

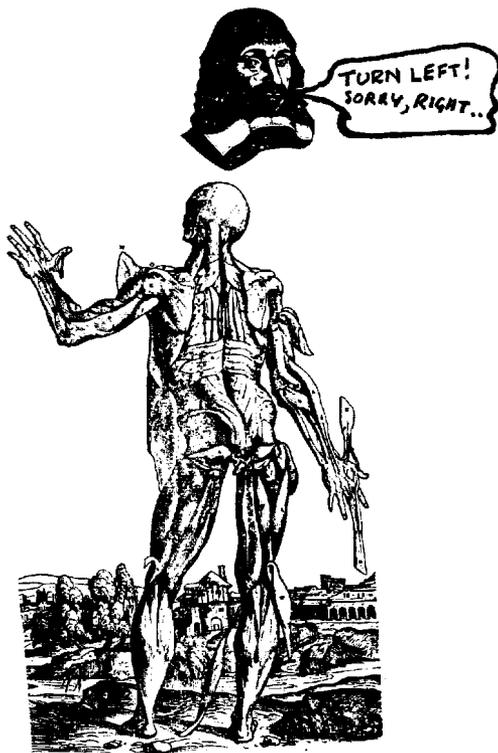
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# The Origins of selves

DANIEL C. DENNETT

Do I choose who I am?

What is a self? Since Descartes in the 17th Century we have had a vision of the self as a sort of immaterial ghost that owns and controls a body the way you own and control your car.



More recently, with the rejection of dualism and the rise of materialism—the idea that the mind just is the brain—we have gravitated to the view that the self must be a node or module in the brain, the central headquarters responsible for organizing and directing all the subsidiary bureaucracies that keep life and limb together.

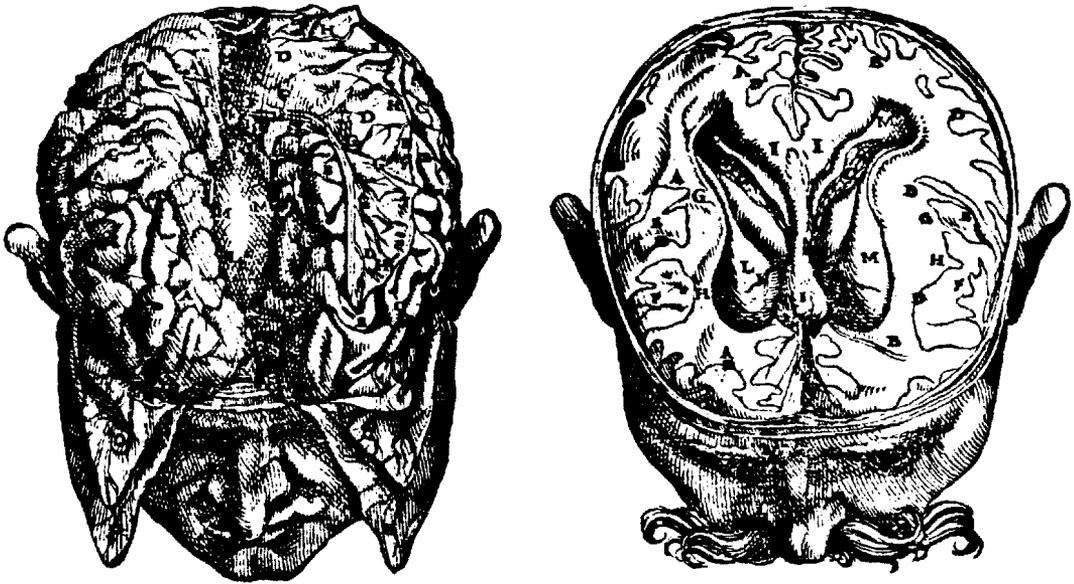
Or is the very idea of a self nothing but a compelling fiction, a creed outworn, as some theorists insist, a myth we keep telling ourselves in spite of the advances of science that discredit it?

