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Imperatives, Ownership, and Self-awareness

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Abstract

The paper argues eight points related to self-awareness. First, priority interruptions are a good metaphor for the way attention works in pain and volition. Second, imperatives allow us to escape a metaphysical problem encountered in traditional accounts of pain and pleasure. Third, imperatives (as broadly construed) play roles in other areas, such as emotion and volition. Fourth, a sense of self (or an immediate or pre-reflective self) is enhanced by emotional and volitional control states, as well as by ownership. Fifth, the immediate self has both conscious and unconscious elements. Sixth, an immediate self is different than a self-concept, but is normally co-present with it. Seventh, ownership fits well with the theory that consciousness is an input-controlled feedback-control process. And eighth, ownership may have arisen phylogenetically at about the same time as consciousness and voluntary movement. The paper tries to show how these observations mesh with each other and with other aspects of self-awareness.

Keywords: Imperative theory of pain, Ownership, Self-awareness, Immediate self, Self-concept, Priority interruptions, Input-controlled feedback-control, Phylogenetic appearance of ownership

1. Introduction

A number of philosophers including Hume (1989) and Ryle (1949, pp. 186-198) have claimed that the self is an unobservable entity (as with Hume)[1] or, at least, systematically elusive (as with Ryle), since the self that observes itself is always one step removed from the self that is observed. While many of us find such speculation interesting, few doubt that we exist in our daily lives. How do we account for this possibly misguided certainty?

To approach this problem I will first consider the imperatives of pain and pleasure and ask whether any implied self or sense of self is involved. Next I will consider emotional and volitional control states—which seem to have embedded imperatives—and ask the same question. After this, I will consider ownership. All these seem to imply a self or evoke a sense of self. Finally, I will consider how other aspects of self-awareness fit into this account.

I will also briefly address two surrounding questions: (1) What is the role of attention in pain? (2) If consciousness is an input-controlled feedback-control process,[2] when does a sense of self arise in such a process?

2. Pain and Pleasure as Imperatives

In an early paper Klein (2007) characterized pain as an inhibiting imperative, a nonverbal command that basically inhibits certain actions—namely those that cause pain. In his more recent book Klein (2015, p. 45) treats pain as a more generalized imperative "to protect a certain body part, in a certain way, with a certain urgency."

By imperative I (and I assume Klein) mean a nonverbal command of some sort. 'Imperative' is simply a convenient word for feelings that impel us (or predispose us) to take certain actions or make certain decisions. I are not saying that infants who cannot speak (or animals that do not speak) do not feel pain. If we accept pain as a type of stop imperative, we can see by extension that pleasure is a continue imperative. Hall (2008, pp, 525-535) extends this logic to itching, which may be seen as an imperative need to scratch. There are further extensions, as well. For example, we might say that a sweet taste is a continue imperative in a particular location. Beyond their imperative nature, we should note that pain and pleasure cause us to pay attention to them.

To understand this I would like to add a computer metaphor that might be helpful. In the simplest stored-program computers the flow of control is from one instruction location to the next. In other words, the computer executes the instruction that is present where the instruction-location counter is pointed. After completing that instruction, the instruction-location counter is advanced and the computer executes the instruction at the next sequential location. With branching or conditional branching, the flow of execution changes to some other sequence of instructions. In the event of special circumstances, such as division by zero or the completion of some external task,

it is necessary to interrupt the normal sequence and execute a series of instructions to deal with the special situation. After the special sequence, control may—but need not—return to the interrupted sequence. Treatment of special situations by a hierarchy of priority interruptions provides a close parallel to the manner in which pain and pleasure operate.

Instead of a sequence of instructions being activated, however, pain and pleasure focus attention. As with priority interruptions on a computer, other high-level tasks are put on hold. The net effect is that we attend to the pain (or pleasure) and want it to cease (or continue). The first aspect of the process involves attention. With attention we have a subjective phenomenon that is metaphorically explained at a machine level. The fact that our attention is redirected is analogous to a priority interruption on a computer. A second aspect is that pain, while it appears to be part of a perceptual field, seems to function as a command rather than in providing information about the world. It would be analogous to a command in text dealing with, say, the mountains of Arizona, that tells the printer to print the next page. Such a command is, of course, operating in a different way than a simple description of the mountains of Arizona. So while pain and pleasure appear to be located in perceptual or somatic fields, they are more like commands than descriptions.

