his early works, he straightforwardly dismisses Kant's notion as 'untenable' on the grounds that it lacks phenomenological evidence. However, Husserl revises his judgment when he begins his work on 'genetic constitution,' i.e., on constitutive syntheses which Husserl identifies as tacitly effective in perceptual experience. By the time Husserl is working on his Paris lectures (later published in the *Crisis*) he speaks of Kant's "great discovery" of the "twofold operation of the understanding." Husserl

[15] Similarly Sartre distinguishes between the positing of perception, which posits its object as existing, and the positing of imagination, which posits its object as nonexistent, absent, existing elsewhere *or* neutralised (Sartre 2004: 12).

[16] Given that Husserl describes imagining as involving the suspension of belief, it remains unclear whether it is possible to simulate the experience of believing. See the section on 'imagination and belief' below for a brief discussion of this issue.

thus extends the meaning of understanding (or rationality) so that it comprises both operations: the personal, explicit, or 'active' syntheses of cognition and judgment; and the sub-personal, tacit, or 'passive' syntheses that configure meaning in the intuitively given life-world (Husserl 1970:103 f.).

Hence Kant's distinction between intellect and transcendental imagination is transformed by Husserl into the distinction between 'active synthesis' and 'passive syntheses.' Importantly, however, for Husserl, passive syntheses are not regulated by concepts, let alone a priori ones (as is Kant's transcendental synthesis of imagination). On the contrary, meaning is generated 'bottom up', so to speak, through the passive syntheses, which are sub-personal perceptual, pre-predicative, pre-reflective and pre-linguistic (Steinbock 2001: xli; Husserl 2001). Thus, Husserl addresses the issue raised by Kant's notion of transcendental imagination but does so by integrating its functions into the complex system of perception itself and thus by making them constitutive of the very understanding that Kant thought was in control of them.

Thinking of phenomenological descriptions in relation to the Kantian notion of transcendental imagination highlights important aspects of a generally speaking phenomenological account of imagination[17]: Although it is discovered in reflection that perception indeed always already exceeds the mere processing of sense data, this is typically not considered evidence for any 'imaginative' activity. On the contrary, it is generally held amongst phenomenologists that perception itself, even in its most elementary moments, "arouses the expectation of more than it contains, and … is therefore already charged with a *meaning*" (Merleau-Ponty 1962: 4). In perception, as Sartre said, "I always *perceive more and otherwise* than I *see*" (Sartre 2004:120). Imagination and perception are therefore considered distinct; "far from being two elementary psychic factors of similar quality and that simply enter into different combinations (they) represent the two great irreducible attitudes of consciousness" (Sartre 2004: 120). He passive or prereflective syntheses which phenomenologists identify as constitutive of experience are hence not, as is Kauf's transcendental synthesis of imagination, understood in terms of a 'top down' process of experience. Rather, phenomenologists attempt to describe the complex ways in which our concepts are grounded in perception and arise through processes of abstraction and formalisation in a "genesis of meaning" (Merleau-Ponty 1962: xix; Husserl 2001; Husserl 1970).

Imagination in Interdisciplinary Research

There has been a relatively recent resurgence of and a more concerted interest in imagination in analytic philosophy of mind. In a climate in which imagination was often considered an expression of old-fashioned idealism or of a misguided preoccupation of continental philosophy, Mary Warnock (1976) took an important step towards rehabilitating it as a serious object of philosophical analysis. Kendall

[17]These two aspects are only meant as typical, not as necessary, features of a phenomenologica approach. My rendering is mainly based on Husserl's, Sartre's and Merleau-Ponty's writings.

Walton's later proposal to comprehend children's play, fiction and other artistic productions as different forms of regulated imaginary pretence (Walton 1990) has been immensely influential in debates on pretence, fiction, and emotional responses to fiction; but it also established imagination as an indispensable element of such debates (Currie 1990, 1995, 1997; Meskin and Weinberg 2003). More recently, imagination has entered into wider epistemological and ethical investigations regarding counterfactuals, conceivability, belief and supposition, action theory, 'mind reading,' and creativity (Currie and Ravenscroft 2002; Gendler and Hawthorne 2003; Gendler 2003; Byrne 2004; Nichols 2006; Nettle 2001). This work has begun to cross over into psychology and psychopathology, especially with respect to the role of imagination in autism and schizophrenia, which are both considered 'pathologies of the imagination' (Currie and Ravenscroft 2002; Phillips and Morley 2003). Since phenomenologists, such as Gallagher (2005, 2004), Zahavi (2004, with Parnas 2003, 2001), Casey (2003), Fuchs (2005), Ratcliffe (2006), 2008), are engaging in the very same debates, interdisciplinary imagination research has also brought opportunities for intra-disciplinary discussion.

Until very recently, it seemed inconceivable that the cognitive sciences would (or could) ever pursue the explanation of something as elusive and capricious, but also as subjective and 'mentalistic' as imagination. During the long-lasting reign of behaviourism,[18] imagination seemed pushed, once and for all, into "the outer darkness of intellectual irrelevance" (Morley 2005: 117). However, the so-called 'cognitive turn,' which turned psychology on its head in the 1970s, triggered new interest in imagination and thus brought relief from the 'iconophobia' (Thomas 2007) of the earlier days. Current research on imagination, its neurological manifestations and its psychological (normal as well as pathological) effects is flourishing (Chalmers and Bourget 2007).

