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Toward an explanatory framework for mental ownership

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Abstract Philosophical and scientific investigations of the proprietary aspects of self—mineness or mental ownership—often presuppose that searching for unique constituents is a productive strategy. But there seem not to be any unique constituents. Here, it is argued that the "self-specificity" paradigm, which emphasizes subjective perspective, fails. Previously, it was argued that mode of access also fails to explain mineness. Fortunately, these failures, when leavened by other findings (those that exhibit varieties and vagaries of mineness), intimate an approach better suited to searching for an explanation. Having an alternative in hand, one that shows promise of achieving explanatory adequacy, provides an additional reason to suspend the search for unique constituents. In short, a negative and a positive thesis are developed: we should cease looking for unique constituents and should seek to explain mineness in accord with the model developed here. This model rejects attempts to explain the phenomenon in terms of either a narrative or a minimal sense of self; it seeks to explain at a "molecular" level, one that appeals to multiple, interacting dimensions. The molecular-level model allows for the possibility that subjective perspective is distinct from a stark perspective (one that does not imply mineness). It proposes that the confounding of tacit expectations plays an important role in explaining mental ownership and its complement, disownership. But the confounding of tacit expectations is not sufficient. Because we are able to be aware of the existence of mental states that do not belong to self, we require a mechanism for determining degree of self-relatedness. One such mechanism is proposed here, and it is shown how this mechanism can be integrated into a general model of mental ownership. In the spirit of suggesting how this model might be able to help resolve outstanding problems, the question as to whether inserted thoughts belong to the patient who reports them is also considered.

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> "…the decisive step in the making of consciousness is not the making of images and creating the basics of mind. The decisive step is *making the images ours*, making them belong to their right owners…" (Damasio 2010: 10)

Introduction

During the first decade of the twenty-first century, a growing number of neuroscientists have exhibited avid interest in phenomena once considered a province largely restricted to philosophical analysis—the nature of self. They have begun in earnest trying to identify the brain's "core self" (Damasio 2010: 201–209), its "sentient self" (Craig 2010), its "observing self: (Baars et al. 2003), its "who system" (de Vignemont and Fourneret 2004), indeed just "where in the brain is the self" (Feinberg and Keenan 2005; Feinberg 2009: 132–158). They unpack concepts somewhat differently and attend to diverse components of brain activity, but a shared concern with self's *proprietary* aspects links their work, and their work to that of several philosophers who are traversing the same terrain (e.g., Bayne 2010: 269–271; Bogdan 2010: 86; Churchland 2002; Dainton 2008: 354–359; Lane and Liang 2010; Metzinger 2003: 283). All are concerned, to a greater or lesser extent, with "mineness,"[1] the respect in which mental states are "experienced as *my own* states" (Metzinger 2008: 216). This concern with the ownership or belongingness of mental states is shared by philosophers of both analytic and continental traditions (Flanagan 1992: 194, Goldman 1970: 96; Zahavi 2006: 275).[2]

The concurrence of scrutiny has contributed to the emergence of a research program focused on mineness (Northoff and Bermpohl 2004), a program wherein experimental work converges on how brains process "self-referential" (SR) stimuli, "stimuli that are experienced as strongly related to one's own person" (2004: 102). SR experimental paradigms are many, but all share the common feature of probing certain contrasts that subjects make. These contrasts engage different modalities (though

[1] Cognates of "mineness" include "myness," "my-ness," "for-me-ness," "mental ownership," and "ipseity." "Ipse" is a Latin pronoun that, in some contexts, means "self."

[2] Philosophers might wonder why, both here and elsewhere in this essay, I write of self, consciousness, and ownership, but refrain from using the appellation, "self-consciousness." If we consider the usual division of labor within philosophy, problems pertaining to ownership tend to be addressed under the rubric, "self-consciousness." "Self," on the other hand, tends to be invoked more often in discussion of problems with a pronounced diachronic dimension: for example, what kind of thing is a self, such that it can persist over many decades in a body that is constantly changing? Because my concern is with ownership and my focus is on the synchronic, one might reasonably expect me to speak not of "self" and "consciousness," but of "self-consciousness." Nevertheless, I avoid the term, because it carries with it a baggage inconsistent with the thesis I develop. Succinctly, many (e.g., Bermudez 2007) who write of self-consciousness treat it as primarily a cognitive rather than an affective state. Moreover, it is commonly assumed about self-conscious that, if we have introspectively based thoughts to the effect that someone has a particular property, "we ipso facto know that we ourselves have that property" (Bermudez 2007: 460). Because I find these and several, related assumptions problematic, I prefer to avoid the term altogether.

studies of visual stimuli are most common), and seek to identify neural correlates of self vs. other, first person vs. third person, full control vs. noncontrol, and so forth. One set of studies, for example, concerns how we recognize some faces as our own and others as those of a famous person (Platek et al. 2004). Northoff et al. (2006: 441) argued that SR processing "constitutes" the "experiential self," the self that "mediates ownership of experience." They further argued that the neural substrate for SR processing—hence, for the experiential self—is the cortical midline structure (CMS).[3]

Northoff (2011: 225) and Northoff et al. (2011) have subsequently revised their original position because, inter alia, imaging studies indicate that neural activity in the CMS is engaged both by self and by other.[4] In other words, SR processing is not exclusive to or *specific* to self. Their attempt to capture what is constitutive of the experience of ownership, however, has inspired a competing experimental paradigm, one that does try to identify what is specific to self—the "self-specificity" (SS) paradigm. SS attempts not only to hone "mineness" with greater precision and fidelity than does SR, but also to equip it with an operational definition. Not unlike SR, and many other works of science and philosophy, SS too aims at identifying that which is constitutive of self.[5]

Philosophical investigations of self, ruminations on the significance of various pathologies of self, and experimental probes of self often presuppose that the search for unique constituents is a productive way to proceed. Philosophers might feel compelled by intuitions and arguments that suggest a unity of consciousness; those who study pathologies might feel compelled by the discrete effects of localized lesions; and those employing experimental probes might feel compelled by the need to reduce search space. But there is good reason to suspend the search for unique constituents of mineness.

Here I argue that SS fails, but instructively so: this essay develops both negative and positive theses. The negative thesis is that there is no unique constituent of mineness, and the search to find one by identifying a minimal self is futile. The positive thesis sees opportunity in the failure of SS (as well as similar attempts). First, its failure creates an opportunity that would have been methodologically impossible had SS turned out to be true. Second, empirical cases that put pressure on SS, suggest an alternative path to explaining mineness. These cases, when considered alongside of other, more familiar, anomalous examples, suggest that explanation of the feeling that "I am the one who is experiencing…" should be pitched at a level higher than has been explored by those whose work is motivated by a search for something unique. To demonstrate that explanatory attempts can be reoriented, a multicomponential framework, pitched at the "molecular" level is adumbrated. Having an alternative framework in hand—one that shows promise of achieving explanatory adequacy—provides us with yet another reason to suspend search for a unique constituent.

[3] CMS regions include the pregenual anterior cingulate cortex, the dorsomedial prefrontal cortex, and the posterior cingulate cortex. The CMS significantly overlaps with the default-mode network (Raichle 2010), which has also been implicated in self-referential processing (Buckner et al. 2008 and Wicker et al. 2003). The CMS also overlaps, in some respects, with what Feinberg (2009: 152–155) has called the "integrative self-system."

[4] Northoff's view of CMS has been expanded so as to include subcortical regions; hence, he now tends to refer to the SCMS (e.g., Northoff and Panksepp 2008 and Northoff 2011: 216).

[5] The SS paradigm is elucidated below, in "Self-specificity" section; the revised version of SR is addressed in "Toward an explanatory framework: a multi-componential model" section.

Main points of the essay are developed in the following sequence: First, the SS paradigm is presented. Second, I present two counter examples or, more modestly, two empirical cases that raise significant challenges for the SS paradigm. Third, with regard to both empirical cases, I consider and respond to possible defenses of SS. Fourth, to begin development of the positive thesis I identify a positive methodological implication of SS's failure. Fifth, to assist with development of the positive thesis, I aver that mineness is a multidimensional construct and cite examples that exhibit this multidimensionality. Sixth, I propose the Principle of Confounded Expectations, a principle that I argue can well serve as part of an alternative, explanatory framework. Seventh, I argue that a modified version of the SR-processing model—now understood as an "enabling, self-*related*" form of processing—can also play an important role in this explanatory framework. Eighth, I argue that the negative and positive theses imply that we should be wary of attempts to reduce explanatory burdens by paring off certain components of self and thereby claim to have identified a conceptually sequestered, atomistic or minimal self. Ninth, I argue that the explanatory framework developed here can help determine whether inserted thoughts are owned by the persons who report them. Finally, in a concluding section, I identify a common thread that links work in neuroscience to work in philosophies of both phenomenological and analytic traditions, and suggest that their approaches should be replaced by one that seeks to explain mineness at a "molecular" level.

Self specificity

The SS critique of SR includes a bold call for paradigm change of Kuhnian import. Among other things, Legrand and Ruby (2009)[6] argue that the paradigm shift is required because SR processing fails to distinguish self from other. SR processing might sometimes contribute to making a self–nonself distinction but, they contend, it is not *specific* to self. It is just as much involved in the representation of other minds as in the representation of self. Moreover, their analysis of the "common denominator" of activity within the CMS suggests that self-relatedness processing is derivative; evaluation, inferential processing, and memory recall predominate.[7]

Legrand and Ruby share the concern of Northoff et al. to identify that which is constitutive of the experience of ownership, but they are intent on reorienting the research program so as to concentrate on just the *minimal*, least contentious implications of the concept of "self." Accordingly, they focus on what they take as most basic—self is distinct from nonself. They (2009: 271–274) observe that there can be no question but that "at the experiential level" self is "specific," at least in the sense that "we can hardly help distinguishing between the self and everything else."

Their (2009: 276) concern with only what is specific to self leads them to concentrate on "subjective perspective," which they understand as "relating a perceiving subject and a perceived object." Motivated by their minimalist perspective, they do not presuppose constitution of a self prior to the entertaining of a perspective

[6] See also Legrand (2007) and Christoff et al. (2011).

[7] Northoff et al. (2011: 54–55) cite evidence that suggests otherwise. See discussion below, "Toward an explanatory framework: a multicomponential model" section.

(cf. Strawson 2009).[8] For Legrand and Ruby (2009: 275), "Constitution of the perceiving self and its perspective are concomitant to the perceptual act…perspective is fundamentally a self-specifying process in the sense that it constitutes the self-nonself distinction."[9] This then is the critical presupposition of their proposal for understanding "mineness," their proposal for a paradigm shift—perspective is that which is fundamental to specifying self, because it is constitutive of the self–nonself distinction.

Note that this way of distinguishing self from nonself does not involve a concern with narrative (Hardcastle 2008) or autobiographical concepts of "self" (Damasio 2010: 210–240). The "consensus view" among those who emphasize narrative is that we create a self through narrative interpretation of a subset of life events (Hardcastle 2008: 116–119), and this narration then "is usually taken as a primitive to explain selfhood" (Hardcastle 2008: 18). Although not all strands of interpretation fit together comfortably, from the first-person perspective we are, nonetheless, able to draw them together in such a way that we comprehend self in terms of a single, centered narrative. Pathologies occur when we completely lose the ability to grasp connections among narrative segments (Hardcastle 2008: 120).