Dennett (1981, pp. 190-229) summarized some of the physiological bases for pain differences. Deep pain and acute pain, for example, are transmitted by different fibers, the acute pain being transmitted by the faster, myelinated A-fibers with the deep pain being transmitted predominantly by the slower, unmyelinated C-fibers. Dennett (1981, pp. 190-229) also has a chapter heading provocatively entitled “Why You Can’t Make a Computer that Feels Pain.” Dennett concludes that “the inability of a robot model to satisfy all our intuitive demands may be due not to any irredeemable mysteriousness about the phenomenon of pain, but to irredeemable incoherency in our ordinary concept of pain.” Treating pain as attention focusing with a stop imperative is a functionalist approach to the problem.

The whole purpose of priority interruptions on a computer is that control is transferred to a section of command sequences that deal with the problem causing the priority interruption. In the case where there is a division by zero, we go to a section of code that deals with attempts to divide by zero. If an attempt is made to access protected memory, we go to a section of code to deal with that problem. So if we have something similar in consciousness, it makes sense that the change in attention due to pain should result in some sort of control to deal with the pain. The obvious sort of control is an imperative of some sort. The nature of that control is an open question, and I am not committed to any particular architecture. My only claim here is that if you have a priority interruption, it makes sense that some sort of control be invoked to deal with the problem.

Just as Ryle (1949, p. 11) claimed we have a commonplace theory of mind that he thought was miscast, I think we have something similar with pain. The commonplace theory is that (1) pain is perceived by a person, (2) the person finds the pain unpleasant, and (3) the person decides at this point to do something to eliminate the pain. I am

claiming instead that there is only one step. By the time that we find ourselves in pain we are already trying to stop it. It is not that pain is unpleasant and we therefore want it to stop. Rather we should say that we want it to stop, and this is what we mean by unpleasant. This sounds like a radical reversal, but it allows us to eliminate the metaphysically problematic term 'unpleasant.'[3] In other words, if you build a robot that supposedly experiences pain it does not help to substitute terms like 'unpleasant' for the term 'pain.' Substituting 'unpleasant' for 'pain' does not lead to testable hypotheses about whether the robot experiences pain.

To avoid the metaphysical trap,[4] we have to describe pain in such a way that we *could* write a computer program that experiences pain. We might, for example, say that the computer (as a part of a robot) would have some sort of priority interruption that goes to a section of command sequences that attempt to stop (or reduce) the attention priority or immediate-action priority of signals coming from a particular location—or at least assigned to a particular location for referred pain or phantom-limb pain. We might also say that pain occupies a multi-dimensional space. The dimensions would include location, attention priority, immediate-action priority, pointedness, perhaps rhythmic features, and probably the extent to which site immobilization is commanded. There is a good deal of explanatory power here that we can use without falling into the metaphysical trap.[5]

Of course, it is more economical to say "that hurts," rather than give a detailed functional description of what is happening. We know immediately that the pain has a location, that it can either be pointed or diffused, that it came on quickly or gradually, and that it dominates our attention or is present as only a background awareness.

3. But Where is the Self in Pain

I am quite sure when I am in pain that it is my pain. It is located in, for example, my finger—not in that rock over there. So there is an implicit self involved. Moreover, I want it to stop, whereas that rock over there could not care less. Also, if we accept the imperative theory of pain, I (or at least part of me) should do something about it. So there is at least an implicit self here, and also, I think, a sense of self or an immediate (or pre-reflective) self.[6]

4. Emotion and Sensations Other Than Pain or Pleasure

In addition to the purely descriptive nonverbal propositions of consciousness,[7] we have pain, pleasure, desire, and emotion. Can these be placed in a single taxonomy? If we generalize from pain and pleasure, we also have states of wanting something, but where no particular body site is involved. This sounds like a description of desire. To place this in our taxonomy we must consider whether emotion and desire involve imperatives, or something quite similar.

In some ways the claim that emotion contains imperatives is not much different from the claim that emotions are affective states. Both imperatives and affective states are seen as affecting future behavior. They differ mainly in the implied probability that a particular outcome will result. 'Affective states,' however, seem more nuanced in that we think of them as coming in degrees and not always bringing about a particular change. So I am not recommending that we drop the terms 'affective states' or 'dispositional states.'