'...a myth we keep telling ourselves.' A myth we keep telling *whom*? Is a self something else, perhaps even some hard-to-image combination of these very different ideas?

On my first trip to London many years ago I found myself looking for the nearest Underground station. I noticed a stairway in the sidewalk labeled 'Subway,' which in my version of English meant subway train, so I confidently descended the stairs and marched forth looking for the trains. After wandering around in various corridors, I found another flight of stairs, leading up, alas, and somewhat dubiously climbed them to find myself on the other side of the intersection from where I had started. I must have missed a turn, I thought, and walked back downstairs to try again. After what seemed to me to be an exhaustive search for hitherto overlooked turnstiles or side entrances, I emerged back on the sidewalk where I had started, feeling somewhat cheated. It finally dawned on me that a subway in London is just a way of crossing the street underground. Searching for the self can be somewhat like that. You enter the brain through the eye, march up the optic nerve, round and round in the cortex, looking behind every neuron, and then, before you know it, you emerge into daylight on the spike of a motor nerve impulse, scratching your head and wondering where the self is.

That is not the way to find the self, or to understand what a self is. (That's a bit like wandering around Manhattan looking for the Big Apple.) Where then might we look? We might look first to origins. As the British biologist D'Arcy Thompson once said, 'Everything is what it is because it got that way' (*On Growth and Form* 1917).

If selves are anything at all, then they exist. Now there are selves. There was a time, millions (or billions) of years ago, when there were none—at least none on this planet. So there has to be—as a matter of logic—a true story to be told about *how there came to be* creatures with selves. This story will have to



Left, the mind; right, the self.



A Chinese peep-show.

tell—as a matter of logic—about a process (or a series of processes) involving the activities or behaviours of things that do not yet have selves—or are not yet selves—but which eventually yield, as a new product, beings that do have selves. That is the true story I would like to tell, but quite obviously it is now—and probably forever—impossible to know the de-

tails of that story, so we will have to speculate somewhat, guided as firmly as possible by the available facts.

And since this will have to be a brief overview of a rather large and intricate research project, I must resort to simplifications and metaphors to illustrate the outlines without going into the details. That does not mean

that I have a different version, right now, for the experts. In fact there are no experts on these topics, and the experts on the details have just as much trouble seeing the overall shape and direction of theory as any novice—perhaps more trouble, since they are so pre-occupied with their close-up views of tiny patches of the problem.

### Biology begins in self-preservation

This story that must be told is analogous to other stories that science is beginning to tell. Compare it, for instance, to the fascinating story of the evolution of sex. There are many organisms today that have no genders and reproduce asexually, and there most certainly was a time when all the organisms that existed did not come in different genders, male and female, and did not engage in sexual reproduction (see, especially, John Maynard Smith, *The Evolution of Sex*, 1978, Cambridge University Press; and Richard Dawkins, *The Selfish Gene*, 1976, pp. 46–48). Somehow, by some imaginable series of steps, some of these organisms have to have evolved into organisms that did have genders, and eventually, of course, into us, and the rather exotic—and, indeed, erotic—transformations and elaborations we have added to the basic biological phenomenon of gender. What sort of conditions were required to foster or necessitate these innovations? Why, in short, did all these changes happen?

There is a nice parallel between the two questions, about the origins of sex and the origins of *selves*. There is almost nothing sexy (in human terms) about the sex life of insects, oysters, and other simple forms of life, but we can recognize in their mechanical and apparently joyless routines of reproduction the foundations and principles of our much more exciting world of sex. Similarly, there is nothing particularly *selfy* (if I may coin a term) about the primitive precursors of human selves, but they lay the foundations for our particularly human innovations and complications.

The original distinction between self and other is a deep biological principle; one might say it is the deepest principle, for biology begins in *self-preservation*—in the emergence of entities (the simplest replicators) who resisted destruction and decay, who combatted, at least for a short time, the Second Law of

Thermodynamics, and passed on their capacity to do this to their descendants.