In what follows I will briefly outline some of those aspects of imagination research that either have already been taken up in interdisciplinary debate or obviously lend themselves to it. These are: (a) mental imagery; (b) 'mind reading'; (c) imagination and belief; (d) imagination as 'ingredient of perception'; and (e) imagination and aesthetics. Since the issue of mental imagery is, in ways that will become clear below, fundamental to phenomenological views on other matters, I will discuss it in more detail than the others.

In what follows, I will address each issue in turn. Where phenomenological approaches have not been advanced (or where I am not aware of them), I will try to outline possible avenues for such contributions.

(a) *Mental Imagery*. Does imagination or mental imagery imply the existence of mental images? In contemporary research, this question forms the contentious basis of what's known as the 'imagery debate' (Block 1981; Tye 1991). Three principal answers have been given to this question:
   (1) *Yes. Mental imagery involves representations that are 'image like.'* In line with a long philosophical tradition, Hannay (1971, 1973), Kosslyn (1980,

[18] "I believe we can write a psychology (…) and (…) never use the terms consciousness, mental states, mind, content, introspectively verifiable, imagery, and the like" (Watson 1913).

1994), Tye (1988, 1991), Cohen (1996) defend pictorial accounts of mental imagery on the grounds of psychological and neurological experiments involving, for example, 'mental rotation' (Shepard with Cooper 1982, with Metzler 1971) and 'mental scanning' (Kosslyn 1978) tasks. Differences in the speed and ease with which subjects were able to rotate and scan imagined objects have been found to correlate with the spatial relations of the imagined objects. For example, subjects were able to shift attention from one point to another point on an imagined map faster if the two points were closer together on the corresponding actual map. This has been taken to suggest that mental imagery involves certain spatial features which correspond to, or 'function like' the spatial features of the object represented. Recent neurological research suggests that imagining activates corresponding perceptual visual and motor areas has been taken to lend new support for this thesis (Farah 1988, 1989; Kosslyn et al. 1993) although there also is evidence that this is not always the case (Bértolo 2005).

(2) *No. Mental Imagery involves representations that are not imagistic or pictorial but descriptional.* Objections against the pictorial model include the claim that mental imagery is too indeterminate to represent pictorially (or even 'quasi-pictorially') (Fodor 1975) and the contention that imagery is more like a description than like an image (Dennett 1969; Pylyshyn 1973, 1981). Connected to this position are at least two more general positions: one, that any image theory inevitably leads into the homunculus fallacy; two, that mental imagery is not self-contained but that it depends on background knowledge and tacit conceptual processes (*cognitive penetrability*). Pylyshyn puts it like this: "there is much more to what your mental image does and what it 'looks like' than meets the eye – even the 'mind's eye'" (Pylyshyn 2003a: 6.1). As a result of this view, the distinction between 'imagining' and 'imagining that' disappears, at least on the sub-personal level. It might remain as a phenomenal difference but, according to descriptionalists, this might be more pronounced in experimental conditions in which 'implied task demands' direct the imagining excercises in particular ways. The same objections that were raised against the earlier psychological version also have been directed at its neurological heir. Moreover, as Pylyshyn points out, the explanatory value of recent formulations of pictorialism in which mental images are said to be only 'functionally' pictorial and 'digitized' is questionable (Pylyshyn 2003b).

One of the main objections against the descriptional view is that it fails to account for neurological evidence indicating that neural visual and motor processes active in imagery largely overlap with those active in perception. However, it has been emphasized that this does not necessarily support the pictorial view (Bartolomeo 2002).

(3) *No, because we have no evidence for the existence of any mental representations, pictorial or descriptional*. While the 'imagery debate' continues, there is a growing body of alternative accounts of perception as enactive, embodied and situated that is supported by neurological evidence (Varela et al. 1991; Hurley 1998; Gallagher 2005; Noë 2004; Noë and O'Regan 2001; Clark 1997). This

has had important implications for conceptions of imagination (Hurley 2006; Jeannerod, 1994, 1995, 1997, 2001; Bartolomeo 2002). In line with Husserl's original observations, these accounts corroborate the view that although we have plenty of phenomenological evidence for imagining and mental imagery we have no phenomenological evidence for the existence of mental representations. When we imagine something we experience, in an imaginative way, *what* we imagine, not an 'image' *of* it; just as when we perceive something we experience, in a perceptual way, *what* we perceive, not an 'image' *of* it.[19]

Sartre (2004), Wittgenstein (2001), and Ryle (2002) are usually credited for having advanced some of the strongest and earliest challenges to any such theory of mental representation.[20] In recent years, McGinn (2004), who largely draws on Sartre's writings, has re-asserted a, broadly speaking, phenomenological critique of representationalism. The principle objection against what Sartre calls the 'illusion of immanence' of image theory, the equivalent to Dennett's 'Cartesian theatre' (Sartre 2004; Dennett 1991), is succinctly put by Slezak: what "these doctrines have in common is the mistake of assuming that we apprehend our mental states rather than just *have* them" (Slezak 2002).