Nevertheless, there are two advantages in seeing imperatives being embedded in affective states. The first advantage is that we now have something to empower the affective state. A purely descriptive proposition does not care about outcome, whereas an emotion does. The second advantage, as discussed with pain, is that we no longer need to deal with metaphysically problematic terms such as 'pleasant' and 'unpleasant.'

These same advantages can also be applied to sensations other than pain or pleasure, such as those of color, taste, or scent. With these other sensations we would probably want to admit a larger perceptual component. My only claim is that we do not always see the world neutrally. If I see a blue I like, for example, I am already reacting to it. If I find that I am hungry, it is not a perception that is accompanied by indifference.

So let us say that emotion moves us; and, like pain, it is somehow activated in consciousness as an imperative-like condition.[8] And, like pain, it is my emotion. It is not in that rock over there. And also, I should do something about it. All these imply some sort of self and, I would guess, contribute to a sense of self or an immediate self.

Here we might see some sort of self as part of a feedback-control process. For example, if I am angry with someone, I might have various phantasies of getting even. But each of the phantasies (which are brought to mind by unconscious processes) may bring to mind potentially unwanted consequences (which are also brought to mind by unconscious processes). We think of such a dialog as being conscious, but it is partly conscious and partly unconscious. Nevertheless, there is some sort of entity (or set of entities or processes), call it an immediate (or pre-reflective) self, that is aware of the emotional condition and should do something about the it.

5. Will and Volitional Control States

Historically 'will' has been used in a broad-brush way to identify the feelings of agency. The term is not without controversy. An apparent sense of freedom led to the notion of 'free will,' which violates the conservation of energy law. Ryle (1949, 62-82) found the term empirically empty, since he could find no instances of willing. Ryle did allow, however, that the term is sometimes used as a synonym of 'intentional.' [9]

Baars (1997, p. 132), among other approaches, considered the volition problem anatomically. "In the brain," he notes, "the differences between voluntary and involuntary functions are simply too marked to be ignored." However, defining will anatomically runs into a problem in that with practice, voluntary actions, such as a

typist's movement of fingers, can become automatic. They are no longer conscious, and, consequently, will no longer appears to come into play. We can rescue volition by saying that it is still acting, but with minimal if any awareness of it. If you interrupt the typist, he/she stops typing. So volition is still involved. The question remains as to whether we can isolate and identify something called 'will.' It presumably would have at least an intermittent conscious presence and be involved in directing current or future action. Identifying a conscious presence, however, requires subjective evidence.

Despite these difficulties, I think we can identify two aspects of will: (1) Archetypically will occurs when we resolve or recall something that we feel committed to do. Such commitments are, in part, propositional; but they are not theoretical propositions. We are not, in other words, saying, "It would be a good idea if I did such-and-such," while feeling no increased disposition whatsoever for doing so. Rather, I am claiming, the feeling of commitment is part of the experience. (2) Besides initiating and recalling our intensions, will may also be said to appear in the timing and intensity of actions and in the certainty of volitional decisions.[10]

Will and other volitional control states[11] are often noticed in retrospect.[12] For example, I might notice that I am determined. Determination, I am claiming, is an instance of will as well as an example of a volitional control state.

However, not all volitional control states involve will. For example, I might notice (1) that my proposed solution will not work, or (2) that a golf shot felt just right, or (3) that I have an inkling of the solution to a problem, or (4) that I think I have forgotten something, or (5) that I have forgotten what I was doing, or (6) that I have found the solution I was looking for, or (7) that I am confident and know what I am doing. All of these examples are volitional control states, but are not instances of will.

So the obvious question is whether some sort of self is involved in volitional control states. I am claiming that it is. My argument is a rather inclusive definition: the immediate self is that which is aware of whatever is conscious, and this immediate self is also that which should do something about affective and volitional control states. Further, the immediate self is that which has done some of the things that have been done about earlier affective and volitional control states. Further still, the immediate self is that which produces thoughts and actions that we take credit for even if those thoughts and actions were not preceded by any obvious affective or volitional control states. So basically I am defining the immediate self in a broad enough way that it includes all the instances where we might claim a sense of self is present.