As soon as something gets into the business of self-preservation, boundaries become important, for if you are setting out to preserve yourself, you don't want to squander effort trying to preserve the whole world; you draw the line. You become, in a word, *selfish*. This primordial form of selfishness (which, as a primordial form, lacks most of the flavours of our brand of human selfishness) is one of the marks of life. When one bit of granite ends and the next bit begins is a matter of slight moment; the fracture boundary may be real enough, but nothing works to protect the territory, to push back the frontier or retreat. 'Me against the world'—this distinction between everything on the *inside* of a closed boundary and everything in the *external world*, is at the heart of all biological processes—not just ingestion and excretion, respiration and transpiration. Consider, for instance, the immune system, with its millions of different antibodies arrayed in defense of the body against millions of different alien intruders. This army must solve the fundamental problem of recognition: telling one's self (and one's friends) from everything else. And the problem has been solved in much the way human nations, and their armies, have solved the counterpart problem: by standardized identification-routines—the passports and customs officers in miniature are molecular shapes and shape-detectors. It is important to recognize that this army of antibodies has no generals, no GHQ with a battle plan or even a description of the enemy; the antibodies represent their enemies only in the way a million locks represent the keys that open them. Occasionally, misidentifications are made—in *auto-immune* reactions, for instance, in which a sort of civil war takes place between different factions of what ought to be peacefully co-existing parts of the whole that resides inside the walls.

The distinctions at this level are far from absolute; within the walls of the body are many, many interlopers, ranging from bacteria and viruses through microscopic mites that live like cliff-dwellers in the ecological niche of our skin and scalp, to larger parasites—horrible tapeworms, for instance. These interlopers are all tiny self-protectors in their own rights, but some of them, such as the bacteria that populate our digestive systems and without which we would die, are just as essential



*Man is but a worm, or, do lobsters have selves? (from Punch).*

team members in our quest for self-preservation as the antibodies in our immune systems. (If Lynn Margulis' theory is correct, the mitochondria that do the work in almost all the cells in our body are the descendants of bacteria with whom 'we' joined forces about two billions years ago.) Other interlopers are tolerated parasites—not worth the effort to evict, apparently—and still others are indeed the enemy within, deadly if not rooted out and driven out.

This fundamental biological principle of distinguishing self from world, inside from outside, has some remarkable echoes in the highest vaults of our psychology. The psychologist Paul Rozin has shown in a fascinating series of experiments on the nature of *disgust* that there is a powerful and unacknowledged undercurrent of blind resistance to certain acts that, rationally considered, should not trouble us (Paul Rozin and April E. Fallon, 'A Perspective on Disgust,' *Psychological Review*, 1987). For example, would you please swallow the saliva in your mouth right now? This act does not fill you with revulsion. But suppose I had handed you a sparkling clean drinking glass and asked you to spit into the glass and then

swallow the saliva from the glass. Disgusting! But why? It seems to have to do with our perception that once something is outside of our bodies it is no longer quite part of us anymore—it becomes alien and suspicious—it has renounced its citizenship and becomes something to be rejected.

Border crossings are thus either moments of anxiety, or, in a familiar reversal, something to be especially enjoyed:

In addition they seemed to spend a great deal of time eating and drinking and going to parties, and Frensic, whose appearance tended to limit his sensual pleasures to putting things into himself rather than into other people, was something of a gourmet.

Tom Sharpe, *The Great Pursuit*, 1977, Secker and Warburg, Pan Books edn, p. 6 Sharpe suggests, in this funny but unsettling passage, that when you get right down to it all pleasure consists in playing around with one's own boundary, or someone else's, and these biological reflections of ours suggest that he is on to something—if not the whole truth, then part of the truth.