For those who, like Legrand and Ruby, are concerned with the minimalist conception of "self," however, narration is not taken as a primitive for explaining selfhood. Personality, episodic memory, and so forth, count for little or nothing here. Even if we have difficulty grasping the connections among narrative segments, such that we are prone to shifting among alters, as is the case with those who suffer from Dissociative Identity Disorder (DID), still the various "alters"—the distinct identities who exhibit enduring patterns of perceiving and relating to the world (Bayne 2010: 162)—retain the ability to distinguish self from nonself.[10] Alters can be perceiving subjects who are related to perceived objects in specific ways. The concern is not with whether a given mental state belongs to one alter or another; the concern is that it be experienced as belonging to the perceiving subject.[11]

"Minimal" also implies that there need be no explicit representation of self. In Legrand and Ruby's terms (2009: 275), what matters is "being a self." This is the self-as-subject, not the self-as-object (2009: 274–275); it is the subject of experience and "is not reducible to the object of one's representations."[12] The emphasis is on that which is prereflective (Legrand 2007: 584–585, 591): insofar as any conscious

[8] In particular, note Strawson's discussion of the transience of self (2009: 323–360).

[9] Often, the absence of temporal extension is taken as a mark of the minimal self; this is consistent with Legrand and Ruby's view, as they are concerned with what happens in the nonce.

[10] One version of the distinction between narrative and minimal selves has been perspicaciously drawn by Rosenthal (2005: 342–345), and the minimal conception has been felicitously marked by his term "raw bearer."

[11] Although instances of "co-consciousness"—one alter knows of that which is being experienced by another alter (Wilkes 1993: 112–127)—is not discussed here, the phenomenon supports the argument I am putting forward. Coconscious seems to be an instance for which perspective is the same, but ownership dissociates. It also enables us to distinguish two modes of introspection: one allows for experiencing the state as one's own, while the other only allows for knowing of the state's existence from, as it were, a third-person point of view.

[12] Although the many who have espoused positions on the distinction between self as-subject and as-object disagree on some aspects of the proper way to distinguish the two, all agree that self-as-subject is the subject of experience and self-as-object is what one refers to when, say, while maneuvering through a crowd I suddenly recognize an image of myself projected on a security camera's screen.

experiences are marked by a subjective feel, they "are necessarily experienced by a given subject." The "for me" quality, "mineness," is unobtrusive.

That the "given subject" is the perceiving subject, and that this claim is categorical, are both promulgated, unequivocally. Legrand and Ruby (2009: 275) make the noncontentious observation that not all representations are about self: representations do not necessarily take the self as their object. But "all representations specify the self as the subject entertaining these representations."

Another among Legrand and Ruby's presuppositions is that the subject is distinct from any qualitative features of what is experienced (Legrand 2007: 585). They sharply distinguish what is perceived (content) and how it is perceived (modality), from "who" perceives it (Legrand and Ruby 2009: 274). Modalities can vary and content can be misrepresented, but "the perceiving subject remains present throughout."

They illustrate these distinctions with the example of biting a lemon: content is specific, in that biting a lemon differs from biting into chocolate. Mode is specific, in that biting differs from seeing. And, the perspective is specific, in that it is "*my* experience of tasting a lemon" (2009: 274).[13] They aver that it is in virtue of the specificity of perspective that the perception/representation of the lemon is "my own perception/representation." In effect, perspective determines invariant ownership.

SS, they argue, can be operationalzed[14] in terms of two criteria (2009: 272): exclusivity and noncontingency. Concerning exclusivity, they contend: if a given self S is constituted by a SS component C, then C characterizes S exclusively. In other words, C could, under no circumstances, characterize non-S. Concerning the non-contingency criterion they contend: the loss of or a change to C would result in loss of that distinction between S and non-S. Non-SS components might play a role in the characterization of self, but they could not be constitutive. Only the presence or absence of a SS component C can determine the self–nonself distinction.

Subjective perspective is privileged because it satisfies both exclusivity and noncontingency (Legrand and Ruby 2009: 274). First, perspective is exclusive to self: two people can perceive the bitterness of lemon, but neither perception can be reduced to the other, for they are had from perspectives that differ systematically. Second, perspective characterizes self noncontingently. Any change, changes the self–nonself distinction. They do not intend to deny that we sometimes adopt "third-person" or "detached" perspectives, but they insist that such attenuations or modifications of perspective "remain one's own." Accordingly, they conclude: that "my perceptions, representations, and experiences are anchored in my perspective, and by virtue of this, they are mine rather than someone else's or nobody's."

[13] Italics added by the author. Elsewhere, Legrand (2007: 591) makes this point with equal clarity—"To consciously perceive a tree is already to be pre-reflectively conscious: it involves self-consciousness in the sense that the tree is perceptually given *to me*, there is a conscious first-person perspective, a dimension of mineness." The italics are Legrand's.

[14] Their operational definition of self-specificity is intended to assist with "evaluating alternative conceptions of self" and to "guide new elaborations." Clearly the sense of "operational" here is not the same as that which concerned a generation of philosophers of science, for although it aims at precision and reliability, it does not clearly evince "definite public criteria of application" (Hempel 1965: 142).

"Double visions"

Zahn et al. (2008), however, report a case that raises doubt about the proposed paradigm shift. A 23-year-old male (DP) complained of "double visions" that had begun while he was on a long-distance flight during which he experienced tachycardia, shortness of breath, and fear of asphyxiation. Because of the "distress" caused by the "double visions," DP sought medical treatment 5 weeks after their acute onset.

It was soon established that DP does not literally experience double vision; in fact, when looking at a new object, he sees it as singular. But something had changed while he was on that long-distance flight. According to DP (2008: 398): "he was able to see everything normally, but that he did not immediately recognize that he was the one who perceives and that he needed a *second step* to become aware that he himself was the one who perceives the object."[15]

In all other respects, DP appeared healthy: for example, the second step is unnecessary when he initiates actions or when he perceives the actions of others. Furthermore, initial and follow-up neurological examinations were negative, and he exhibited no other symptoms of psychopathology. His visual perceptions were not accompanied by any of the following: delusions of control, thought insertions, obsessions, compulsions, or fear. Neither did initial psychopathological examinations evince symptoms, other than "double visions" and the distress they caused, nor did subsequent examinations conducted over the course of a year. Results of a structured DSM-IV-R interview did not suggest a psychiatric diagnosis nor did treatment with various antidepressants or antipsychotics relieve his symptom.

He performed well on a wide range of examinations that included tests for lexical retrieval, for visual object recognition, for attention or executive deficits, and for short-term, working, semantic, and episodic memory. His medical history contained no indication of psychosocial stress or trauma: indeed, he seemed socially well-adjusted and capable of managing daily activities. His problem was confined to "double vision" and the accompanying distress.

One might wonder whether DP's symptom indicates that a self does indeed own the perceptual experience of objects, but that his problem concerns subsequent judgments about whether *that* self who owns *those* perceptions is the same as the self who owns his prior or other perceptual experiences, perhaps the experiences that are constitutive of his narrative self. But nothing in DP's exhaustive medical examinations, carried out over the course of a year, and nothing in his medical history or subsequent behavior, suggests such a diagnosis. His pathology is narrowly circumscribed and there is no evidence that he has experienced dissociative tendencies or other abnormalities relating to the experience of self, either prior to or subsequent to the acute onset of his idiosyncratic "double-visions."

The apparent cause of this condition is hypometabolism that has been found in several areas, but "predominantly within right inferior temporal and parieto-occipital regions" (Zahn et al. 2008: 400).[16] The former is part of the ventral visual stream; the latter, part of the dorsal visual stream. Since "double visions" were restricted to visual

[15] Italics added by author.

[16] "Hypometabolism" refers to problems pertaining to the supply of or ability to metabolize glucose. It was confirmed by findings from an 18-fluorodeoxyglucose positron emission tomography exam, 2 months after DP first complained of "double visions."

object recognition, it is not surprising that the right inferior temporal and parieto-occipital regions were involved, as they are known to be critical to visual object and visuospatial representation. They combine to enable object recognition and location.

A counter example to self-specificity: experiences that belong to nobody

Bear in mind that Legrand and Ruby are concerned with SS at the experiential level, the minimal self, the self–nonself distinction, self-as-subject, self as independent of the qualitative features of experience, and prereflective awareness. They emphasize that perceptual stimuli are related to "self by being grounded in the perspective of the perceiving subject." The perspective is specific, in that it is "my experience of tasting a lemon" (2009: 274). It is in virtue of this specificity that the perception of the lemon is "my own perception."

Now consider "double visions." When DP looks at a new object, he satisfies both of the operational conditions: the particular visual image of that object is *exclusive* to DP. That image could not be constitutive of anyone who is not DP. Further, this difference between DP and anyone else is *contingent* upon the availability to DP of the visual image.[17] Change in that image would result in change to that particular distinction between DP and non-DP. In Legrand and Ruby's exemplar, we have "*my* experience of tasting a lemon"; for "double visions" we have "*DP's* visual image of a new object." According to SS, because DP's visual perception or experience of the new object is anchored in his perspective it should be the case that it is his "rather than someone else's or nobody's."

But the cause of DP's "distress"—the reason for seeking medical help—is the need for a "second step" in order to become aware that he is "the one who perceives the object." The visual image is exclusive to DP and its loss would result in the loss of a distinction between DP and non-DP. But from the satisfaction of these two conditions, it does not necessarily follow that this is DP's visual image. It is unlike the prototypical case of the lemon for, prior to taking of the second step, DP does not take it as "my" visual image. Whereas in the exemplar, the subject could say, "I am the one experiencing the acidity of the lemon juice," DP would not make such a claim. There is an important sense in which, although it is anchored in "his"[18] perspective, the perception or the experience of the new object is "nobody's."

Finally, when criticizing SR and proclaiming the need for a paradigm shift, Legrand and Ruby (2009: 264) write: "It is important to note that the inferential processes can be made explicitly but most of the time are made implicitly." They emphasize that SS is distinct from SR in that the former does not involve inferential processing. DP's need for a "second step" though suggests the need to make an inference from "perceived-object" to "perceiving-subject." This alone is sufficient to serve as a counter example to SS—perspective does not determine mineness. But something potentially more threatening to SS seems afoot. The case of DP raises the empirical possibility that in ordinary cases a gap must also be inferentially bridged, albeit implicitly.

Summarizing, DP's distress indicates that SS fails. Were SS concerned with self-as-object or with reflective states of awareness, the case of DP would not count against it.

[17] Recall that SS does not presuppose constitution of a self prior to the entertaining of a perspective.
[18] Note that these are scare quotes. Those that appear in the latter half of the sentence, however, are not.

But SS is principally concerned with the self-as-subject and with pre-reflective experience. Furthermore, that DP seems to require an explicit inference in order to take new visual images as belonging to self, the empirical possibility of implicit inference making in ordinary cases is suggested.

Possible defenses of self-specificity

First, levelheadedness is always the proper response to singular pathological cases. Although it is undeniable that much has been learned from rare pathologies, particularly as regards the discovery of double dissociations, when $n=1$ caution in interpretation is always warranted. There simply are too many respects in which the characterization of empirical findings can go astray, a fact which is all-the-more true when subjective reports are involved.