The immediate self also seems to be part of a feedback-control process—not only when I am threading a needle, but also when I find something wrong with a mathematical proof. For example, we might only suspect that something is wrong with the proof. This feeling is brought to mind by unconscious processes—and probably by some sort of priority interruption. Then we notice that what was to be proved was used earlier as an assumption in the proof. But that realization was also brought to mind by unconscious processes.

To accomplish this the immediate self must be aware of what we are aware of. Otherwise the feedback-control nature of consciousness would not work. So the immediate self is partly conscious and partly unconscious. If we assume that except for our reflected-upon selves, we are identical to our immediate selves[13], that means that we also are partly conscious and partly unconscious. While this seems to follow, it means that we sometimes take credit for results created by a partly unconscious process. This sort of makes sense, because we sometimes do take credit for the unconscious processes and sometimes do not.

Notice also that thoughts and actions are not always preceded or accompanied by obvious volitional control states. We simply think the thought or take the next step. In cases where we are determined, that determination may both precede and accompany the thought or action. When such intent or determination is not obvious, however, we still sometimes take ownership of the thought or action, particular if the thought or action follows from what was recently considered or intended. So I will discuss ownership in the next section.

To summarize, I am hypothesizing that will is a subset of volitional control states. Moreover, some sort of implicit or immediate self is evident from both affective and volitional control states. And again, this implicit or immediate self appears to be a part of a feedback-control process that involves priority interruptions. And finally, the immediate self appears to have both unconscious and conscious elements.

6. Ownership

A third[14] aspect of self-awareness is ownership. It would work as follows: Through proprioceptive and kinesthetic feelings, and perhaps by other means, I know my leg is my leg and my actions are my actions. So a self is, at least, implied by these feelings. This possibility was evident in an account given by Oliver Sacks (1984, pp. 72-82). After a fall Sacks lost all sensation in his left leg. Fortunately, Sacks recovered. While doing so, however, his leg felt alien to him. Sacks describes the case of a patient who in similar circumstances attempted to heave his leg out of his hospital bed. Similar cases of somatic alienation are cited by Baars (1997, 148-149). Ananthaswamy (2015, pp. 63-91) describes cases where the feelings of alienation were so compelling that the offending limbs were amputated.[15]

One would think that proprioceptive and kinesthetic feedback are of utmost biological importance not only because they enable the control of movement, but also because they help establish the self/world dichotomy. Things that are part of self are treated differently than things that are a part of the world. As a part of the self/world dichotomy such feedback distinguishes between self-initiated acts and outside forces. Out of this process selfhood is implied by proprioceptive and kinesthetic feelings. To the extent that thought is an outgrowth of the motor act of speech, certain types of thought may be recognized as self-initiated. It is normally clear that such thoughts are my acts rather

than someone else's. (Some mental illness may be explained by this process going awry.) Even perception has its motor aspects; so a perceiving self could be bootstrapped out of kinesthetic feedback. If attention focusing evolved out of motor control, it also may be tagged with selfhood.

This third approach has been explored in some detail by Gallagher (2000, pp. 14-21) and Hohwy (2007, pp. 1-20), who discuss how efferent copies of motor commands could be used via forward modeling to distinguish self-initiated motion from other motion. Hohwy suggests that a sense of 'mineness' arises out of this process. Gallagher notes that the agency of action might be distinguished from the sense that it is one's body that is moving. Gallagher also notes that schizophrenic patients who suffer from thought insertion also tend to make mistakes about the agency of various body movements.

Damasio (2010, pp. 108-112) has hypothesized that "the brain can *simulate* within somatosensing regions, certain body states , *as if* they were occurring." This could enable preparatory processes, as well as enabling a preparatory-like mimicking that might help us understand the actions and emotions of others. Damasio cites some experimental evidence for this. One can guess that such a process would help establish ownership.

While such ownership has enticing justifications, what we tend to notice is non-ownership. Ownership seems be more of a background awareness that things are going in a familiar and expected way. That you can control your limbs is the default assumption. It is only when something goes wrong that you suspect outside agency, an imperfect execution, or some wrong assumptions about the task at hand. So what we notice in ownership is usually the non-ownership of outside agency, an imperfect execution, or a stubborn world.

There is, nevertheless, an implicit or immediate self that *is* or *is not* the cause of what you see or feel. Further, when *your* expectations are not met, *you* must do something about it. So this amounts to a volitional control state. However, ownership is a recognizable property of the action you have caused. So in terms of elementary physics, it is looking backward. Volitional control states, on the other hand, tell the immediate self what to do and are, thus, forward looking.