In any event, the origin of complex life forms

on this planet was also the birth of the most primitive sort of self, whatever sort of self is implied by the self-regard that prevents the lobster, when hungry, from eating itself.

Does a lobster have a self? Or, should we say, are there selves that have lobster bodies? This question is obviously the secular descendant of a question that has troubled theologians for several thousand years: do animals have immortal souls? Do insects? I must say that I much prefer the secular version to the religious, and will not make any attempt—except by implication, no doubt—to express my opinions about the existence of souls. Even the most hard-headed materialist/mechanist/scientist, on the other hand, must face the question of how to describe the distinction between the lobster and the rock behind which the lobster crouches—only one of them is designed around the principle of self-regard. So far as *that* property goes, we can make fairly simple robots or automata that also exhibit it, detecting and retreating from dangers, seeking out shelter and striving to renew their energy-resources. This is minimal self-hood, but one must start at the beginning.

So a minimal self is not a thing inside a lobster or a lark, and it is not the 'whole lobster' or 'whole lark' either; it is something abstract which amounts just to the existence of an organization which tends to distinguish, control and preserve portions of the world, an organization that thereby creates and maintains boundaries. To a first approximation the principle that draws the boundary is this slogan:

You are what you control and care for.

### The self has flexible boundaries

Every word in this slogan cries out for further refinement, but I prefer to leave it in its simplest form, since the amendments that will already no doubt have occurred to you illustrate my next point. The boundaries of the minimal self are not only permeable, as we have just seen, but flexible as well. The hermit crab finds the discarded shell of another creature and appropriates it as a portable shelter, but by this appropriation that alien shell is moved inside the boundary—just as much as the shell that a snail grows, utilizing materials it likewise finds in its environment, but ingests and then extrudes.

The beaver's dam, by the same token, is so intimately associated with the beaver's fundamental strategies of survival that it should be included inside the boundary as well, as Richard Dawkins argues—I think conclusively—in *The Extended Phenotype*. One might protest that however loyally the beaver cares for its dam, it doesn't *directly* control the shape of its dam (in the way that it directly controls the posture of its limbs), but one could also go on to point out that it doesn't control its limbs as directly as it controls the motor nerve firings that innervate its limbs—so should we draw the boundary of minimal selfhood inside its limbs? Surely not.

An even more stunning example is the anthill or termite colony, in which there is a boundary not marked by any membrane or even by unbroken proximity of parts. What is particularly striking about the termite colony is that it is an example of a complex system capable of functioning in what seems to be a thoroughly 'purposeful and integrated' way simply by having *lots of subsystems* doing their own thing without any central supervision. Indeed most systems on earth that appear to have central controllers (and are usefully described as having them) do not. The colony as a whole builds elaborate mounds, gets to know its territory, organizes foraging expeditions, sends out raiding parties against other colonies, and so on. The group cohesion and coordination is so remarkable that hard-headed observers have been led to postulate the existence of a colony's 'group soul' (vide E.N. Marais' *The Soul of the White Ant*, 1937, London, Methuen). Yet in fact all this group wisdom results from nothing other than myriads of individual termites, specialized as several different castes, going about their individual business—influenced by each other, but quite uninfluenced by any master-plan. (Douglas Hofstadter has developed the analogy between mind and ant colony in the 'Prelude . . . Ant Fugue' flanking chapter 10 of *Gödel Escher Bach*, 1979, New York, Basic Books, pp. 275–336. The 'distributed control' approach to designing intelligent machines has in fact had a long history in artificial intelligence, going back as far as Selfridge's early 'Pandemonium' model of 1959, and finding recent expression in Marvin Minsky's *The Society of Mind*, 1985, New York, Simon & Schuster).

In every beehive or termite colony there is, to be sure, a Queen Bee or Queen Termite, but

these individuals are more patient than agent, more a treasure to be protected than the chief of the protective forces—in fact their name is more fitting today than in earlier ages, for they are much more like Queen Elizabeth II than Queen Elizabeth I. There is no Margaret Thatcher bee, no George Bush termite, no Oval Office in the anthill.