In conjunction with the situated and embodied aspects of enactive accounts of perception, this view has led to a theory of imagination as *enacted and embodied simulation* (Thompson 2007b; Thomas 2007; Currie and Ravenscroft 2002).[21] Imagination is thus no longer understood as "an experience in which we seem to see or have a mental picture" but rather as "the activity of mentally representing an object or a scene by way of mentally enacting or entertaining a possible perceptual experience of that object or scene" (Thompson 2007a: 143). As a result, researchers now speak not only of sensory imagination (visual, audio, olfactory, gustatory, haptic) but also of motor imagination, i.e., imagination of *action* (Jeannerod 1994, 1995, 1997, 2001).[22]

(b) *Mindreading*. We often use the metaphor of 'reading someone's mind' when we describe how we figure out what another person believes or feels. Our capacity to make sense of others and their behaviour is generally considered "a prerequisite for normal social interaction" (Frith and Happé 1999:2; Harris 2000). In current

[19] Note in this context that Pylyshyn's description of the three levels involved in the explanation of mental imagery corresponds closely with the three moment of picture-consciousness outlined by Husserl: "At the first level we can ask about the content, or what the representation represents – what it is about. (…) At the second level of analysis, we can inquire about the form of the representation, the system of codes by which mental objects can represent aspects of the world. (…) The third level of analysis of mental representations is concerned with how representations are realized in biological tissue or implemented in hardware" (Pylyshyn 2003a).

[20] Not only Sartre but also Ryle and Wittgenstein were familiar with Husserl's work, at least to some extent.

[21] This idea of enacted and embodied simulation, which we also find in Husserl (see above), is not to be confused with the notion of simulation employed in so-called 'simulation theory,' which is thought of as a mental representation rather than an embodied enactment (see below).

[22] The issue of visual imagination dominates debates; investigations of other modes are rare. See, for example, Reisberg (1992).

research the term comprises investigations into our abilities to 'read' other minds as our own (Nichols and Stich 2003).

Recent neuroscientific studies with persons suffering from Autism Spectrum Disorders and schizophrenia have rekindled psychological and philosophical interest. Discussions are currently dominated by two prominent competing theories about the abilities and processes involved in 'mind reading': 'theory theory' (Baron-Cohen 1989, 1995; Leslie 1991; Gopnik and Meltzoff 1997; Carruthers and Smith 1996) and 'simulation theory' (Goldmann 1989; Gordon 1986, 1995; Heal 1986, 1998a, b). Generally speaking, 'theory theory' assumes that we take a (folk-) theoretical stance by means of which we infer what the other believes or feels, while 'simulation theory assumes that we simulate what we would experience if we were in the other's situation. In short, 'theory theory' says we *think* about other people's mental states while 'simulation theory' tells us that we *imagine* them (Currie and Ravenscroft 2002; Zahavi and Parnas 2003). Simulation seemed to receive additional support from neurological evidence, when Giacomo Rizzolatti, with Vittorio Gallese and other members of their research team discovered the activity of mirror neurons[23] (Fogassi et al. 1998; Gallese and Goldmann 1998).

In opposition to the representationalist approach of both 'theory theory' and 'simulation theory' and in line with enactive and phenomenological views on perception, Gallagher defends the claim that "in most intersubjective situations we have a direct understanding of another person's intentions because their intentions are explicitly expressed in their embodied actions, and mirrored in our own capabilities for action" (Gallagher 2005: 224). This view does not exclude that in some situations, in which we find it perhaps more difficult to make sense of someone, we *do* use either a theoretical stance or empathetic imagination. As Zahavi and Parnas have pointed out: "the crucial question is not whether we can predict and explain the behaviour of others, and if so, how that happens, but rather whether such prediction and explanation constitute the primary and most fundamental form of intersubjectivity" (Zahavi and Parnas 2003).

Especially, if we think of imagination as *enacted and embodied* simulation (see above) and not as the possession of a mental state; and if we think of the theoretical stance as an assessment of behaviour and not of mental states; this does not imply the representationalist model criticised by phenomenologists (Gallagher, 2005; Zahavi 2004). It also does not contradict neurological findings, which precisely demonstrate an embodied enactment, not the presence of a mental presentation (Gallagher 2005; Hurley 2006; Lohmar 2006, 2008). In this way then, we can integrate evidence that autism at least often includes imaginative disorders (Currie and Ravenscroft 2002) into a more general phenomenological account of autism. For example, one could investigate the ways in which difficulties in imaginatively transposing oneself into a different situation or perspective are related to an impaired imaginary of the self which can accompany more basic forms of self-awareness just as self-knowledge can (Zahavi and Parnas 2003: 67; Raffman, 1999). This might also make phenomenological

[23] Mirror neurons are neurons in the pre-motor cortex that display the same patterns of activity when an action is observed as they display when an action is performed. In that sense, they are said to 'mirror' in the observer the neurological activity present in the performer of the action.

approaches to empathy (Stein 1989) relevant for contemporary research in social neuroscience (Decety and Grèzes 2006; Decety and Hodges 2006).