Again it should be noted that not all actions and thoughts are preceded or accompanied by any obvious volitional control states. They simply seem to happen. We, nevertheless, sometimes know they are ours. So ownership applies here as well, and I think we can still claim that some sort of self is sensed or implied by that ownership.

7. Other Aspects of Self-awareness

A fourth aspect of self-awareness might be called own-body recognition. For example, I might see myself in the mirror and conclude that what I see is myself, or I might see my foot and know that it is mine. Here I imagine someone (or some animal) noticing a part of his or her body in the same way an outside observer might.

As a fifth aspect of self-awareness we should add an autobiographical self—where we describe what we are, in terms of goals, history, or nature. Something similar to this notion of self is termed 'narrative construction' by Gallagher and Zahavi (2008, pp. 200-204). Baars (1993, p. 327) has a similar category that he calls "the self-*concept*, which is the set of beliefs *about* oneself." Like 'narrative construction,' a 'self-concept' allows for the possibility that you might be mistaken about what you objectively are. But it also suggests something more detailed and more objective than a story. It is rather like a narrative self that has been stripped of any embedded imperatives. So to emphasize this quasi-objectiveness I will use the term 'self-concept.' A narrative self may include an immediate self; but a self-concept—at least by my definition—does not.

Damasio (2010, pp. 223-255) has a similar category he terms the 'autobiographical self.' He uses the term to describe the phylogenetic stage where *Homo sapiens* are now. Damasio also suggests that having a protagonist is a useful fiction. The fiction that an individual organism persists in time could presumably contribute to its survival. I would add to this that if you do not have a protagonist, you cannot have emotions such as pride or shame, which play an important role here.

Feelings such as pride, hope, or shame may be evoked by what appear to be objective statements about ourselves, particularly if those statements are made by others. These feelings, I am claiming, are control states, which involve an immediate self. Moreover, we can reflect upon these feelings, which can affect our narrative self. So it makes sense to say that control states and ownership help shape and define our personal character. I will discuss what happens when such feelings are missing after first introducing two additional aspects of self-awareness.

A sixth aspect of self-awareness involves a mind's-eye image (or episodic image) of a past (or imagined) situation where you were (or might be) present. For example, I might remember where I parked my car this morning. This creates a link between the current self and an earlier self. The current self is different than the earlier self in that the impetus and kinesthetic feel of the past episode need not be present. At the very least, there is an understandable loss of detail. However, the remembered or imagined situation might have associated sets of feelings that are freshly minted.[16] So memories and imagined situations can be like the self-concept; they involve aspects of selfhood. But whether they invoke an immediate self depends upon whether ownership or affective or volitional control states are present.

A seventh aspect of self-awareness is what might be called a perceptual frame. Whenever I look at the world I find *myself* in the foreground with the world *out there*. The perceptual frame would include those parts of my body that I can peripherally see

or feel, which in effect frames the world that is in focus. Equally important, we could say the self is the zero point of a moving coordinate system.[17] As a consequence, the size of approaching objects and their gradients of texture both expand as they approach.[18]

One way to explore these first seven aspects of self-awareness is to ask whether we can go from a first-person account of the world to a third-person account. A third-person account lacks the caring and vested interest that is present in a first-person account. Can we see the world in such neutral propositions? Consider the following, quoted by Huston Smith (1958, p. 132).

> I entered. I lost the boundary of my physical body. I had my skin, of course, but I felt I was standing in the center of the cosmos.... I saw people come toward me, but all were the same man. All were myself. I had never known this world before. I had believed that I was created, but now I must change my opinion: I was never created; I was the cosmos; no individual...existed.

The above description of *satori*, the supposedly enlightened state in Zen Buddhism, is almost a third-person account. What this suggests is that consciousness can at times be impersonal. Selfhood would then somehow arise out of only some aspects of what is conscious and what is unconscious. A perceptual frame could be insufficient, since that is still present in an impersonal consciousness.[19] Similarly, the self-concept and memories of the past could also be impersonal if they do not evoke ownership or affective or volitional control states.