But while the neural substrate for the case described by Zahn et al. appears to be unique in the neuropsychological literature, the conscious experience reported by DP might not be so rare as tends to be presupposed. Similar reports are to be found in the literature on psychoses. Sass and Parnas (2003: 438), for example, describe a patient who "reported that his feeling of his experience *as his own experience* only 'appeared a split-second delayed'." Because this gap between self and subjective experience—what Parnas (2003: 225) refers to as "phenomenological distance"—strikes us as so odd, it might be the case that such reports tend to be disregarded or neglected, even when reported.[19] Alternatively, because the relationship between subjects and reportable experiences is typically so intimate, clinicians and scientists might simply be failing to ask the right questions or conduct the right probes. The degree to which these reports strike us as counter intuitive might be a function of under-reporting motivated by false presuppositions.[20]

Second, Legrand and Ruby might just insist that, despite what DP says, the visual image is, objectively, his. This conceptual gambit, however, would not be available to them, because they are attempting to explain the "*subjective* perspective"[21] at the

[19] The case of phantom limb phenomena is instructive in this regard: despite being commonplace and well-described for at least 500 years, until recently it has largely been neglected by clinicians and researchers. One reason for this neglect is that the very idea of sensations felt where there is no limb just strikes us as too counter intuitive (Halligan 2002).

[20] Some of Shoemaker's views might be representative of widely held presuppositions: (a) the relationship between a subject and an experience are as intimate as a "branch and a branch bending" (1996: 10), and (b) the proper way to regard the relationship between introspection and mental states is that "the reality known and the faculty for knowing it are…made for each other—neither could be what it is without the other" (1994: 289). In short, the relationship among subject, experience, and introspective access are so close that it is difficult for most of us to conceive of the possibility that they are not related, integrally.

[21] Legrand and Ruby sometimes seem equivocal as regards "perspective". Occasionally they say "perspective"; on other occasions, "subjective perspective." The difference is suggestive of the distinction drawn by Blanke and Metzinger (2008: 8) between a weak first-person perspective (1PP) and a stronger 1PP, like "subject of experience." On their construal, a weak 1PP is a "purely geometrical feature." It alone is insufficient to make consciousness subjective—insufficient to constitute a subject of experience or a self-as-subject. If Legrand and Ruby are referring to a weak 1PP, then their claims court triviality and have no bearing on mineness. I believe, however, that on any charitable interpretation of their argument, they should be taken to be referring, consistently, to a subjective perspective, that at least approximates a strong 1PP.

"*experiential* level." Were they concerned with the self-as-*object*, they could say that despite what DP experiences, the image is his, for it supervenes on his brain activity. But their concern is with the self-as-*subject*, and the subject does not experience ownership.

Third, they might insist that mineness obtains, in view of the fact that DP does, eventually, relate the image to himself. This strategy would also fail, however, because they are principally concerned to explain "being a self" at the level of "pre-reflective awareness." DP's distress indicates that perceiving subject does not, prereflectively, feel perceived object to be his. Rather, an explicit ownership representation must be formed for it to be taken as belonging to self. What's more, if the self in question is understood as "minimal," in the sense that it lacks temporal extension, then the time required to form the ownership representation suggests that Legrand and Ruby employ "minimal" with inadequate precision.

Fourth, they might emphasize that visual images are unlike baseballs. Baseballs can fly about freely, whereas mental states are like dents in that they simply cannot exist on their own. Given that it is DP who reports these images and given that images must be had by someone, they necessarily are owned by DP. But the fact that images need *hosts* and that DP reports the image does not imply that DP is the one who *owns* the image.[22]

The empirical details in this and similar cases are insufficiently clear to allow us to produce a definitive characterization of the phenomena. But we already know that DP's reported experience is atypical. For this reason alone, we should be careful not to conflate *hosting* and *ownership*. It seems to be the case that they mark a distinction with a nontrivial difference, one that is empirically significant. We should at least allow for the empirical possibility that DP's awareness of this mental state's existence is less like *owning* and more like *awareness of* in the way that I "am aware" fear exists by "seeing" it in the eyes of the person standing before me.[23] Determining whether this analogy is cogent will, in part, turn on just how direct is introspection and how indirect is empathy or mind-reading. But then these are empirical matters, not matters to be decided a priori.[24]

Fifth, they might claim that DP's initial experience is no different than what we experience when we adopt a "third-person" or a "detached" perspective; in either case, the experience remains "one's own." But the phenomenology of these perspectives is distinct, not confusing for the perceiving subject. We can easily manage the distinction between third- and first-person perspectives, unless, say, we are suffering

[22] Many verbs are used in contexts of this sort, most of which are intended to imply ownership. Among these are "possess," "bear," and "enjoy."

[23] If I am correct, some version of what are often called "inner sense" models must be assumed. As regards how best to understand this analogy to perception, Jack and Roepstorff (2003: 14–15) have proposed some minimal and plausible assumptions concerning possible mechanisms.

[24] The issues here admittedly are complex: de Vignemont (2010), for example, has cautioned that for cases of this type, what we might call "mirror empathy," the degree to which we can know another's mental state is greatly "mediated by context." But what tends to be neglected in discussions of this type is that we might be worrying less about contextual mediation in cases of introspection simply because we know so much less about introspection than we do about observing the external world. Furthermore, instances of mirror empathy vary greatly in the degree to which they might be mediated by context. Observation of the eyes alone, independent of the rest of the face, can be sufficient for awareness of the existence of a mental state as well as identification of its type (Adolphs et al. 2002; Dadds et al. 2006; and Morris et al. 2002).

from autistic spectrum disorder.[25] But DP is socially well-adjusted and adept at managing daily activities. His only symptoms are "double visions" and the distress they cause. So there is no reason to suspect that he could not manage routine shifting of perspective.

And, sixth, Legrand and Ruby might argue that their paradigm case is unlike the case of DP in that biting a lemon involves action, whereas seeing a new object does not. Indeed, their (2009: 276) advocacy of a paradigm shift includes advocacy of the view that "perception is fundamentally active." Taking their lead from the views of Gibson (1979) on perception, as well as from recent developments of those views (e.g., Hurley 2006 and Noe 2004), they propose that the link between perceiving subject and perceived object is forged by the subject's actions and their perceptual consequences in the world. Accordingly, they hypothesize: "The self-specific perspective is paradigmatically constituted by the sensorimotor loop specifically characterizing a given perceiving agent."

But the view that "perception is fundamentally active" is a highly contentious position (e.g., Prinz 2006). Caution is advisable, especially in view of the fact that they are merely proposing a methodological approach—the actual research has yet to begin. Even should it turn out to be the case that self-specific perspective is "paradigmatically constituted" by the sensorimotor loop which characterizes a given perceiving agent that would seem to leave the case of DP as an unexplained "anomaly," to invoke the terminology of paradigm shifts. Recall, Legrand and Ruby categorically proclaim that "all representations specify the self as the subject entertaining these representations." But DP's representation of new objects does not so specify. Paradigms with an established track record of success can afford to temporarily set aside the occasional anomaly. Paradigms not so well established cannot.

A counter example to self-specificity: experiences that belong to someone else

Recall that according to Legrand and Ruby (a) "my perceptions, representations, and experiences are anchored in my perspective, and by virtue of this, they are mine rather than someone else's or nobody's," and (b) "the self-specific perspective is paradigmatically constituted by the sensorimotor loop specifically characterizing a given agent." In DP's case, prior to the 'second step,' he is aware of the existence of a visual image that belongs to nobody, an image that is not fundamentally active. If we restrict ourselves to consideration of a minimal self—not the narrative self—does it ever transpire that perceptions, representations or experiences are anchored in my perspective but are felt to be someone else's,[26] even though they involve sensorimotor loops of the sort that Legrand and Ruby deem paradigmatic?

Gott et al. (1984) describe a woman, JJ, whose son participated in their study on attention deficit disorder and hyperactivity. While providing routine background information for her son, she took the opportunity to query, incidentally, "what her switching

[25] Likewise, as efficient mobile creatures, we have no difficulty moving back and forth between egocentric and allocentric frames of reference.

[26] Bottini et al. (2002) describe a case which is arguably (Lane and Liang 2011) of this type. But the case described here is significantly different, in ways that are especially relevant to Legrand and Ruby's notion of self-specificity, for it involves agency and action.

meant?" It turns out that from early childhood she has experienced "involuntary" switches between states that she refers to as "me" and "it." When she was 16, she learned how to control these switches by closing her eyes or looking at the horizon, and allowing the conscious decision to take effect. Because "me" and "it" have different talents, learning to do this enabled her to improve both her schoolwork and her personal behavior.

She experiences no amnesia between states and, ever since learning to how to control the switching, she has been able to hold herself in either state, whichever she chooses, irrespective of the task at hand. Under experimental conditions, she was able to demonstrate that certain activities are better performed in one state than in the other. Generally, the characteristics of "me" and "it" conform to what would be expected were one to shift from left-hemisphere dominance ("me") to right hemisphere dominance ("it"), as indicated by split-brain research that suggests distinct cognitive styles (Roser and Gazzaniga 2004; Schiffer et al. 1998).[27] But knowledge of hemispheric lateralization could not have influenced the development of JJ's capacity for state-switching, because most work on hemispheric specialization did not occur until after the emergence of her switching. And popularization of those studies came even later yet.[28]

JJ runs a small business, a garden shop. Among other things, her switching tends to reflect specializations peculiar to management and gardening. For example, "it" performs better than "me" when engaged in design or drawing tasks; "its" drawings are more accurate. Notably, although she has learned to select states appropriate to the circumstances, neither her husband nor friends are able to distinguish one from the other.

JJ has never suffered from any psychological or neurological disorders. Interhemispheric, sensorimotor tests revealed no evidence of the type of performance deficiencies associated with agenesis of the corpus callosum. No significant differences between "me" and "it" were indicated by cognitive tests. Both exhibited above average or superior cognitive abilities, and superior intelligence: for example, on the WAIS Full Scale IQ test their scores were nearly identical. Personality tests indicated normal traits and no evidence of any psychiatric disorder. "Me" and "it" are extremely similar, evincing just a few, subtle differences: "me" is somewhat more concrete and shrewd, whereas "it" is somewhat more abstract and forthright.

To confirm that the experiential shifting corresponds to shifting in hemispheric dominance, EEG alpha asymmetry tests were employed, because decreases in mean alpha amplitude correlate with increased hemispheric activation. "Me"–"It" performance differences were always in the expected direction and JJ could hold either state, regardless of the task, such that when the task did not fit the state, performance suffered. In short, confirmation was achieved by a form of "mutual manipulability" (Craver 2007: 258): task performance can be enhanced or degraded in predictable ways by shifting, and the same is true when tasks are changed while JJ resists shifting.

[27] For a recent, accessible, and comprehensive review, see McGilchrist (2010: 37–91).

[28] Functional asymmetry seems to result from specialized information processing methods distinct to each hemisphere (or, some parts of each hemisphere). Perhaps a helpful way to think about this distinction is in terms of "hubs" and "nodes" (Nunez 2010: 29–30). While certain "critical nodes" or "hubs" might be lateralized, the performance of most activities likely involves widespread, regional networks, distributed across both hemispheres (and elsewhere) including some lesser "nodes" which themselves indicate brain tissue masses wherein substantial network connections occur. Were we to think of this in operational terms, fMRI might be more readily able to identify major hubs (assuming significant increases in blood oxygen), and somewhat less able to locate nodes in other parts of the network.

An additional physiological measure employed to examine performance differences between "me" and "it" was the interhemispheric transmission test (ITT). Here, transmission of somatosensory information is checked while fingers are stimulated. ITT results were largely consistent with the EEG alpha asymmetry tests, but something additional was observed: interhemispheric transmission was significantly shorter from the left to the right hemisphere, than from the right to the left. This additional finding suggests that a mechanism for hemispheric dominance of the type JJ experiences might involve some measure of control—perhaps inhibition or shunting mediated by the corpus callosum—over interhemispheric transmission. In effect, "my" transmissions to "it," appeared to be more efficiently processed than "its" transmissions to "me."