In a similar way, current phenomenological contributions to interdisciplinary research on schizophrenia (Danion and Huron 2007; Gallagher 2004; Parnas 2004, with Handest 2003, with Parnas and Sass 2002; Parnas and Sass 2006; Depraz 2003; Zahavi 2001) can be augmented by an exploration of the 'imaginative disorders' involved both in schizophrenic delusion as well as schizophrenic hallucination (Casey 2003). All these enquiries demand careful attention to the ways in which our awareness of self, of others and of objects is *enacted and embodied* (Fuchs 2005).

(c) *Imagination and Belief*. Investigations into the relation between imagination and belief obviously arise from a notion of imagination as 'make believe' or pretence. These debates are gathering additional momentum from psychological and neuroscientific research into developmental and pathological issues of pretence, for example in autistic children (Harris 2000; Hurley with Chater 2005; Frith and Happé 1999; Currie and Ravenscroft 2002).

However, there is also a perhaps more fundamental question about differences between imagining something (without believing it) and supposing it (without believing it). This question becomes more complex again considering the view that one can imagine beliefs, just as one can imagine experiences and desires, and that supposing something *is* imagining a belief (Currie and Ravenscroft 2002). Phenomenological analysis, however, casts doubt on such a conception. We do not have to simulate the experience of believing in a state of affairs in order to suppose that state of affairs. In fact, a 'mere' supposition is precisely characterized by a lack of belief. Rather, in supposing something, or in 'imagining that …' we consider a state of affairs possible, while suspending the question of whether we believe in it or not. Neither the *noetic* aspect of imagining (the simulation of an experience) nor the *noematic* aspect of imagining (the simulation of the object) need be present in supposing.

Further, it is questionable whether we can simulate belief. Belief is a mode in which we intend something, e.g., we can entertain a thought in the mode of belief, or doubt, or under the suspension of belief-we can perceive with belief (as we usually do), but we can also doubt what we perceive (when, for example, we are aware of a perceptual illusion). To talk about 'belief-like imagining' hence implies that we can simulate that particular mode of experiencing something *with belief*. It is unclear whether it is possible to do that but it seems pretty clear that this is not what we do in supposing or when we 'imagine that …' Thus it seems that if, in line with ordinary language, we still want to refer to such acts as instances of imagining, then at least we have to note this essential difference between them (O'Brien 2005).

The fact that in experience cases of mere supposing and imagining are not always clearly distinguishable is a good reason for considering those issues as related. Recent work on counterfactual thinking, which includes both activities, has shown the great extent to which many rational operations depend on them (Byrne 2004). Moreover, research on 'imaginative contagion' has shown that either can have great impacts on our (actual) beliefs (Gendler 2007).

(d) *Imagination as 'Ingredient of Perception.'* Hume's and Kant's idea that imagination has a necessary (Hume) or transcendental (Kant) function in perception is still part of contemporary discourse, whether imagination is (Johnson 1987, with Lakoff 1999) or is not (Prinz 2002, McDowell 1994) explicitly referred to. The underlying idea is that we do not just 'see' what there is but that we also import or project certain elements into perception. In other words, there is evidence of a gap between present perceptual stimuli and what is perceptually experienced as present. Recent research on 'change blindness' (the failure to perceive even great changes in a perceived scene), 'inattentional blindness' (the failure to perceive events outside one's attentional focus), and 'filling-in' or 'perceptual completion' (the seeing of a figure as complete although parts of it are outside the visual field) has stirred a debate on the so-called 'grand illusion' of perception (Noë 2002a). Contributions to this debate from the 'enactive' and 'embodied' perspective make use of the phenomenological evidence already invoked by Husserl, Merleau-Ponty and Sartre to highlight the differences between perception and imagination and thus to reject the hypothesis of a 'grand illusion' (Noë 2002b; Thompson et al. 1999). However, paying special attention to the differences – within perception – between those elements that can be explained with reference to present stimuli and those that cannot surely amounts to important research into the nature of perception and does not require representationalism (O'Connor and Aardema 2005; Lohmar 2008; Lennon 2009 forthcoming).

(e) *Imagination and Aesthetics*. I mentioned above the strong interest in 'make believe', fiction and emotions manifest in recent discussion in aesthetics. Traditionally, imagination has played a great role in conceptions of aesthetic experience as well. However, while cognitive and neuro-scientists have turned towards aesthetic experience and, in particular, to our experience of beauty (Kawabata and Zeki 2004; Zeki 1999a,b, 2002; Romano 2002; Blood and Zatorre 2001; Ramachandran and Hirstein 1999; Solso 1996), there has been little phenomenological response to the emerging discipline of neuroesthetics.[24] Perhaps aesthetic experience is considered too complex and too phenomenologically under-researched for focused interdisciplinary debate. And there are reasons to be sceptical about initial interpretations of neurological findings (Seeley 2006; Jansen 2006; Ione 2003). However, this only calls for more phenomenological clarification of aesthetic experience and its imaginative dimension, which in recent years has perhaps not received as much attention as it should.

[24]Lead by Semir Zeki, researchers at University College London and University of California at Berkeley founded the Institute of Neuroesthetics in 2002. For further information, see http://www.neuroesthetics.org/index.html.