Baars (1997, p. 150) notes that mild depersonalization is surprisingly common. Nevertheless, a basically impersonal consciousness seems counter-intuitive to us, because aspects of selfhood are almost always present. What then, we may ask, is present when we are not depersonalized? This is clearly consistent with some sort of self that is present to consciousness. It need not be only one thing, but it does not appear to be a fiction. If it is missing when it is missing, then something is there when it is there.

More extreme cases of depersonalization are discussed by Simeon and Abugel (2006). While *satori* is accompanied by positive emotions, primary depersonalization disorder is unwanted in a large majority of cases (Simeon and Abugel, 2006, p. 207).

The Diagnostic and Statistical Manual of Mental Disorders, (DSM-5) (2013, p. 620), states that, "Volitionally induced experiences of depersonalization/ derealization can be a part of meditative practices that are prevalent in many religions and cultures and should not be diagnosed as a disorder. However, there are individuals who initially induce these states intentionally but over time lose control over them and may develop fear and aversion for related practices." Their caution may be justified. In any case, one cannot help being struck by the similarities between *satori* and primary depersonalization disorder.

One biological theory of depersonalization discussed by Simeon and Abugel (2006, p. 111) is that a heightened activation of certain areas of the prefrontal cortex could inhibit the emotional centers in the limbic system. This theory is consistent with my claim that affective and volitional control states enhance a sense of self. One group of the treatment therapies discussed by Simeon and Abugel (2006, p. 193-4) is "grounding." Some of the grounding techniques, such as willful submersion in the senses, also suggest that affective and volitional control states enhance a sense-of-self.

An eighth aspect of self-awareness would involve homuncular functionalism (Dennett 1981, pp. 80-81 and pp. 123-124; Lycan 1995, pp. 37-48). There is a reflective appearance of agency, but these agents call on sub-agents who call on further sub-agents, etc. until at the lowest levels such simple processes are at work that agency is no longer a proper characterization of what is happening. This aspect is helpful in explaining how we can sometimes take credit for unconscious processes, which results in an immediate self that is partly conscious and partly unconscious.

Finally, there are questioners and deniers of an isolated self. As mentioned, Hume (1979) and Ryle (1949, pp. 186-198) have staked out positions along these lines. Such questioners and deniers, however, are not claiming that we do not have bodies or that we do not have emotions or remember our past. To summarize then, there are at least five further aspects of self-awareness: a perspectival self, a self-concept, one's own-body recognition, a mind's-eye image of a past (or imagined) situation where a self was (or might be) present, and homuncular functionalism. These aspects can interact with some of the previously mentioned aspects of self-awareness. An objective view of oneself might evoke feelings of shame, pride, or hope—which will then involve the immediate self that accompanies affective or volitional control states.

8. The Immediate Self as Part of a Feedback-control Process

One example of an immediate self is that when I move my hand, I see my hand as an object; but I know that I am moving it. So the evidence for an immediate self here is in some form of knowledge that I am moving my hand. We know of our intention and somehow know the hand movement was caused by us. But both the intention and the ownership involve unconscious processes.

So I have defined the immediate self to include those unconscious processes, but have also argued that any such entity (or process) must also have some awareness of what is conscious. Together these unconscious and conscious processes create a dialog between what is happening and what is intended. This dialog, in turn, suggests that the immediate self is part of a feedback-control process.

That feedback control is evident should not surprise us. Both mammals and primitive organisms try to achieve homeostasis (Damasio, pp. 33-66), and feedback control is a good strategy for achieving it—particularly for behaviors that are complex or require sensitive timing.

For functions where no volitional control is involved—for example, in regulating heart rate—there would be little advantage in recognizing which outside effects were caused by the organism. If, however, an organism is trying to capture prey, it would be important that the organism be able to distinguish the effects of its efforts from those of its prey. So we might guess that phylogenetically ownership would have arisen at about the same time as consciousness and voluntary movement.

9. Summary

Pain and pleasure can be understood metaphorically. The first metaphor used to explain pain and pleasure is a priority interruption on a computer. Just as attention drifts off to something other than the pain or pleasure, it is redirected to the site of the pain or pleasure. The second metaphor used to explain pain or pleasure is a consciously-perceived stop or continue imperative. Pain has the imperative: less-of-that-with-great-priority. Pleasure involves an imperative to continue. It is not that you want pain to stop because it is unpleasant. It is that you want it to stop, and this is what we mean by unpleasant. Otherwise pain and pleasure become metaphysical entities.