It would seem to be the case that JJ's learning how to "switch" when she was 16 involved both reflection and an explicit representation of self. But prior to that time "switching" was a spontaneous change that occurred when JJ was just "being a self"; "it" emerged against a prereflective background. There is no suggestion that subjective perspective changes, but in this case invariance does not self specify in such a way as to secure the self–nonself distinction. When "shifting" occurs, self experiences a yielding to someone else, to "it." It is also worth noting that in contrast to DP's case which involves no action, JJ's "it" is fully capable of being an agent and acting on the world. She gardens and performs other activities when in this state.

Consider what appears to have occurred during "shifts" prior to JJ's having learned to exercise control over them: her perspective would be unchanged, fully in accord with the two operational criteria. It would remain exclusive to her and it would be noncontingent. Not only is JJ's description fully consistent with this view, she was later able to demonstrate the effects of "shifting" under experimental conditions. But pace what Legrand and Ruby would expect, "shifting" is sufficient to change mineness.

It might seem unnecessarily contentious, perhaps even misleading, to characterize JJ's shifting from left to right as an example of "experiences that belong to someone else." One might object that although JJ "experiences" some experiences as "someone else's," they are, nonetheless, hers. As I have argued above, however, to insist that these experiences are hers, despite how things seem to her, is to fail to allow for the empirical possibility that DP's awareness of the existence of these mental states is less like *owning* and more like *awareness of* in the way that I "am aware" fear exists by "seeing" it in the eyes of the person standing before me (or, like awareness in the sense associated with routine, third person, mind-reading). Characterization in these terms is not intended to be hyperbolic; rather, it is intended as a means of making clear the hypothesis.

Why does "me" seem more nearly associated with left-hemisphere dominance than with right? The ITT's are highly suggestive. Recall, interhemispheric transmission was significantly shorter from the left to the right hemisphere, than from right to left. These data are important because they indicate a pattern of activity that is *opposite* to the norm (see discussion in "Toward an explanatory framework[33] for mineness: the principle of confounded expectations (PCE)" section): for most people, interhemispheric transmission is faster from right to left. We might, therefore, plausibly conjecture that JJ's distinctive phenomenology results from an atypical pattern of information transmission.

A possible defense of self-specifity

It might be wondered whether JJ's case should more properly be construed as pertaining to the autobiographical or narrative self. After all, at least superficially, JJ's "switching" does bear some resemblance to cases such as DID wherein distinct narrative interpretations apparently play an important role in constituting the nonself. Moreover, because the pattern of interhemispheric transmission favors the left hemisphere, it might be thought that this very fact lends support to a narrative interpretation. As is well-known, Gazzaniga hypothesizes (e.g., Gazzaniga and Miller 2009: 266) that the left hemisphere is an "interpreter," that "it creates a running narrative of our actions, emotions, thoughts, and dreams," that it is "the glue that keeps our story unified." But the details of JJ's case do not support a narrative interpretation.

First, JJ suffers from no psychological or neurological disorders that are associated with autobiographical/narrative conceptions of self (cf. Damasio 2010: 229–240; Feinberg 2009: 40–43; Hardcastle 2008: 111–126). She evinces no amnesiac barrier separating "me" from "it"; she exhibits no signs of having lost the ability to grasp connections among narrative segments of her life; and, salient life events append to both "me" and "it," conjoining to weave JJ's narrative. This is evidently unlike DID or other personality disorders.

Second, narration cannot here be "taken as a primitive to explain selfhood," as arguably might be the case with DID. "Switching" seems fundamental to JJ's selfhood, and is doubtless an essential component of her narrative interpretation of herself. But "switching" has been a consistent, important part of her autobiography since childhood, not something which interrupts, alters, or abruptly changes that autobiography. The capacity to switch might help to explain her narrative, as the difference between "me" and "it," learning how to "switch" when she was 16, and so forth, clearly gain inclusion as being among the subset of life events to be included in the creating of JJ's narrative self. But there is no indication that narrative interpretation can be taken as a primitive to explain these aspects of selfhood.

Third, the relationship between JJ's hemispheres is very much unlike the relationship between hemispheres that motivated Gazzaniga's interpreter–module postulate. He was working with patients who had undergone a corpus callosotomy. What he found striking was the left hemisphere's ability to confabulate explanations for the body's behavior under circumstances wherein it had no direct access to the reasons for that behavior, as those reasons would only have been available to the right hemisphere. But interhemispheric transmission in JJ is atypical, not severed. And there is nothing in her behavior that suggests confabulations of the type that intrigued Gazzaniga.

Fourth, JJ's personality does change slightly when "switching" from "me" to "it," but the differences are not conspicuous, nothing more than what one might find to be the case with any among the "non-switching" majority. Sometimes we are a bit more shrewd; sometimes, more forthright. Sometimes we think more abstractly; sometimes, more concretely. Furthermore, recall that "switching" is so subtle, not even her most intimate friends or family members can distinguish between the two. What is distinctive about JJ is that *she experiences abstract or forthright expressions as*

belonging to someone else and that this experience correlates with a specific pattern of cerebral lateralization.

This atypical experience of belongingness might be a "hereditary anomaly" or it might be indicative of "a latent human potential" (Gott et al. 1984: 71). But "switching" of cognitive styles correlates with a switching of the neural substrate. Differences in interhemispheric transfer are what underlie the difference between "me" and "it," differences that were evident early in life and that have helped to shape JJ's narrative. But "switching" itself is not a narrative creation. To again invoke Hardcastle's formulation, there is no evidence to suggest that narrative can be taken "as a primitive to explain" JJ's selfhood.

A positive methodological implication

Although "double-vision" and "switching" pose stout challenges for SS, they also yield a positive, methodological implication. Legrand and Ruby (2009: 275–276) express the worry that on their characterization of SS processes, physiological mechanisms in virtue of which they can be realized are intractable to empirical investigation. In order to identify neural correlates of a process, one must contrast presence and absence, and this seems impossible to do with subjective perspective. But these counter examples suggest the possibility of at least contrasting *distinct types* of perspective taking: (a) one in which there is awareness of a mental state that belongs to "nobody"; (b) one in which there is awareness of a mental state that belongs to "it"; and, (c) one in which there is awareness of a mental state for which it seems clear that "I am the one who is experiencing" it. Although SS loses the luster of explanatory adequacy—perspective cannot play the critical role in the explanans that Legrand and Ruby hoped—still, what once seemed intractable is found to be tractable. We lose an element of the explanans, but we gain explananda, along with the ability to explore the neural correlates of those explananda: we are now able to contrast the ownership experience with its absence, the difference between a *subjective* perspective and lean or stark perspectives.[29]

Indeed, this is not just a possibility in principle. The failure of SS to identify a unique constituent in the case of DP, for example, suggests a previously unanticipated learning opportunity. We might choose to adopt a "neurodisruption approach" (Bestman et al. 2008: 383–385): that is, we could employ low-frequency, transcranial magnetic stimulation on experimental subjects to transiently interfere with patterns of neuronal synchrony[30] in areas that correspond to DP's hypometablism, thereby inducing "double vision." In so doing, we would be positioning ourselves to better understand the contrast between subjective and stark perspectives, at both phenomenological and neural levels.

[29] Recall fn. 21, discussion of the distinction between a strong and a weak 1PP (Blanke and Metzinger 2008). It is not altogether clear whether my subjective-stark contrast corresponds to their strong-weak contrast.

[30] TMS is a noninvasive technique for inducing weak electric currents into the brain. Synchronized oscillation among distinct neural assemblies has been hypothesized to be a key mechanism for self-consciousness.

Varieties of mineness

Self-referential paradigms seem not to have been specific enough. But in attending only to subjective perspective, self-specificity paradigms have proven specious. One striking aspect about the evidence adduced to show that Legrand and Ruby have failed to identify that which is constitutive of mineness for the minimal self is that belongingness can fail to be realized in multiple ways.

Failure of a given experimental paradigm does not necessarily imply that the search for what is constitutive is futile. But when sundry types of empirical data can be adduced to expose failures for several candidate paradigms, and when these findings are leavened by other analyses of mineness, a pattern begins to suggest itself. Perhaps the phenomenon we seek to understand lacks a unique constituent.

Philosophers long assumed that introspective access guaranteed one could not be in error as regards mineness (e.g., Shoemaker 1968). But multiple types of empirical evidence have been adduced to call Shoemaker's formulation into question. Elsewhere, for example, I have argued that in order to experience certain introspectively accessible sensations, those sensations must be represented as belonging to someone other than self (Lane and Liang 2011). In a word, mode of access is insufficient to determine whether a mental state belongs to self or to someone else: introspective access to a mental state does not necessarily imply that it will be taken to be one's own. Furthermore, perception of events in the external world does not necessarily imply that what is perceived will be taken as external to self—e.g., experimental subjects can be made to feel that they are experiencing tactile sensations on rubber hands that they observe when these are stroked in synchrony with their biological, occluded hands (Botvinick and Cohen 1998).

Here, it has been shown that subjective perspective is insufficient to determine mineness. In DP's case, hypometabolism in the right inferior temporal region (as well as other regions) contributes to a state in which he can become aware of the existence of new visual images, without experiencing those images as his. In JJ's case, an atypical pattern of interhemispheric transmission contributes to the feeling that cognitive styles underlain by right hemisphere dominance are alien. In other words, we now have reason to believe that two, what once might have appeared to be unassailable ways of distinguishing self from non-self—subjective perspective and introspective access—are both inadequate.

Other analyses of mineness suggest yet further levels of complexity: it can be impeded both (a) when experience is attenuated and (b) when experienced is enhanced. As for (a), cortico-limbic disconnection syndromes, wherein there is a disconnection between sensory cortical areas and emotional structures, can serve to illustrate this phenomenon. As with the cases already discussed, here too there is no involvement of autobiographical memory or self-narrative (Sierra and David 2011: 99). Lesions to the parietal operculum and the posterior insula can cause pain asymbolia, a syndrome in which patients fail to experience the emotions typically associated with pain, despite being able recognize its modality, qualities, intensity, and location (Grahek 2007: 51–71). Pain shorn of its painfulness can occur because our pain system bifurcates: the path that engages our emotions and motivations projects to the limbic system, while the path that enables fine sensory discriminations projects to the cortex. In some cases, the effect of cortico-limbic disconnection can be so profound

that patients report awareness of pains, "but they seem to belong to someone else, not to me" (Sierra 2009: 150).

As for (b), in striking contrast to pain, when our bodies are in action, they tend to be "transparent and silent"; indeed, it seems that "the mark of the self in action is that we have very little experience of it" (Frith 2005: 767). The failure "to recognize the self in action" and the feeling that our actions are under the control of "some external force" results when we feel what we would ordinarily not feel (Frith 2005: 753). Typically, when we feel in control, proprioceptive signals, sensory feedback, as well as various other movement-related sensations are attenuated. It is, on the contrary, when we are keenly aware of these that we do not "feel in control in the way we normally do" (Frith 2005: 754). There is now good evidence to show that patients with passivity experiences—actions that are experienced as made for the agent by some external force—are abnormally *aware of* proprioceptive feedback and the sensory consequences of their movements (Frith 2005: 763). What seems to occur when we feel that someone else is controlling our behaviors is that we do have a sense of action-caused-by-intention,[31] but this sense dissociates from the experience of being in control, and it is the latter that "relates to the self" (Frith 2005: 765). In short, we feel in control of what our bodies do when we consciously experience little; out of control, when conscious experience is more robust.