Conclusion

Whereas each of these issues constitutes an individual research area that has largely been pursued independently from all the others, it is also possible to regard these areas as moments of an emerging integrated field of inquiry profiting – by means of processes of mutual constraint and instruction (Gallagher 1997) – from cross-fertilization across disparate disciplines, such as philosophy, cognitive science, neuroscience, psychology, psychopathology and psychiatry. This perspective keeps open a space in which further research will show whether and how the many different senses of imagination can be related phenomenologically, conceptually, psychologically, or neurologically. This, I take it, is the best reason to approach imagination in phenomenology and interdisciplinary research with a 'holistic stance' and – if only now and again, when one looks up from one's own specialized work – consider it as a multifaceted but integrated field of research.

References

Bacheland G (2005) The poetics of space (trans: Jolas M). Beacon Press, Boston MA
Baron-Cohen S (1989) The autistic child's theory of mind. J Child Psychol Psychiatry 30:285–298
Baron-Cohen S (1995) Mindblindness: an essay on autism and theory of mind. MIT Press, Cambridge, MA
Bartolomeo P (2002) The relationship between visual perception and visual mental imagery: a reappraisal of the neuropsychological evidence. Cortex 38:357–378
Bértolo H (2005) Visual imagery without visual perception? Psicológica 26:173–188
Block N (ed) (1981) Imagery. MIT Press, Cambridge, MA
Blood A, Zatorre R (2001) Intensely pleasurable responses to music correlate with activity in brain regions implicated in reward and emotion. PNAS 98(20):11818–11823
Brough J (1992) Some Husserlian comments on depiction and art. Am Cathol Philos Q LXVI(2): 241–259
Brough J (2005) Translator's introduction. In: Husserl E, Phantasy, image consciousness, and memory (1898–1925). Springer, Dordrecht, pp XXIX–LXVIII
Byrne R (2004) The rational imagination. MIT Press, Cambridge, MA
Carruthers P, Peter KS (1996) Introduction. In: Carruthers P, Smith PK (eds) Theories of theories of mind. Cambridge University Press, Cambridge
Casey ES (1976) Imagining: a phenomenological study. Indiana University Press, Bloomington, IN
Casey ES (2003) Imagination, fantasy, hallucination, and memory. In: Philips J, Morley J (eds) Imagination and its pathologies. MIT Press, Cambridge
Castoriadis C (1994) Radical imagination and the social instituting imaginary. In: Robinson G, Rundell J (eds) Rethinking imagination: culture and creativity. Routledge, New York
Castoriadis C (1998) The imaginary institution of society (trans: Blamey K). MIT Press, Cambridge, MA
Chalmers D, Bourget D (eds) (2007) Mindpapers. A bibliography of philosophy of mind and science of consciousness. http://consc.net/mindpapers/.
Clark A (1997) Being there: putting brain, body, and world together again. MIT Press, Cambridge, MA
Cohen J (1996) The imagery debate: A Critical Assessment. J Philos Res 21:149–182
Currie G (1990) The nature of fiction. Cambridge University Press, Cambridge
Currie G (1995) Image and mind. Cambridge University Press, New York