The stop or continue imperatives, it is argued, belong to a class of control states in which all our feelings are grouped. Emotion appears to attain its impetus from embedded imperatives. Affective control states are constituted by pain, pleasure and emotion.

A similar process, appears to happen on the volitional side. Resolutions and recollections that we must do something are notably similar to affective imperatives, but there are other aspects of volition that exhibit aspects of control. These volitional control states are like affective control states in that they have an imperative nature.

An immediate self seems to be evident from ownership and from affective and volitional control states. Affective and volitional control states suggest that the immediate self is that which should do something about the imperatives. Ownership suggests that you are the author of your thoughts and actions, when, for example, you know a particular action is or is not caused by you.

An immediate self may be contrasted with a self-concept, where one sees his or her self more like an object in the world or as generalizations about his or her nature or history. When, on rare occasions, ownership and affective and volitional control states are missing, an impersonal consciousness emerges, where, however, a personal perceptual frame (or perspective) may still be still present. Seemingly objective generalizations about ourselves may, however, evoke feelings, such as pride, shame, or hope, where an immediate self is present.

The immediate self is aware of what we are aware of, but its internal workings are unconscious. To the extent that we are identical to our immediate selves, this suggests that we have both conscious an unconscious elements. The immediate self also seems to be part of a input-controlled feedback-control process that modifies what it does based upon the consciously perceived results. This suggests that phylogenetically ownership would have arisen at about the same time as consciousness and voluntary movement.

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Appendix on Volitional Control States

For determination, resolutions, or remembered obligations, I think it is clear that there is something imperative-like in the experience. So clearly there is something control-like about them. However, for my other examples of volitional control states, most of which are mentioned in section 5, it is not immediately obvious what we are being asked to do. So below I make some suggestions along these lines.

1. "I cannot remember what I was doing." This feeling exhibits an absence of control. So you are, in effect, being asked to remember what you were doing, or, at least to find some other course of action. 'You,' of course, should not be taken literally.[20]

2. "I have an inkling of a solution to a problem," or "I have forgotten something." Here, I think, you are being asked to wait until a solution appears or the forgotten something is remembered.

3. "My proposed solution does not work." Here, I think, you are being asked to modify the solution or to find some other course of action.

4. "That golf shot felt just right." This one is partly perceptual, since it references the still-felt kinesthetic sensations. Probably you are being asked to remember this so that you can do it again. Perhaps you are also given leave (or induced) to exult, which could amount to the same thing.

5. "This is the word or solution I was looking for." Here, I think, you are being asked to consider the ramifications and proceed. Some form of exultation might occur here, as well.

6. "This motion of mine is about right" or "this motion is mine and is intended." These background feelings seem to accompany all action, although we are not always aware of them. For example, if I grasp the handrail when going upstairs the resulting feelings are only intermittently present if I notice them at all. Such feelings are related to ownership discussed in section 6. Probably comparisons are being made between efforts, kinesthetic sensations, and the actual and desired outcomes. Basically you are being asked to modify (or not) something you can control, as opposed to recognizing a disturbance that is controlled by outside forces.

7. "I am confident and know what I am doing." Here, I think, we are being asked to proceed without having to stop and think too much about the next steps.

Other volitional control states may be treated similarly. It will not, of course, be an easy matter to untangle and somehow empirically verify the various functional paraphrases. Among other things, we will also want to know which of the feelings involve verbal elements and which are present in other species.

Notes

[1] Campolo (1992 pp. 157-159) notes, however, that while "in the first book of the *Treatise* ,he [Hume] insists that there is no such thing as an 'impression or idea of the self'," Hume seems to contradict this elsewhere. Campolo argues that this apparent contradiction is likely caused by Hume's reuse of the same words for different concepts and that "The idea and the impression of self are indispensable components of pride and humility, and they play a role in the functioning of sympathy."

[2] This theory has been discussed recently by Carey (2018). In Perceptual Control Theory, to paraphrase Carey, the PCT system controls its input rather than its output. It does this by trying to reduce the differences between the desired input states and the perceived input states. Of course, the output also is controlled, but by monitoring the input rather than the output. Such a process is apparently more effective than one that tries to control output directly.