Phenomenological approaches to schizophrenia (e.g., Sass and Parnas 2003), even those that focus on the prodromal (the pre-onset) phase (e.g., Nelson et al. 2008), advance congruous claims. Heightened or exaggerated awareness (sometimes termed, "hyperreflexivity") of that which is ordinarily tacit or prereflective interferes with absorption necessary for the feeling that self "saturates experience" (Parnas and Handest 2003: 125). One consequence of the loss of "saturation" is that thoughts or sensations which had previously been mine can become objectified, "as if they were external objects" (Nelson et al. 2009: 809).[32]

Toward an explanatory framework[33] for mineness: the principle of confounded expectations (PCE)

Gleanings from the several phenomena discussed above enable us to discern a general principle. In standard, ecological cases, mental states cluster in accord with fixed sets of tacit expectations. What we typically refer to as a pain state, for example, occurs in such a way that affective-motivational and sensory-discriminative aspects are conjoined. In

[31] Various factors contribute to this feeling: one among them is "intentional binding," wherein perceived time of initiating an act and perceived time of effect are closely bound (Moore and Haggard 2010).

[32] To make less inchoate the sense of "objectification" intended here, Nelson et al. (2008: 387) invoke a centrifuge metaphor: "the hyperreflexive attitude spins aspects of the self outward until they form separated and estranged entities."

[33] I use the term "explanatory framework," advisedly: following Crick and Koch (2003: 119). I take a framework to be "a suggested point of view for an attack on a problem," a point of view that suggests some testable hypotheses. As regards explanation, I am an advocate of the received view in that I aspire to making "predictions concerning as yet unexamined phenomena" (Hempel 1965: 365), but I side with Craver (2007) as regards neuroscience-related disciplines—we should aspire to reveal how phenomena are situated within the causal structure of the world, even though there may well be more than "one thing answering to the word 'causation'" (Craver 2007: 105).

the case of pain asymbolia, however, the two dissociate, thereby confounding our tacit expectations. It is for this reason, inter alia, that a person can be positioned so as to be introspectively aware of a mental state and, yet, feel that the state belongs "to someone else, not to me."

Figure 1 delineates this relationship. In standard conditions, those that are tacitly assumed, when the sensory-discriminatory aspects of pain are felt with a sufficient degree of robustness, so too are the affective-motivational aspects. To abstract away from this particular case, we might say that this phenomenon reflects a general principle, mental state clustering (MSC).

But here, MSC is disrupted. The affective-motivational aspects are not experienced, as is indicated by the *y*-axis. This confounding of tacit expectations—this instantiation of PCE—is what causes some who have experiences of this type to characterize the mental states of which they are aware as belonging to someone else.

PCE also applies to action. In standard, ecological cases involving action, just so long as intentions are appropriately bound to behavior,[34] one experiences ownership. Tacit expectations are confounded though when that which should be silent is not: typically we are not keenly aware of proprioceptive feedback or the sensory consequences of our behaviors. When we are, however, we are still inclined to feel the accompanying behaviors are actions; it is just that they are not *our* actions.

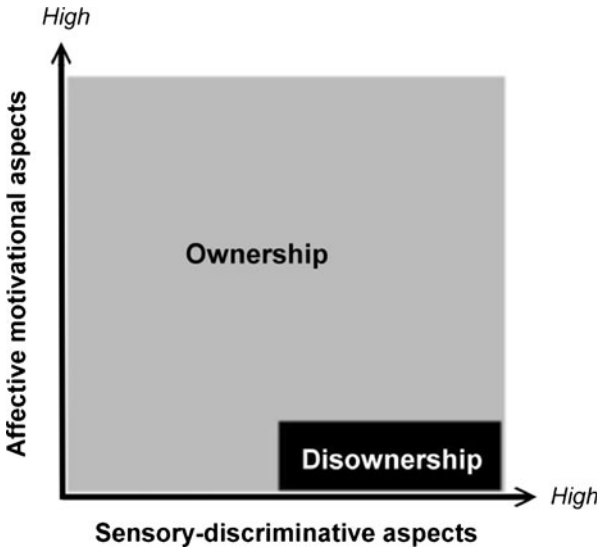
Figure 2 delineates this relationship. The sense that movement is causally linked to intentions is necessary for experiencing behaviors as action, as is indicated by the *x*-axis. But typically, as indicated by the *y*-axis, there is no robust awareness of proprioceptive feedback or action's sensory consequences. When these are keenly sensed people are likely to feel that those actions are not theirs.

Now how might PCE apply to the case of "double vision"? What seems to be occurring in this instance, as indicated by the *x*-axis, is that DP has standard, introspectively based awareness of a mental state's existence, in this instance, a visual state. Once again taking the *y*-axis as the indicator of aberrancy, it appears to be the case that attribution of the visual image to a subject is atypical, in that it requires the taking of a "second step." Although Zahn et al. do not attempt to explicate "second step," a natural reading suggests itself—DP needs to *infer* that he is the subject of this visual experience.

Among the community of philosophers and scientists who investigate consciousness, although there is much disagreement as regards its proper characterization, some intuitions are widely shared. One among these is that "phenomenally conscious events are ones that we recognize in ourselves, non-inferentially, or 'straight off,' in virtue of the ways in which they feel to us, or the ways in which they present themselves to us subjectively" (Carruthers 2000: 14). Rosenthal (2002: 408–422 and 2005: 343–344), developing a distinct theory of conscious mental states, also emphasizes that they feel "direct," "unmediated," or "noninferential," that "one's awareness of the state tacitly represents that state as belonging to the very individual that has that awareness" (Rosenthal 2010: 271).

[34] Concerning "appropriate binding," see fn. 31. Also, see Wegner's (2002: 64–74) Humean interpretation of mental causation, which emphasizes that intentions be prior to, consistent with, and exclusive for a given behavior.

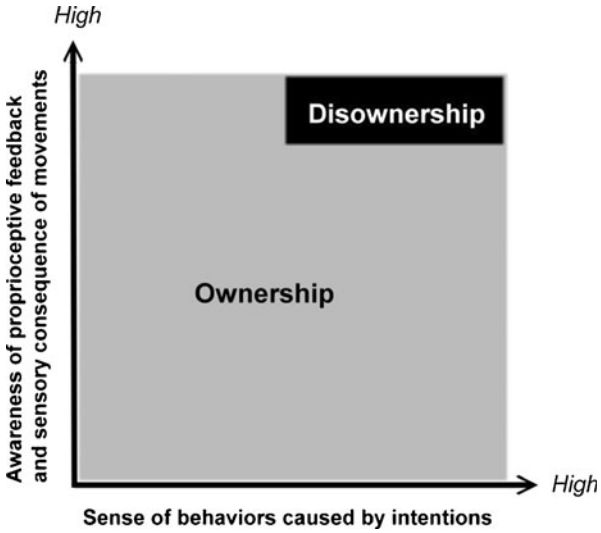
Fig. 1 Pain



But DP is different. Despite being consciously aware of the mental state's existence, "second step" seems to imply that awareness of its relatedness to him—the subject—is not straight-off, direct, unmediated, tacit, or non-inferential. A step, seemingly an inferential step, is required in order for DP to become aware that the visual image is his.

The expectation here confounded is that conscious experiences typically do not require a "second step." Legrand and Ruby align themselves with the consensus view that a conscious experience and its relationship to the subject seem tacit, noninferential, or "pre-reflective"; indeed, there is good reason to hold that this relationship is true for all standard cases. But expectations can be confounded and when they are mental ownership fails to obtain, at least it does not obtain in the way that Legrand and Ruby aver. Eventually, DP does realize that the visual image is his. But this type of ownership

Fig. 2 Action



is not that which Legrand and Ruby presuppose and then seek to explain. This is not their intended target, their intended explanandum. The ownership that eventually obtains is not tacit; rather, the need for a "second step" implies that attribution of the visual image to self is the result of reflection and the explicit formulation of an ownership representation (Fig. 3).

Applying PCE to "Me–It Switching," it appears to be the case that introspectively based awareness of mental states is unaffected. What varies, again taking the *y*-axis to be the indicator of aberrancy, is that interhemispheric transmission from right to left is relatively prolonged. This prolongation of transmission—on the plausible assumption that it correlates with a distinctive phenomenological experience—seems to be that which confounds tacit expectations and results in the sense that those experiences are not mine.

One among the well-established research findings concerning inter-hemispheric transmission of information (Barnett and Corballis 2005, Marzi 2010, and Putnam et al. 2010), is that left to right is slower than is right to left, and this is true regardless of whether the task tends to engage more activity in one hemisphere than in the other.[35] But JJ exhibits the opposite tendency. In her case, the tacit expectation (perhaps a natural disposition) for a particular mode of asymmetric transmission is confounded. The emergence of JJ's involuntary switching, and its presumably distinctive phenomenology, may have caused her to distinguish "me" from "it": that is, normal channels of information transmission are inhibited, causing her to feel that right hemisphere activity is more alien. A natural interpretation of her description is that awareness of *its* mental activity strikes her as being more like awareness of the mental activity of other people than it is like awareness of one's own mental activity. Her eventual learning of how to control the two—how to switch—may then be seen as an ontogenetic adaptation to this atypical mode of inter-hemispheric transmission (Fig. 4).[36]

Speculating, since the description of "switching" does not provide sufficient information, it might be that the main causal factor is the awareness of inference making, as is the case with "double-vision." Time is a factor in both, and DP spoke of the need for a "second step." JJ did not describe her experience in these terms, but one benefit to be derived from highlighting this similarity is that when such cases are encountered in the future, we will know what questions to ask.

Finally, let us apply PCE to an experimental protocol that probes aspects of mental ownership, the rubber hand illusion (RHI). In RHI when participants observe rubber hands being stroked in synchrony with the stroking of their occluded biological hands, several phenomena occur (Botvinick and Cohen. 1998). Here though, I am only concerned with two: touch referral (the feeling that the rubber hand is being stroked) and body ownership (the feeling that the rubber hand becomes one's own

[35] Candidate explanations for this phenomenon include: (a) asymmetry of callosal fibers, (b) hemispheric specialization, and (c) more fast-conducting, myelinated fibers in the right than in the left hemisphere.

[36] I am grateful to Yasuo Deguchi and Hsu Hahn for pressing the point that "her eventual learning of how to control the two" implies the existence of what we might refer to as a "meta-me." This observation raises important questions about the relationship between me and meta-me. Those questions I will address in subsequent work: here it is only necessary to observe that meta-me did not emerge until JJ was 16, assuming that the ability to control switching is the main indicator of its existence. Moreover, given JJ's description of her phenomenology, it would seem that after meta-me emerged, switching to *it* should not be allowed as a tactic to absolve her of responsibility for subsequent actions. As a first pass at characterizing ethical implications here, it would seem to be that meta-me should be held responsible in the way that a gang leader is held responsible for arranging that a gang member commit a crime or moral infraction.