Currie G (1997) The paradox of caring. In: Hjort M, Laver S (eds) Emotion and the arts. Oxford University Press, Oxford, pp 63–77
Currie G, Ravenscroft I (2002) Recreative minds. Oxford University Press, Oxford
Danion J-M, Huron C (2007) Can we study subjective experiences objectively? First-person perspective approaches and impaired subjective states of awareness in schizophrenia? In: Zelazo PD, Moscovitch M, Thompson E (eds) The Cambridge handbook of consciousness. Cambridge University Press, Cambridge, pp 481–498
Decety J, Grèzes J (2006) The power of simulation: imagining one's own and other's behavior. Brain Res 1079:4–14
Decety J, Hodges SD (2006) The social neuroscience of empathy." In: van Lange PAM (ed) Bridging social psychology: benefits of transdisciplinary approaches. Erlbaum, Mahwah, pp 103–109
Dennett D (1969) Content and consciousness. Routledge & Kegan Paul, London
Dennett D (1991) Consciousness explained. Little, Brown, Boston, MA
Depraz N (2003) Putting the epoche into practice: schizophrenic experience as illustrating the phenomenological exploration of consciousness. In: William K, Fulford M, Morris KJ, Sadler JZ, Stanghellini G (eds) Nature and narrative: an introduction to the new philosophy of psychiatry. Oxford University Press, Oxford
Elliot B (2005) Phenomenology and imagination in Husserl and Heidegger. Routledge, New York
Farah M (1988) Is visual imagery really visual? Overlooked evidence from neuropsychology. Psychol Rev 95(3):307–317
Farah M (1989) The neural basis of mental imagery. Trends Neurosci 12:395–399
Fodor JA (1975) The Language of thought. Thomas Crowell, New York
Fogassi L, Gallese V, Fadiga L, Rizzolatti G (1998) Neurons responding to the sight of goal-directed hand/arm actions in the parietal area PF (7b) of the macaque monkey. Soc Neurosci Abstr 24:654
Frith, Uta and Francesca Happé. 1999. "Theory of Mind and Self-Consciousness: What is it like to be autistic?'" Mind and Language 14(1):1–22
Fuchs T (2005) Corporealized and disembodied minds: a phenomenological view of the body in melancholia and schizophrenia. Philos Psychiat Psychol 12(2):95–107
Gallagher S (1997) Mutual enlightenment: recent phenomenology in cognitive science. J Conscious Stud 4(3):195–214
Gallagher S (2004) Agency, ownership, and alien control in schizophrenia. In: Dan Z, Grunbaum T, Parnas J (eds) The structure and development of self-consciousness: interdisciplinary perspectives. John Benjamins, Amsterdam
Gallagher S (2005) How the body shapes the mind. Oxford University Press, Oxford
Gallese V, Goldman A (1998) Mirror neurons and the simulation theory of mind-reading. Trend Cogn Sci 2:493–501
Gendler TS (2003) On the relation between pretense and belief. In: Kienan M, Mcluer Lopes D (eds) Imagination, philosophy, and the arts. Routledge, London, pp 125–141
Gendler TS (2007) Imaginative contagion. Metaphilosophy 37(2):183–203
Gendler TS, Hawthorne J (eds) (2003) Imagination, conceivability and possibility. Oxford University Press, Oxford
Goldmann A (1989) Interpretation psychologized. Mind Lang 4:161–185
Gopnik A, Meltzoff A (1997) Words, thoughts, and theories. MIT Press, Cambridge, MA
Gordon R (1986) Folk psychology as simulation. Mind Lang 1:158–171
Gordon R (1995) Simulation without introspection or inference from me to you. In: Davies M, Stone T (eds) Mental simulation: evaluations and applications. Blackwell, Oxford
Hannay A (1971) Mental images – a defence. Allen & Unwin, London
Hannay A (1973) To see a mental image. Mind 82:161–262
Harris P (2000) The work of the imagination. Blackwell, Oxford
Heal J (1986) Replication and functionalism. In: Butterfield J (ed) Language, mind, and logic. Cambridge University Press, Cambridge, pp 45–59
Heal J (1998a) Co-cognition and off-line simulation: two ways of understanding the simulation approach. Mind Lang 13:477–498

Heal J (1998b) Understanding other minds from the insides. In: O'Hear A (ed) Current issues in philosophy of mind. Cambridge University Press, Cambridge:
Hurley S (1998) Consciousness in action. Harvard University Press, Cambridge, MA
Hurley S (2006) Active perception and perceiving action: the shared circuits hypothesis. In: Gendler TS, Hawthane J (eds) Perceptual experience. Oxford University Press, Oxford, pp 205–259
Hurley S, Chater N (eds) (2005) Perspectives on imitation: from cognitive neuroscience to social science. MIT Press, Cambridge, MA
Husserl E (1959) Erste Philosophie (1923/24). Zweiter Teil: Theorie der phänomenologischen Reduktion (= Husserliana VIII), Boehm R (ed). Martinus Nijhoff, The Hague [my translation]
Husserl E (1969) Zur Phänomenologie des inneren Zeitbewusstseins (1893–1917) (= Husserliana X), Boehm R (ed.) 2nd edition. Martinus Nijhoff, The Hague [my translation]
Husserl E (1970) Crisis of the European sciences and transcendental phenomenology (trans: David C). Northwestern, Evanston
Husserl E (1973) Experience and judgment (trans: Churchill JS, Ameriks K). Northwestern, Evanston
Hasserl E (1975) Log ische Uutersuchungen Erster Band (= Husserliana XIII), Holenstein E (ed.). Martinus Nijhoff The Hague
Husserl E (1980) Phantasie, Bildbewusstsein, Erinnerung. Zur Phänomenologie der anschaulichen Vergegenwärtigungen (1898–1925) (= Husserliana XXIII), Marbach E (ed.). Martinus Nijhoff, The Hague
Husserl E (1983) Ideas pertaining to a pure phenomenological philosophy. First Book (trans: Fred K). Martinus Nijhoff, The Hague
Husserl E (1984) Logische Untersuchungen. Zweiter Band: Untersuchungen zur Phänomenologie und Theorie der Erkenntnis, vol. 2 (= Husserliana: XIX/2), Panzer U (ed). Kluwer Dordrecht [my translation],
Husserl E (1985) Einleitung in die Logikund Eikennttin's theories Vorelesungen 1906/07 (= Husserliana XXIV), Melle U (ed.). Kluwer, Dordrecht
Husserl E (2001) Analysis concerning passive and active syntheses (trans: Steinbock A). Kluwer, Dordrecht
Husserl E (2005) Phantasy, image consciousness, and memory (1898–1925) (trans: Brough J). Springer, Dordrecht [pagination in square brackets follows the German original (Husserl 1980)].
Ione A (2003) Examining Semir Zeki's neural concept of formation and art: Dante, Michelangelo, Wagner. J Conscious Stud 10(2):58–66
Jansen J (2005) On the development of Husserl's transcendental phenomenology of imagination and its use for interdisciplinary research. J Phenomenol Cogn Sci 4(2):121–132
Jansen J (2006) Schnittstelle und Brennpunkt: Das ästhetische Erlebnis als Aufgabe für eine Kooperation von Phänomenologie und Neurowissenschaft. In: Lohmar D, Fonfara D (eds) Interdisziplinäre Perspektiven der Phänomenologie. Springer, Dordrecht, pp 142–163
Jeannerod M (1994) The representing brain: neural correlates of motor intention and imagery. Behav Brain Sci 17:187–245
Jeannerod M (1995) Mental imagery in the motor context. Neuropsychologia 33:1419–1432
Jeannerod M (1997) The cognitive neuroscience of action. Blackwell, Oxford
Jeannerod M (2001) Neural simulation of action: a unifying mechanism for motor cognition. Neuroimage 14:103–109
Johnson M (1987) The body in the mind. University of Chicago Press, Chicago/London
Johnson M, Lakoff G (1999). Philosophy in the flesh: the embodied mind and its challenge to western thought. Basic Books, New York City
Kaplan E (1972) Gaston Bachelard's philosophy of imagination. Philos Phen Research 33(1): 1–24
Kawabata H, Zeki S (2004) Neural correlates of beauty. J Neurophysiol 91:1699–1705
Kosslyn SM (1978) Measuring the visual angle of the mind's eye. Cogn Psychol 10:356–389
Kosslyn SM (1980) Image and mind. MIT Press, Cambridge, MA
Kosslyn SM (1994) Image and brain: the resolution of the imagery debate. MIT Press, Cambridge, MA