But enough about the bees and the birds. What about us? I know that there will be some among you who will be sure I am leading you on a wild goose chase; the sort of self-hood we have been examining, you think, is *not at all* the sort of self-hood that you have; a human being's self is *entirely different* from the sort of implied self of the lobster or the ant-colony. Yes and no. Of course they are different in important ways; the question is, can we build a bridge of evolution or development between them?

First let's look at a similarity, and then a major difference. Do our selves, our non-minimal *selfy* selves, exhibit permeability and flexibility of boundaries? We have noted the hermit crab's shell and the beaver's dam. What of our own clothes, our houses, our automobiles, and the other paraphernalia we strive to control—our 'stuff' as George Carlin calls it? Do we expand our personal boundaries—the boundaries of our selves—to enclose any of this? In general, perhaps, no, but there are certainly times when this seems true, psychologically. For instance, some people own cars and drive them, while other people are *motorists*; the inveterate motorist prefers *being* a four-wheeled gas-consuming agent to being a two-legged food-consuming agent, and his use of the first-person pronoun betrays this identification:

'I'm not cornering well on rainy days because my tires are getting bald.'

So sometimes we enlarge our boundaries; at other times, in response to perceived challenges real or imaginary, we let our boundaries shrink:

'I didn't do that! That wasn't the real me talking. Yes, the words came out of my mouth, but I refuse to recognize them as my own.'

This shrinking tactic has important moral implications. If you make yourself really small, you can externalize virtually everything. (See the discussion of the moral implications of the 'dimensions of the self' in *Elbow Room*, especially p. 143).

I have reminded you of these familiar speeches to draw out the similarities between our selves and the selves of ants and hermit crabs, but the speeches also draw attention to the most important differences: ants and hermit crabs don't talk. The hermit crab is designed or organized in such a way as to see to it that it acquires a shell; this organization, we might say, *implies* a shell, and hence, in a very weak sense, tacitly represents *the crab as having a shell*, but the crab does not in any stronger sense represent *itself* as having a shell. It doesn't go in for self-representation at all. To whom would it so represent itself and why? It doesn't need to remind *itself* of this aspect of its nature, since its innate design takes care of that problem, and there are no other interested parties in the offing. And the ants, as we have noted, accomplish their communal projects without relying on any explicitly communicated blueprints or edicts.

### **Our selves are the product of narrative**

We, in contrast, are almost constantly engaged in presenting ourselves to others, and to ourselves, and hence *representing* ourselves—in language and gesture, external and internal. The most obvious difference in our environment that would explain this difference in our behavior is the behavior itself. Our human environment contains not just food and shelter, enemies to fight or flee and conspecifics with whom to mate, but words, words, words. These words are potent elements of our environment that we readily incorporate, ingesting and extruding them, weaving them like spiderwebs into self-protective strings of *narrative*. Our fundamental tactic of self-protection, self-control, and self-definition is not building dams or spinning webs, but telling stories—and more particularly concocting and controlling the story we tell others—and ourselves—about who we are.

Now we are ready for the strangest idea in my paper, but also, I think, the most important: there is a further similarity between the spiders, the beavers, and us. Spiders don't have to think, consciously and deliberately, about how to spin their webs; that is just something that spider brains are designed to get spiders to do. And even beavers, unlike professional human engineers, do not consciously and de-

liberately plan the structures they build. And finally, we, (unlike professional human storytellers) do not consciously and deliberately figure out what narratives to tell and how to tell them; like spider webs, our tales are spun by us; our human consciousness, and our narrative selfhood, is their product, not their source.