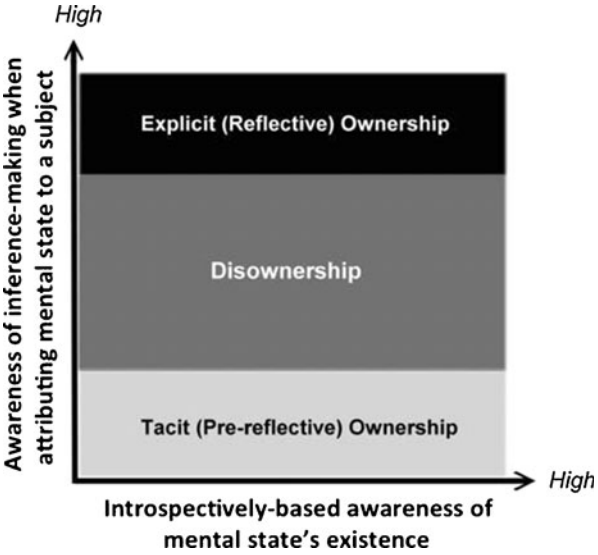


Fig. 3 Double vision

hand). According to the neurocognitive model that Tsakiris (2010 and 2011) educes, touch referral appears to precede body (part) ownership. In other words, participants first experience the sensation of touch as occurring on the rubber hand, rather than on the biological hand. After that occurs, they begin to feel that the rubber hand is their hand.

Tsakiris nowhere makes this sequence explicit. Experiments conducted thus far have tended to focus upon aggregate results (30% or more of naïve participants fail to experience the illusion) and correlations. But PCE yields a specific prediction. What seems to occur is that due to vision's ability to dominate other sensory modalities when a spatial conflict is imposed ("visual capture") the majority of participants begin to feel that they are being touched where they see the touch occurring—viz. on the rubber hand. But this experience confounds the tacit expectation that I will feel

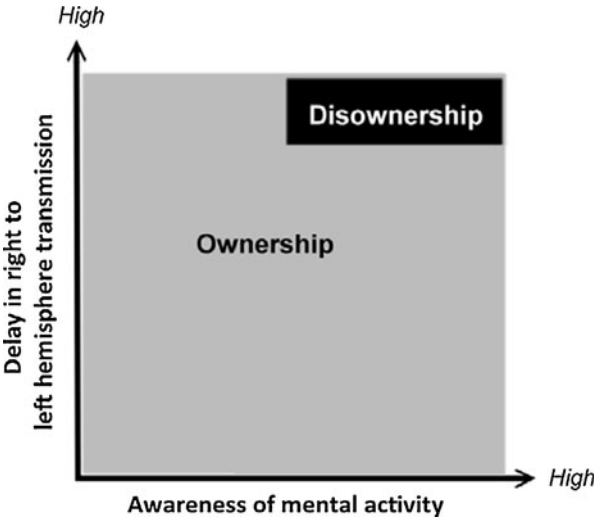


Fig. 4 Me–it switching

touch where my biological body is being touched. As soon as expectations about location are confounded, one has a pair of derivative experiences: the rubber hand seems to belong to me while my own hand does not. This paired set of experiences result from the confounding of an expectation that has been well articulated by Brewer (1995: 305): "…how we experience our body *as ours*…cannot be an external phenomenon. For when we perceive it from the outside, our body has no indelible stamp of ownership." When visual capture confounds tacit expectations as to where tactile sensations should be felt, the tacit expectations expressed by Brewer are, ipso facto, also confounded. The result is that not only does the rubber hand feel like it is mine, my biological hand feels disowned (Fig. 5).[37]

Because I have here presented only a two-dimensional sketch of PCE, some readers might find that it resembles Levine's (1990) "discovery hypothesis" of anosognosia.[38] According to Levine, anosognosia results from two factors: patients suffer impairment (e.g., hemiplegia) of a type that does not directly engender the sensation of lost function. Typically, loss must be "discovered" through observation or inference. Anosognosia results when the capacity for discovering loss is also impaired. For example, deficits related to neglect of hemispace or hemibody interfere with the discovery of weakness or paralysis of a limb.

PCE and discovery theory are alike in that both emphasize the importance of becoming aware of abnormal or atypical circumstances. But where discovery theory is an attempt to explain first-person ignorance of phenomena that are dead obvious from a third-person perspective, PCE is proposed as a *partial* explanation of that aspect of the first-person perspective that links awareness of a mental state to its owner. Moreover, I incline to the view that discovery theory is inadequate. I favor the view that anosognosia is better understood as a "multi-dimensional construct" (Vuilleumier 2004: 15) and that its explanation will require "a multi-componential model…in which no single deficit is either sufficient or necessary" (Vocat et al. 2010: 3592). Similarly, for mineness, I believe the construct itself is multi-dimensional and adequate explanation will require a multicomponential model.

Toward an explanatory framework: a multicomponential model

A proper inference to be drawn at this juncture, I submit, is that if we take the explanandum to be a prereflective "I am the one who is experiencing…", then the search for a unique constituent is ill-advised. The required explanans will include

[37] de Vignemont (2011) has observed that RHI tends to induce only a weak, elusive sense of ownership. I believe this observation to be accurate, when experimental subjects are considered in the *aggregate*. But formal studies of RHI, conducted in collaboration with my colleague Yeh Su-Ling, suggest that the experience of ownership or disownership varies greatly among subjects. PCE allows for this variation: it predicts that ownership and disownership are functions of the degree to which one's expectations concerning the location of touch—the robustness of touch referral—are contravened. In effect, robustness of touch referral is an indicator of contravened expectations, such that the more robust is the sense of touch referral, the greater the feeling of ownership and disownership for rubber and real hands. (Standard measures of disownership consistently indicate that it is weaker than the ownership effect, but this result follows necessarily from experimental design—attention is directed toward the rubber hand and away from the biological hand.)

[38] Ramachandran (1995) and de Vignemont (2011) have also developed versions of the discovery hypothesis.

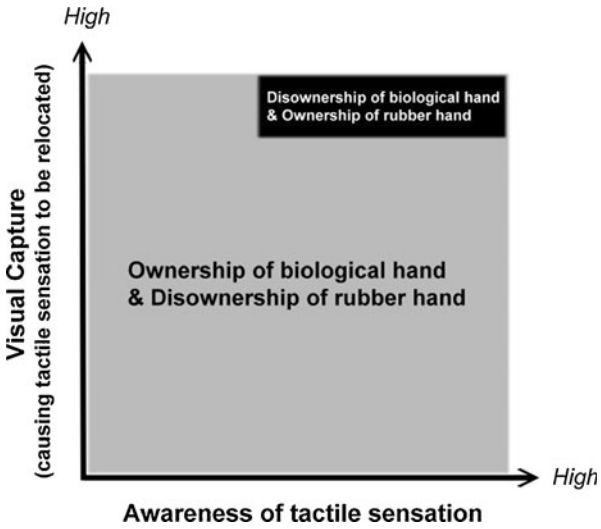


Fig. 5 Rubber hand illusion

multiple components, interacting dynamically, while the explanandum will be a multidimensional phenomenon. Some regions of the multidimensional space would be those within which interaction of the components secures mineness; some, where one experiences disownership; and some, where one is bemused. In a manner analogous to the way in which neuroscience has motivated some philosophers to reject the view that we possess a faculty of free will and seek, instead, to understand the many ways in which a person can be in or out of control (Suhler and Churchland 2009), so too should we reject the search for a unique mineness constituent, and seek to understand how multiple components interact so as to engender varying types and degree of mental ownership. In short, mineness is multiply realizable, the consequence of multiple, interacting components.

Naturally, just as it has been misguided to search for a unique constituent, so too would it be foolish to disregard the importance of perspective. It would be equally foolish to disregard the importance of the distinction between awareness of a mental state's existence via introspection and awareness of its existence via observation of the external world. But what seems increasingly clear is that to these components must be added other critical components, not the least of which will involve phenomenal experiences underlain by mechanisms of perception within right inferior–temporal regions, interhemispheric transmission, cortico-limbic interaction, and visual capture.

Moreover, with reference to the phenomenon identified by Zahn et al. (2008), it will be important to get clear about the positive methodological implication discussed above, the implication that pertains to distinguishing subjective from stark perspective. Presumably, this is not a distinction relevant only to visual perception, so analysis will need to be carried out at a more abstract level. Blanke and Metzinger (2008) have pioneered important conceptual spadework in this vicinity, along with suggesting how these concepts can be fitted to several types of empirical work. But more needs to be done. The explanatory goal should not be to merely identify the critical components of belongingness; it should be to tell us enough about how these

components interact and evolve over time such that we are able to design both clinical probes and experiments for healthy subjects.

This explanatory goal provides one of the motivations for seeking to abstract away from empirical regularities and trying to identify more general principles—like PCE—that can be used to generate predictions. The Tsakiris neurocognitive model that is cited above exemplifies the need for more theorizing in this area, albeit theorizing that is constrained by empirical work. That model educes empirical regularities but is silent as regards how touch referral and hand ownership relate to one another. It implies a sequential relationship, but that is all. PCE is a proposal both for how to characterize touch referral and hand ownership and for how to understand their causal relatedness.

But PCE is not sufficient. To illustrate with one respect in which it will need to be augmented, consider the difference between pain asymbolia and Capgras syndrome. In the former, patients are aware of pains that seem not to belong to them; in the latter (Bortolotti 2010: 68–73), patients are aware of familiar faces that seem oddly alien. Some among the attempts at explaining both syndromes have emphasized that something is missing—expected, affective response.[39] In short, tacit expectations are confounded. But only the case of pain asymbolia is relevant to mineness. Clearly, PCE can only be part of a framework that aspires to explanatory adequacy. Fortunately, indications of the shape of the general framework within which PCE stands to play a significant role can be inferred from recent empirical work.

Recall that the SR paradigm has been criticized (a) because neural activity in the CMS (cortical midline structure) that correlates with SR processing was found to be engaged both by self-related and by other-related stimuli, and (b) because it has been alleged to be more accurately regarded as a general mechanism for evaluating and judging (Legrand and Ruby 2009). In other words SR-processing of the CMS is not exclusive to or *specific* to self.

As for (b), when participants are instructed not to exercise judgment in responding to stimuli, the CMS was found to be active when they respond to self-specific stimuli (e.g., the hearing of one's own name or the seeing of one's own face), thereby suggesting that these neural mechanisms do not perform a general, evaluative function (Northoff et al. 2011: 54–55). Moreover, meta-analyses (Qin and Northoff 2011) have indicated that the pregenual anterior cingulate cortex (PACC)—an important part of the CMS—is engaged by self-specific stimuli, but not by general, evaluative functions. As regards (a), on the other hand, it seems Legrand and Ruby is correct that SR processing in the CMS is not self-specific, at least in that it is not constitutive of the experiential self, nor does it mediate ownership of experience. But here too, acknowledgement of failure can be instructive.

Follow-up probes, designed to target the self-other distinction, evince that although CMS activity[40] does not correlate with mineness, it does correlate with self-related processing (SRP), processing that "distinguishes between different degrees of self-relatedness, including high and low self-relatedness" (Northoff 2011: 227). SRP then,

[39] For discussion and assessment of competing explanations of Capgras syndrome, see Hirstein (2009).

[40] Whenever possible, these probes are now extended so as to include *sub*-cortical midline structures, in particular the periaqueductal gray, the superior colliculi, the adjacent mesencephalic locomoter region, the hypothalamus, and the dorsomedial thalamus.

while it cannot be said to *constitute* mineness or self-specificity, does appear to be a "neural predisposition" for mineness (Northoff 2011: 226–230; Northoff et al. 2011: 54–56). Neither PCE nor SRP are separately sufficient to explain mineness, but both seem necessary, and, jointly, they approach sufficiency.