[3] I am using 'metaphysical' in the sense of Ayer (1952, p. 41), who defines a metaphysical sentence "as a sentence which purports to express a genuine proposition, but does, in fact, express neither a tautology nor an empirical hypothesis."

[4] Klein notes (2015, pp. 48-49) that mild pain does not feel bad and argues that pain and hurt should be distinguished. So he is at risk of falling into the metaphysical trap. I agree that mild pains do not feel particularly bad. However, we still want them to stop. So my claim is that Klein's distinction between pain and hurt is not needed.

[5] One possibility is that distant regions of the multi-dimensional space are phenomenologically dissimilar, but we learn of their connection through our familiarity with intermediate regions of the space.

[6] When you think about something you did yesterday, what you remember is a reflected-upon self. When your finger is moving toward your nose you have an objective awareness of the moving finger but a pre-reflective awareness that you are moving it. See Gallagher and Zahavi (2016) for a fuller description and brief history of the notion of a pre-reflective self.

[7] An example of a nonverbal proposition would occur if you recognize something at a particular location and think, "That is there," but without using any words.

[8] Of course, emotion also has other properties. Damasio (2010, pp. 124-127), for example, uses the following working definition: "Feelings of emotion are composite perceptions of (1) a particular state of the body, during actual or simulated emotion, and (2) a state of altered cognitive resources and a deployment of mental scripts." But here I am emphasizing emotion's tendency to move things along, which I assume in Damasio's working definition would occur as the alternative cognitive resources are being selected. Or alternatively, the mental scripts could be energized by some sort of activation priority.

[9] He was using 'intentional' in the ordinary way, not in the sense of Brentano, meaning that our thoughts and perceptions are *about* something.

[10] The concept of will does not necessarily imply that will is causal for the short term. It may only record and publicize the fact that you are committed to a particular outcome. However, the availability of such a record would presumably influence subsequent actions and decisions.

[11] I give some examples of other volitional control states in the next paragraph. See the appendix to see why I think these control states have an imperative nature.

[12] Meyers (1997, p. 14) thought something approaching simultaneity might have helped William James's redefinition of introspection as retrospection. In Meyers's fix, "One can try to picture a retrospective state of awareness or cognition as being so closely juxtaposed in time to a prior state, say, of anxiety that the later awareness, though retrospective, may be said to 'observe the anxieties'… ." More broadly, to use Meyers's example, we could say that that 'now' has width, and a background anxiety might be brought to the fore in a moment of reflective awareness. In terms of elementary physics what is brought to the fore are past events (along with any forward projections), but phenomenologically what is noticed is something that is ongoing.

[13] If you assume that we are not, in part, identical to our immediate selves, you run into problems. One possibility is that you have something like a homunculus within yourself that sees what you see and takes appropriate action. But then you must ask whether this homunculus has a homunculus within itself who faces the same problem of having a conscious awareness that is accompanied by unconscious actions.

One way out of the difficulty is homuncular functionalism, which is discussed in section 7. The advantage of homuncular functionalism is that the unconscious processes are not fully conscious—they are only partially aware of some of the things a fully conscious person is aware of. Nevertheless, these unconscious processes can create conscious thoughts. So the combination of some of these unconscious processes as well as some of the conscious processes is what constitutes the immediate self.

[14] I say "third aspect" here because I am grouping pain and pleasure in with other affective control states. So the affective control states are my first aspect of self-awareness, and the volitional control states are my second aspect.

[15] This is not permitted in most countries, but apparently can still be done. One justification is that those who receive such a remedy are satisfied with the result and do not seek further therapy.

[16] It is, of course, difficult (or impossible) to distinguish between feelings that are remembered and feelings that are freshly minted.

[17] Husserl (1989, p. 61) also notes the body as "the zero point of orientation."

[18] The importance of texture gradients and other depth clues in visual perception is described in elementary psychology texts. See for example Hebb (1966, pp. 277-281).

[19] It should be noted that when we move, the changes in texture gradients and in the apparent size and position of objects, might establish ownership. After all, it is your motion that is causing these changes. So we should recognize that a *changing* perceptual frame can contribute to a sense of self.

[20] 'You' has the same ambiguities and complexity as 'self-awareness' described in sections 3-7. For the current examples, let us just say that there are probably some sort of subsystems or scenarios that compete for control. It is the underlying selection processes that are being coordinated or guided.

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