These strings or streams of narrative issues forth as if from a single source—not just in the obvious physical sense of flowing from just one mouth, or one pencil or pen, but in a more subtle sense: their effect on any audience or readers is to encourage them to (try to) posit a unified agent whose words they are, about whom they are: in short, to posit what I call a *center of narrative gravity*. (Daniel Dennett, 'Why we are all novelists,' *Times Literary Supplement*, Sept 16–22, 1988, also to appear as 'The self as the center of narrative gravity,' in F. Kessel, P. Cole and D. Johnson, eds, *Self and Consciousness: Multiple Perspectives*, Hillsdale, NJ, Erlbaum, in press). This is yet another abstraction, not a thing in the brain, but still a remarkably robust and almost tangible *attractor of properties*, the 'owner of record' of whatever items and features are lying about unclaimed. Who owns your car? You do. Who owns your clothes? You do. Then who owns your body? You do. When you say

'This is my body',

you certainly aren't taken as saying

'This body owns itself.'

But what can you be saying, then? If what you say is neither a bizarre and pointless tautology (this body is its own owner, or something like that) nor the metaphysically discredited—or at least highly suspect—claim that you are an immaterial soul or ghost puppeteer who owns and operates this body, what else could you mean? I think we could see more clearly what

'This is my body'

meant, if we could answer the question: as opposed to what? How about as opposed to this?

'No, it isn't; it's mine, and I don't like sharing it!'

If we could see what it would be like for two (or more) selves to vie for control of a single body, we could see better what a single self really is. As scientists of the self, we would like to conduct controlled experiments, in which, by varying the initial conditions, we could see just what has to happen, in what order and requiring what resources, for such a talking

self to emerge. Are there conditions under which life goes on but no self emerges? Are there conditions under which more than one self emerges? Of course we cannot ethically conduct such experiments, but, as in other scientific investigations of human phenomena, occasionally nature conducts terrible experiments, from which we can cautiously draw conclusions.

### Always one self to one body?

Such an experiment is multiple personality disorder, in which a single human body seems to be shared by several selves, each, typically, with a proper name and an autobiography. Nicholas Humphrey and I have been investigating MPD with an eye to answering these questions about the self.

The idea of multiple personality disorder, or MPD, strikes many people as too outlandish and metaphysically bizarre to believe—a 'paranormal' phenomenon to discard along with ESP, close encounters of the third kind and witches on broomsticks. I suspect that some of these people have made a simple arithmetical mistake: they have failed to notice that two or three or seventeen selves per body is really no more *metaphysically* extravagant than one self per body. One is bad enough!

'I just saw a car drive by with five selves in it.'

'What?? The mind reels! What kind of metaphysical nonsense is this?'

'Well, there were also five bodies in the car.'

'Oh, well, why didn't you say so. Then everything is OK.'

'Or maybe only four bodies, or three—but definitely five selves.'

'What?!!'

The principle of 'one to a customer' certainly captures the normal arrangement, but if a body can have one, why not more than one under abnormal conditions?

I don't at all mean to suggest that there is nothing shocking or deeply puzzling about MPD. It is, in fact, a phenomenon of surpassing strangeness, not, I think, because it challenges our presuppositions about what is *metaphysically* possible, but more because it challenges our presuppositions about what is humanly possible, about the limits of human cruelty and depravity on the one hand, and the limits



'Me' vs 'the rest of the world.'

of human creativity on the other. For the evidence is now voluminous that there are not a handful or a hundred but thousands of cases of MPD in this country, and it almost invariably owes its existence to prolonged early child abuse, usually sexual, and of sickening severity.

These children have often been kept in such extraordinarily terrifying and confusing circumstances that I am more amazed that they survive psychologically at all, than I am that they manage to preserve themselves by a desperate redrawing of their boundaries. What they do, when confronted with overwhelming conflict and pain, is this: they 'leave'. They create a boundary so that the horror doesn't happen *to them*; it either happens to no one, or to some other self, better able to sustain its organization under such an onslaught—at least what they say they did, as best they recall.