Northoff et al. (2011: 58–61), employing descriptive meta-analysis, compared investigations of the neural substrates[41] of self, familiarity, and non-self (or other). Three sets of studies were included, in order to adequately flesh out the distinctiveness of each condition: self-related stimuli were, for example, compared to stimuli related to people with whom one is familiar. Results indicate clear differences among the three conditions—self, familiarity, and other. Self, for example, seems to be generated by a pattern of interaction "mediated by a specific constellation of the neural activities in the insula and the PACC" (Northoff et al. 2011: 61). It would be inaccurate to suggest that the insula and the PACC wield an exclusive anatomical involvement with self. Instead, the Northoff et al. findings, which are broadly consistent with related bodies of research (e.g., Craig 2010; Feinberg 2009; Gusnard et al. 2001), suggest that there is a pattern of interaction (involving resting state activity,[42] as well as interoceptive and exteroceptive stimulus processing) that enables a clear, albeit continuous, distinction between that which pertains to self and that which pertains to the familiar.[43]

How then might PCE and SRP be combined so as to help with distinguishing phenomena relevant to mental ownership (e.g., pain asymbolia) from phenomena that are not (e.g., Capgras syndrome)? The role envisioned for PCE in explaining mental ownership is one which presupposes the enabling or predisposing capacities of SRP. If, for example, stimuli are processed in such a way as to suggest that the visual image of a face is *familiar*, but affective expectations are confounded, we might find ourselves to be suffering from Capgras syndrome. If, on the other hand, stimuli are processed in such a way as to suggest that pain is highly related to *self*, but affective expectations are confounded, we might find ourselves to be suffering from pain asymbolia. To link this yet more directly to the framework sketched here, it has been found that one of the critical differences between perception of pain in self and others is that when we perceive self to be in pain a large region of the mid-insula is much more active than when we perceive others to be in pain (Ochsner 2008: 153). If processing by the insula has contributed to enabling a sense of self-relatedness (as opposed to mere familiarity or other-relatedness), then a confounding of expectations (e.g., the absence of affect and motivational dispositions that typically accompany perception of pain in self) can inhibit mental ownership, even though one's awareness of this mental state is grounded in the first-person perspective.

This framework need not be restricted to explaining just self and familiar persons; it can be extended to include the physical environment. Consider, for example, derealization, the feeling that one is cut off from the outside world, that it seems "unreal" (Sierra

[41] Because data of this type concerning subcortical regions are limited, the scope of this study is restricted to cortical regions, hence directly relevant to the CMS, but not the SCMS. This methodological limitation has no bearing on the use to which this study is put here, for the study does provide a framework for distinguishing between that which *belongs to* self and that which is *familiar to* self.

[42] Northoff (2011: 91–92) uses the concept of "resting state" in a way that is related to, but not identical with the "default mode network" of Raichle (2010). The differences shall not concern us here.

[43] Note that in the discussion of Tsakiris (2011: 194–195) on the subjective experience of body ownership and disownership, he too emphasizes the role played by the right insular lobe.

2009: 38–39). Articulate patients frequently ascribe the feeling of "unreality" to the absence of affective coloring: the world might seem distant, flat, or artificial. If the loss of affect, or its distortion, is a significant component of derealization, then we might plausibly infer that PCE conjoined with SRP can explain not only problems pertaining to mental ownership and familiar faces, but also problems pertaining to the sensed unreality of one's physical environment.

Figure 6 builds upon the two-dimensional models presented above. Here a *z*-axis is added, one which stands for the degree to which stimuli (both exteroceptive and interoceptive) are related to self. It extends from the highly self-related, to the personal–familiar, to the external environment (in particular those aspects of the external environment that would ordinarily evoke affective reactions). Conceptual and empirical issues relevant to the *z*-axis will require further refinement, but it can already be employed to indicate the general shape of a 3-D, mental ownership model. Also, take note that here I have only considered PCE as it applies to affective–motivational components and sensory–discriminative components. A complete version of the model will need to incorporate other ways in which expectations can be confounded.

To show how this can be applied to an experimental context, consider RHI one last time. Tsakiris (2010 and 2011) emphasizes that in order for touch referral to occur, subpersonal mechanisms must make two comparisons: the visual form of the viewed object must be compared to a pre-existing body model, and the postural–anatomical features of the viewed object must be compared to the current state of the body.

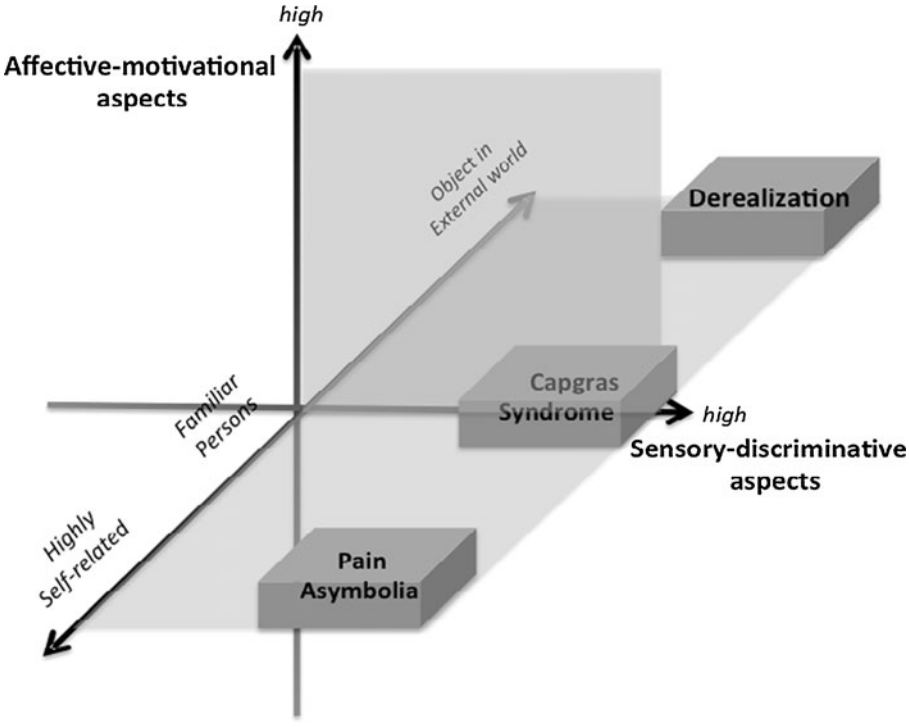


Fig. 6 3-D model of mental ownership

According to his neurocognitive model, touch referral, rubber hand ownership, and biological hand disownership occur *only if* these visual form and postural constraints are satisfied. These two "comparators" are, in effect, doing work here attributed to the *z*-axis, the work of enabling or predisposing, by indicating the degree of self-relatedness. The Tsakiris model and the model proposed here are compatible in that self-relating is taken to be a necessary condition for the experience of mental ownership; they differ in that the 3-D model is designed to achieve broader explanatory scope.

Toward an explanatory framework: Whither minimalism?

Some who explore this terrain presuppose that by merely marking the distinction between minimal and narrative selves, and by concentrating on the former, vexing issues of belongingness can be eluded. Mineness is included among the essential characteristics of a minimal self in much the same way as atomic mass is for a chemical element. On this view, the impurities of belongingness are peculiar to narrative or autobiographical selves, as only there do we find exotic embellishments of the self, the paradigmatic example of which being alters that appear in DID.

But placing emphasis on the *minimal*[44] has not succeeded in eluding the perplexities of mineness. One need not look far to uncover vexing empirical cases. A reason for this might be that the contrast implied by "minimal" does not characterize actual phenomena with distinct boundaries; that which is conceptually distinct is not necessarily empirically discrete. If a label is needed, one might aptly pronounce this to be an instance of the *fallacy of minimalism*—that is, avoid vexing issues by claiming to have pared them off in the process of identifying that which is minimal. One way to tame disturbingly, unruly empirical phenomena is to tack away from the complexities toward an estuary of conceptual quiescence.

The main point, however, is not that these distinctions are wholly without merit. Indeed I have helped myself to them above, especially in "Toward an explanatory framework: a multicomponential model" section. Instead, the point is that they might lead us to presuppose a self that is conceptually primitive or somehow insulated, when in fact it is not. On some interpretations, "minimal" implies a concept so discrete that self can be held constant, as though it were unaffected by the vicissitudes of what we experience. Legrand and Ruby are a case in point: for them, the subject is distinct from any qualitative features of what is experienced.

Concerning this worry that self or subject might be unjustifiably segregated from experience, Humphrey (2006: 124) has recently observed that philosophers are inclined to give exaggerated emphasis to such claims as "an experience is impossible without an experient." Humphrey is quoting Frege, but like emphasis is to be found in the works of many others, including Wittgenstein, Shoemaker, and Peter Strawson.

[44] A thorough examination of this point would need to consider more than just the concept "minimal." A set of related concepts—the pre-reflective self, the self-as-subject, and the absence of explicit representation—have also tended to be wielded with insufficient precision and insufficient sensitivity to whether they reflect distinctions that are found in the world.

Humphrey points out that the antithesis of (or perhaps a corollary of) "experience is impossible without an experient," is "a subject has to have something to be the subject of." He proceeds to say that his point is not only as logical as the received view, but it is "at a human level potentially far more important." It leads "to the potentially astonishing revelation that 'I am because I have such and such experiences.'"[45]

This is not the place to try to tease out all of the implications of Humphrey's antithetical observation.[46] But the empirical work considered above, and the 3-D model derived from that work, suggest that mineness is one of those "human levels" for which insight about the experient is to be gained by attending more to the experience than has heretofore been the case. In effect, we now have yet another reason for discouraging the search for a unique constituent of mineness—it seems to accord an undeserved status to the "perceiving subject." "Perceiving subjects" should not be regarded as though they were somehow insulated, as above the fray of life experiences.

We must though tread carefully here, for to say that self is not insulated is not to say that it is insubstantial or eliminable, or wholly reducible to the types and qualities of experience.[47] At the very least the self–nonself distinction is critical to explaining various phenomena. The intent of warning about insulation, what we might call an *anti-isolationist view*, is to allow that the self of visual perception, the self who is able to switch, the self in pain, and the self in action are not entities whose character remains constant, wholly without regard to what is experienced. Experiencing a pain shorn of its painfulness or experiencing behavior with enhanced proprioceptive sensation does affect mineness. Change in the qualitative features of what is experienced has predictable consequences for the sense of belonging—subtract the emotion or add robust proprioceptive sensation and it does not feel like me.

This emphasis on the dependence of self on experience might strike some readers as inconsistent with the framework proposed above. After all evidence is adduced on

[45] The "telephone syndrome," described by Ramachandran (2011: 245–247) is strikingly illustrative of this view: this syndrome occurs in those who suffer from akinetic mutism or vigilant coma—the inability to move, to talk, or to initiate actions. Ramachandran describes a case wherein the patient, Jason, had a normal sleep–wake cycle and when awake could follow, with his eyes, people moving about his room, but he had no ability to recognize others or interact meaningfully. The cause of akinetic mutism in Jason's case was damage to the anterior cingulate and the visual pathway. The auditory pathway, however, was intact. Had both visual and auditory pathways been impaired, Jason would have lived in a permanent twilight state, unable to interact with others, regardless of the circumstances. But because Jason's auditory pathway was largely intact, when Jason's father would leave the room and phone him, Jason "suddenly became alert and talkative, recognizing his dad and engaging him in conversation." When his father returned to the room—so that Jason could see him—Jason "lapsed into his semiconscious 'zombie' state." According to Ramachandran, the "visual Jason is essentially dead and gone as a person…but the auditory Jason lives on." Because our brains emphasize "visual processing, the visual Jason stifles his auditory twin." (Recall the phenomenon of "visual capture," discussed in "Toward an explanatory framework[33] for mineness: the principle of confounded expectations (PCE)" section.)