Kosslyn SM, Alpert NM, Thompson WL, Maljkovic V, Weise SB, Chabris CF, Hamilton EE, Rauch SL, Buonanno FS (1993) Visual mental imagery activates topographically organized visual cortex: PET investigations. J Cogn Neurosci 5:263–287
Lennon K (2009, forthcoming) Imagination and the imaginary. Routledge, New York/London
Leslie A (1991) The theory of mind impairment in autism: evidence for a modular mechanism of development? In: Whiten A, Natural theories of mind. Blackwell, Oxford, pp 63–78
Lohmar D (1998) Erfahrung und kategoriales Denken. Hume, Kant und Husserl über vorprädikative Erfahrung und prädikative Erkenntnis. Kluwer, Dordrecht
Lohmar D (2006) Mirror neurons and the phenomenology of intersubjectivity. Phenomenol Cogn Sci 5(1):5–16
Lohmar D (2008) Phänomenologie der schwachen Phantasie. Untersuchungen der Psychologie, Cognitive Science, Neurologie und Phänomenologie zur Funktion der Phantasie in der Wahrnehmung. Springer, Dordrecht
Lotz C (2007) Depiction and plastic perception. A critique of husserl's theory of picture consciousness. Cont Philos Rev 40:171–185
Marbach E (1993) Mental representation and consciousness. Kluwer, Dordrecht
McDowell J (1994) Mind and world. Harvard University Press, Cambridge, MA
Merleau-Pondg M (1962) Phenomenology of perception (trans: Smith C). Humanities Press, New York
McGinn C (2004) Mindsight. Harvard University Press, Cambridge, MA
Meskin A, Weinberg J (2003) Emotions, fiction, and cognitive architecture. Br J Aesthet 43(1):18–34
Morley J (2005) Introduction: phenomenology of imagination. Phenomenol Cogn Sci 4:117–120
Nettle D (2001) Strong imagination: madness, creativity and human nature. Oxford University Press, Oxford
Nichols S (ed) (2006) The architecture of the imagination. New essays on pretence, possibility, and fiction. Oxford University Press, Oxford
Nichols S, Stich S (2003) Mindreading: an integrated account of pretence, self-awareness, and understanding of other minds. Oxford University Press, Oxford
Noë A (ed) (2002a) Is the visual world a grand illusion? Imprint Academic, Thorverton/Charlottesville, VA
Noë A (2002b) Is the visual world a grand illusion. In: Noë A (ed) Is the visual world a grand illusion. Imprint Academic, Thorverton/Charlottesville, VA
Noë A (2004) Action in perception. MIT Press, Cambridge, MA
Noë A, Kevin O'Regan J (2001) A sensorimotor approach to vision and visual consciousness. Behav Brain Sci 24(5):939–973
O'Brien L (2005) Imagination and the motivational view of belief. Analysis 65(1):55–62
O'Connor K, Aardema F (2005) The imagination: cognitive, pre-cognitive, and meta-cognitive aspects. Conscious Cogn 14(2):233–256
Parnas J (2004) Belief and pathology of self-awareness: a phenomenological contribution to the classification of delusions. J Conscious Stud 11(10–11):148–161
Parnas J, Handest P (2003) Phenomenology of anomalous self-experience in early schizophrenia. Compr Psychiat 44(2):121–134
Parnas J, Sass L (2002) Self, solipsism, and schizophrenic delusions. Philos Psychiat Psychol 8(2–3):101–120
Parnas J, Sass L (2006) Explaining schizophrenia: the relevance of phenomenology. In: Chung M, Fulford W, Graham G (eds) Reconceiving schizophrenia. Oxford University Press, Oxford, pp 63–96
Phillips J, Morley J (2003) Imagination and its pathologies. MIT Press, Cambridge, MA
Prinz J (2002) Furnishing the mind. MIT Press, Cambridge, MA
Pylyshyn Z (1973) What the mind's eye tells the mind's brain: a critique of mental imagery. Psychol Bul 80:1–25