How can this be? What kind of account could we give, ultimately at the biological level, of such a process of splitting? Does there have to have been a single, whole self that somehow fissioned, amoeba-like? How could that be if a self is not a proper physical part of an organism or a brain, but, as I have suggested, an abstraction? The response to the trauma seems so creative, moreover, that one is inclined at first to suppose that it must be the work of some kind of supervisors in there: a supervisory brain program, a central controller, or whatever. But we should remind ourselves of the termite colony, which also seemed at first, to require a central chief executive to accomplish such clever projects. We can perhaps convince ourselves of the possibility—no more than that—of such a creative process by exploring an extended analogy.

### **Do I resemble the USA?**

Consider the United States of America. At one level of description there is surely nothing wrong with personifying the USA and talking about it (rather like the termite colony) as if it had an inner self. The USA has memories, feelings, likes and dislikes, hopes, talents, and so on. It hates Communism, is haunted by the memory of Vietnam, is scientifically creative, socially clumsy, somewhat given to self-righteousness, rather sentimental. But does that mean there is one central agency inside the

USA which embodies all those qualities? Of course not. There is, as it happens, a specific area of the country where much of it comes together. But go to Washington and ask to speak to Mr American Self, and you'd find there was nobody home: instead you'd find a lot of different agencies (the Defense Department, the Treasury, the courts, the Library of Congress, the National Science Foundation, etc) operating in relative independence of each other.

To be sure, there is no such thing as Mr American Self, but as a matter of fact there is in every country on earth a Head of State: a President, Queen, Chancellor, or some other figurehead. The Head of State may actually be non-executive; certainly he does not himself enact all the subsidiary roles (the US President does not bear arms, sit in the courts, play baseball, or travel to the Moon . . .). But nevertheless he is expected at the very least to take an active interest in all these national pursuits. The President is meant to appreciate better than anyone the 'State of the Union'. He is meant to *represent* different parts of the nation to each other, and to inculcate a common value system. Moreover—and this is most important—he is the 'spokesman' when it comes to dealing with other nation states. Other individuals—diplomats and press secretaries—may deliver the actual utterances, but these acts are understood to be relaying *his* speech acts to the world.

That is not to say that a nation, lacking such a figurehead, would cease to function day-to-day. But it is to say that in the longer term it may function much better if it does have one. Indeed a good case can be made that nations, unlike termite colonies, require this kind of figurehead as a condition of their political survival—especially given the complexity of international affairs.

The drift of this analogy is obvious. In short, a human being too may need an inner figurehead—especially given the complexities of human social life. If this is accepted (as I think it should be), we can turn to the vexed question of how such a figurehead could be developed or established in the first place. Here the Head of State analogy may seem at first less helpful. For one thing, in the USA at least, the President is democratically elected by the population. For another, the candidates for the presidency are pre-formed entities, already waiting in the wings.

Yet is this really so? It could equally be argued that the presidential candidates, rather than being pre-formed, are actually brought into being—through a narrative dialectical process—by the very population to which they offer their services as president. Thus the population (or the news media) first try out various fictive versions of what they think their 'ideal president' should be, and then the candidates adapt themselves as best they can to fill the bill. To the extent that there is much more than one dominant fiction about 'what it means to be American', different candidates mold themselves in different ways. But in the end only one can be elected—and he will of course claim to speak for the whole nation.

In very much a parallel way, Humphrey and I suggest, a human being first creates—unconsciously (the way a spider creates a web)—one or more ideal fictive-selves and then elects the best supported of these into office as her Head of Mind. A significant difference in the human case, however, is that there is likely to be considerably more outside influence. Parents, friends, and even enemies may all contribute to the image of 'what it means to be me', as well as—and maybe over and above—the internal news media. In a Multiple Personality case, Daddy, for example, might lean on the growing child to impose an *invasive* fictive-style.