[46] Galen Strawson's (2009, pp. 338–425) development of ideas concerning "thin subjects"—subjects who "don't and can't exist in the absence of experience"—exemplifies one strategy for teasing out the implications.

[47] There are many reasons for preserving a certain looseness to the connection between experience and experient: one empirical reason is that some subjects in persistent vegetative states preserve the ability to communicate by modulating brain activity such that yes-no answers can be interpreted from fMRI data (Monti et al. 2010). This suggests the empirical possibility of selves—perhaps even selves that exhibit "an inner hub of information and locus of control" (Ismael 2007: 211)—persisting even when the capacity to experience is greatly diminished.

behalf of the CMS (or SCMS) model to suggest that self is independent of the different sensory modalities or distinct domains (Northoff 2011: 218). But it should be recalled that SRP—self-related processing—that is realized in virtue of neural activity in the SCMS is an enabling, predisposing condition for the phenomenal experience of mineness. It is not a sufficient condition. It concerns where stimuli are situated on a continuum from the highly self-related, to the merely familiar, or to something entirely other. The experience of mineness, so it is argued here, requires that stimuli be found to be closely related to self, but this alone is not sufficient to explain self "at the experiential level," which is what Legrand and Ruby are intent on explaining. SRP *enables* the taking of stimuli as related to self, but whether stimuli that are related to self will be *experienced* as mine depends upon PCE.

Toward an explanatory framework: the case of thought insertion

One among the most contentious issues pertaining to mineness revolves about how best to understand schizophrenic thought insertion. On the one hand, it seems to be a straightforward instance of thoughts that belong to someone other than self. But Gallagher (2010) and others, have argued that thought insertions are better understood as instances wherein mineness remains intact, in the sense that the patients do indeed experience the thoughts. What is distinctive about these thoughts though is that they are experienced as having been inserted into their minds or heads; in some instances patients even feel able to identify the point of entry into the head. According to Gallagher, the reason thoughts are taken to be "inserted" is that the patients do not feel themselves to be the agents or the authors of those thoughts, despite clearly being the subjects of experience.

Bayne (2010: 156–162) has reviewed the evidence and arguments that have been marshaled on behalf of both positions, the "no-subjectivity" (viz. the thoughts are not mine) account and the "no-agency" account (viz. the thoughts are mine but I am not their author). He observes that patient reports are equivocal. Some support the "no-subjectivity" account; others, the "no-agency account." Since phenomenological reports from patients are inconclusive, Bayne proceeds to assess other aspects of the dispute.

Among the points he raises of behalf of the no-subjectivity account are: (a) having "thoughts inconsistent with our cognitive goals is commonplace," but we do not for that reason ascribe them to others.[48] And, (b) patients with obsessive thoughts are not inclined to disown them. In other words, since we do not typically disown thoughts to which we have introspective access, even when we have good reason to do so, we should take seriously those exceptional instances wherein ownership is disavowed, lest we risk ensconcing an important phenomenon. Might the considerations adduced above help to adjudicate this dispute?

It has been suggested that "me's" awareness of "its" thoughts can be understood as either a form of empathetic understanding or mind reading. To consider just the possibility of mind reading, "me" is aware of "its" thoughts, and vice versa. But "me" does not declare ownership of "its" thoughts, nor does "it" declare ownership of "my" thoughts. Both are aware of thoughts that they attribute to someone else. Although the clinical

[48] The same is true—even more so—for emotions.

description is inadequate to produce a definitive characterization of this phenomenon, it appears to be the case that their experiences correspond to the "no-subjectivity" account: "me" and "it" seem to be exhibiting incisive mind-reading capabilities, the ability to represent the mental states of *other* people.

When interacting with intimates, we often detect cues that enable us to be aware of what they are thinking, and with a high degree of reliability. There is no question but that those thoughts belong to someone else—are in someone else's stream of consciousness—but we are able to be aware of those thoughts.[49] What might be happening in the case of thought insertion is that patients are reacting to cues analogous to those we react to when becoming aware of what our intimates are thinking, the difference being that those cues are *internal*. If this line of thinking is correct it suggests that one presupposition motivating the "no-agency" account might be an inversion of that which motivates some criticisms of the Extended Mind Hypothesis (Clark 2007). Stated baldly, the worry is: just as it is arbitrary to insist that what extends beyond skin and skull cannot belong to one's mind, so too is it arbitrary to insist that what is confined to skin and skull must belong to one's own mind.

But analogical arguments or worries about false presuppositions can take us only so far. It would be better to seek resolution through empirical means. A difficulty, however, is encountered when trying to adduce empirical support for either the no-agency or the no-subjectivity account—the two are not easily teased apart in clinical or experimental settings. Can the three-dimensional Model of Mental Ownership be recruited to help break the impasse?

New theories of auditory verbal hallucinations (AVH) in schizophrenia suggest a way. Northoff and Qin (2011), developing an idea first proposed by Allen et al. (2008), have called attention to the possibility that during AVH abnormally strong modulation from the auditory cortex might be accompanied by reduced top-down modulation from cortical regions that are involved in *generating* speech. If this model can be developed such that it incorporates thoughts that are not necessarily auditory, it would enable us to distinguish (a) the agentive (that which "generates") from (b) that which concerns just the relationship between self and thoughts of which self is aware. The latter, (b), could then be assessed from within the framework of mental ownership model, to determine the degree of self-relatedness. For example, if we were to find that the insula and the PACC were not highly active when I am aware of inserted thoughts, we would have additional grounds for being dubious of the no-agency account.[50]

Conclusion

This essay begins with an excerpt from Damasio: "…the decisive step in the making of consciousness is not the making of images and creating the basics of mind. The

[49] Of course, though the mechanisms involved would differ. Carruthers (2009) is useful in helping to mark the difference between representing our own thoughts and representing the thoughts of others.

[50] Northoff and Qin (2011) and Northoff (2011: 288–297) develop much of their account with respect to their views on "resting states"—neural activity that is intrinsic to or generated by the brain itself. The details need not concern us here, but it should be born in mine that although this view of "resting state" is related to the default-mode network (see above, fn. 3), it is distinctive in that, among other things, it emphasizes that intrinsic neural activity is not restricted to the regions typically regarded as being part of the default mode.

decisive step is *making the images ours*, making them belong to their right owners…" If Damasio intends that I can only become consciously aware of mental states that are intrinsically taken as *my* mental states, then the negative and positive theses developed herein suggest that he is in error. Although for most ecological conditions undergone by healthy subjects this might appear to be the case, the relationship between self and states of which one can be consciously aware is contingent. "Making the images ours" seems not to be the "decisive step" that Damasio proclaims it to be.

Obviously, were we chronically bemused, uncertain upon becoming aware of visual images of projectiles directed at our heads, whether "I am the one who is seeing this projectile," our species would have vanished long ago. This is an important datum. But it does not imply that the link between self and conscious states is intrinsic. That link is "decisive" only in the sense that *apparent* self-intimation might be essential for the survival of a species, at least in those environments wherein events unfold at a pace familiar to humans and our ancestors.

But the negative and positive theses are not intended as admonishments for neuroscientists alone; philosophers of both phenomenological and analytic traditions also seem to have been hoodwinked by the quotidian, leading them to mischaracterize the belongingness of mental states. Zahavi (2005: 16), for example, claims that "phenomenal consciousness must be interpreted precisely as entailing a minimal or thin form of self-awareness…any experience that lacks self-awareness is nonconscious." Dainton (2008: 242) has observed that Zahavi's position is essentially the claim that "all experiences come stamped with a *me*ish quality." Kriegel (2009: 53), who approaches these issues from within the analytic tradition, adopts a similar position: he regards phenomenal character as a "compresence of qualitative character and subjective character." He (2009: 10) holds that it is the latter, subjective character—the "for-me-ness"—that "determines" that a mental state is phenomenally conscious. On Kriegel's view (2009: 55), the for-me-ness has a "constitutive place in phenomenal character."

If the negative thesis and the explanatory framework developed above approximate the truth,[51] then the mental states of organisms can be conscious states, even if they are not taken as belonging to self. Phenomenal consciousness does not entail self-awareness; it is not stamped with a *me*ish quality; and, for-me-ness does not play a determining role in its constitution. Appearances notwithstanding, the awareness of a mental state's existence is never more than conditionally related to the attribution of that state to a given subject. Matters only seem otherwise, because in all ordinary situations self and consciousness are tightly interwoven.

All parties who have weighed in on this issue are aware that attenuation of the narrative or autobiographical self that occurs in dementia does not seem to disrupt the capacity for conscious experience. This is why most have concentrated their discussion on one version or another of what is often referred to as a "minimal" self. But seeking refuge in minimalism is a non-starter; the empirical cases that have been adduced here concern a self that does not require the accessories of narrative or autobiography. For this reason I have discouraged the tendency to search for an

[51] I am here assuming that a verisimilar ordering of theories can be achieved.

invariable essence, at least that is if the primary motivation for doing so is to account for the self's proprietary aspects.

There are gaps and crevices, aberrant circumstances in which aspects of mind that supervene on one's brain are not taken as belonging to self.[52] There are as well circumstances in which aspects of mind that supervene on someone else's brain are taken as belonging to self. And these peculiarities of belongingness cannot be explained away by seeking refuge in a minimalist conception of self. If minimalism provides no refuge from proprietary complexities, then how should one proceed?

The way forward—the positive thesis—includes the effort to learn from failure. In this spirit, I have proposed a framework (see "A positive methodological implication" section) that sees empirical–experimental opportunity in acknowledging the distinction between stark and subjective perspective. Clinicians can benefit from sensitivity to this distinction by designing questions that will help refine our understanding of how these two differ, phenomenally, from the first-person perspective. Cognitive neuroscientists can avail themselves of modern techniques that should enable us to tease apart the neural substrates of subjective and stark perspective.

But failure can do more than this. It can motivate us to begin searching for clues to belongingness among the varieties and vagaries of mineness that have previously been described, but whose implications and relatedness to one another has, heretofore, been accorded scant attention. By devoting attention to the vagaries—both those previously described and those newly discovered—a pattern can be discerned: mental states tend to cluster in accord with fixed sets of tacit expectations, and when these expectations are confounded, one can have conscious experiences that feel alien. PCE though is not sufficient to explain mental ownership, because it can also apply when mental ownership is not at issue. Therefore, it needs to be supplemented by an additional component, one which indicates how it is we distinguish between that which is related to self and that which is, say, merely familiar.

Considerations adduced here suggest that an error committed by many who have sought to account for the feeling that "I am the one who is experiencing…", has been to seek answers at the wrong level. If an analogy be needed, it can be said that mineness is not an atomic (minimalist) phenomenon; rather, it is molecular. It can usefully be thought of as a three-dimensional configuration that allows for differential clustering among mental states as well as gradations of self-relatedness. In molecular science, mere identification of the atoms involved is not sufficient, because compounds with the same molecular formulas, isomers, can bond in different ways, yielding different properties. The same holds true for mental states: knowing what states are involved is not enough. How the states are bound to one another—their "isomeric" relationship—plays an important role in determining the properties of conscious experience, one among these being mineness.

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[52] Although for the sake of convenience philosophers often use locutions of the sort, "mind supervenes on the brain," it is important to keep in mind that this phrase is just an elliptical formulation; it is more accurate to say that mind supervenes on the brain, the endocrine system, the immune system, and the spinal cord.

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