Pylyshyn Z (1981) The imagery debate: analogue media versus tacit knowledge. Psychol Rev 88:16–45
Pylyshyn Z (2003a) Seeing and visualizing: it's not what you think. MIT Press, Cambridge, MA
Pylyshyn Z (2003b) Return of the mental image: are there pictures in the brain? Trends Cogn Sci 7:113–118
Raffman D (1999) What autism may tell us about self-awareness: a commentary on Frith and Happé. Mind Lang 14(1):23–31
Ramachandran V, Hirstein W (1999) The science of art. J Conscious Stud 6(6–7):15–51
Ratcliffe M (2006) Phenomenology, neuroscience and intersubjectivity. In: Dreyfus H, Mark W (eds) Blackwell companion to phenomenology and existentialism. Blackwell, Oxford, pp 327–343
Ratcliffe M (2008) Feelings of being: phenomenology, psychiatry and the sense of reality. Oxford University Press, Oxford
Reisberg D (ed) (1992) Auditory imagery. Lawrence Erlbaum, Hillsdale, NJ
Richir M (2004) Phantasia, imagination, affectivité. Millon, Bonchamp-Lès-Laval
Ricoeur (1977) The Rule of Metaphor (trans: Czerhy R with K McCoughlin and J Costello). University of Toronto Press, Toronto
Romano J (2002) The mind's eye: neuroscience, synesthesia, and art. Neurol Rev 10(7)
Ryle G (2002) The concept of mind. University of Chicago Press, Chicago, IL. Originally published in 1949
Sartre J-P (2004) The imaginary (trans: Webber J). Routledge, New York
Seeley WP (2006) Naturalizing aesthetics: art and the cognitive neuroscience of vision. J Vis Art Prac. Special Issue: Rediscovering Aesthetics, Halsall F, Jansen J, O'Connor T (eds), 5(3):195–213
Shepard RN, Cooper L (1982) Mental images and their transformations. MIT Press, Cambridge, MA
Shepard RN, Cooper L, with Metzler J (1971) Mental rotation of three-dimensional objects. Science 171:701–703
Slezak P (2002) The imagery debate: Déjà vu all over again? Commentary on Zenon Pylyshyn. Behav Brain Sci 25(2):209–210
Solso R (1996) Cognition and the visual arts. MIT Press, Cambridge, MA
Stawarska B (2005) Defining imagination: Sartre between Husserland Janet. Phenomenol Cogn Sci 4(2):133–153
Stein E (1989) On the problem of empathy (trans: Stein W). ICS Publications, Washington, DC
Steinbock A (2001) Translator's introduction. In: Husserl E (ed) Analysis concerning passive and active syntheses. Kluwer, Dordrecht, pp xvi–lxv
Stevenson LF (2003) Twelve conceptions of imagination. Br J Aesthet 43(3):238–259
Thomas N (2007) Mental imagery. Stanford encyclopedia of philosophy. http://plato.stanford.edu/entries/mental-imagery
Thompson E (2007a) Look again: phenomenology and mental imagery. Phenomenol Cogn Sci (6):137–170
Thompson E (2007b) Mind in life: biology, phenomenology, and the sciences of mind. Harvard University Press, Cambridge, MA
Thompson E with Noë A, Pessoa L (1999) Perceptual completion: a case study in phenomenology and cognitive science. In: Petitot J, Varela F, Pachoud B, Roy J-M (eds) Naturalizing phenomenology. Stanford University Press, Stanford
Tye M (1988) The picture theory of mental images. Philos Rev (97):497–520
Tye M (1991) The imagery debate. MIT Press, Cambridge, MA
Varela F, Thompson E, Rosch E (1991) The embodied mind: cognitive science and human experience. MIT Press, Cambridge, MA
Volonté P (1995) Husserls Phänomenologie der Imagination. Verlag Karl Alber, München
Walton K (1990) Mimesis as make-believe. Harvard University Press, Boston, MA

Warnok M (1976) Imagination. Faberand Faber, London
Watson JB (1913) Psychology as the behaviorist views it. Psychol Rev 20:158–177
Wittgenstein L (2001) Philosophical investigations, 3rd ed. (trans: Anscombe GEM). Blackwell, Oxford
Zahavi D (2001) Schizophrenia and self-awareness. Philos Psychiatry Psychol 8/4:339–341
Zahavi D (2004) Beyond empathy. Phenomenological approaches to intersubjectivity. In Dermot M, Embree L (eds) Phenomenology. Critical concepts in philosophy, vol II. Routledge, London/New York, 179–200
Zahavi D, Parnas J (2003) Conceptual problems in infantile autism research: why cognitive science needs phenomenology. J Conscious Stud 10(9):53–71
Zeki S (1999a) Inner vision. Oxford University Press, Oxford
Zeki S (1999b) Art and the brain. J Concious Stud 6(6–7):76–96
Zeki S (2002) Neural concept formation and art: Dante, Michelangelo und Wagner. J Conscious Stud 9(3):53–76