Thus a human being does not start out as single or as multiple—she starts out without any Head of Mind at all. She is poised to fend for herself—just as the lobster or beaver is—but she does not *yet* have an organization crystallized around one or more centers of narrative gravity. In the normal course of development, she slowly gets acquainted with the various possibilities of selfhood that 'make sense'—partly through her own observation, partly through outside influence. In most cases a majority view emerges, strongly favouring one version of 'the real me', and it is that version which is installed as her elected Head of Mind. But in some cases the competing fictive-selves are so equally balanced, or different constituencies within her are so unwilling to accept the result of the election, that constitutional chaos reigns—and there are snap elections (or coups d'état) all the time.

I think that a model inspired by (underlying, rendering honest) this analogy can account for symptomatology of MPD: the memory black-spots, differences in style, and so forth. Certainly the analogy provides a wealth of detail

suggesting so. Once in office a new Head of State typically downplays certain 'unfortunate' aspects of his nation's history (especially those associated with the rival Head of State who immediately preceded him). Moreover he himself, by standing for particular national values, affects the course of future history by encouraging the expression of those values by the population (and so, by a kind of feedback, confirming his own role).

I am still talking in metaphors, however. What translations into the terms of current cognitive science could we formulate? First, what sense can be given to the notion of a 'Head of Mind'? The analogy with a *spokesman* may not be far off the literal truth. The language-producing systems of the brain have to get their instructions from somewhere, and the very demands of pragmatics and grammar would conspire to confer something like Head of Mind authority on whatever subsystem *currently* controls their input. E.M. Forster once remarked:

'How can I tell what I think until I see what I say?'

The four 'I's in this sentence are meant to refer to the same thing. But this grammatical tradition may depend—and always have depended—on the fact that the thought expressed in Forster's question is quite literally self-confirming: what 'I' (my self) thinks is what 'I' (my language apparatus) says.

There can, however, be no guarantee that either the speaker or anyone else who hears him over an extended period will settle on there being just a single 'I'. Suppose, at different times, different subsystems within the brain produce 'clusters' of speech that simply cannot easily be interpreted as the output of a single self. Then—as a Bible scholar may discover when working on the authorship of what is putatively a single-authored text—it may turn out that the clusters make *best sense* when attributed to different selves.

Another central feature of MPD is selective amnesia, which is the chief difference between the plight of the MPD sufferer and the rest of us (who have our various *personae* in the various roles we play day to day). MPD sufferers typically have no memory at all for the events that occur during regimes when they are out of power. To those who have even a passing knowledge of computer information processing, the idea of mutually inaccessible 'directories' of stored information will already

be familiar. In cognitive psychology, new discoveries about state-dependent learning and other evidence of modularization in the brain, have led people to recognize that *failure of access between different subsystems is the norm rather than the exception*. Indeed the old Cartesian picture of the mind 'transparent to itself' now appears to be rarely if ever achievable (or even desirable) in practice. In this context the out-of-touchness of different selves no longer looks so startling.

The different 'alters' of an MPD sufferer almost always have different attitudes towards life and different emotional characters; one will be prudish and reserved, another sexy, a third angry and violent, for instance. What could be the basis for the different 'value systems' associated with these rival Heads of Mind? At another level of analysis, psychopharmacological evidence suggests that the characteristic emotional style of different personalities could correspond to the brain-wide activation or inhibition of neural pathways that rely on different neurotransmitter chemicals. Thus the phlegmatic style of one personality could be associated with low norepinephrine levels, the shift to a carnal style with

high norepinephrine, and the out-of-control alter could coincide with low dopamine.

Even the idea of an 'election' of the current Head of Mind is not implausible. Events very like elections take place in the brain all the time—whenever coherent patterns of activity compete for control of the same network. Consider what happens, for example, when the visual system receives two conflicting images at the two eyes. First there is an attempt at fusion; but if this proves to be unstable, 'binocular rivalry' results, with the input from one eye completely taking over while the other is suppressed. Thus we already have, at the level of visual neurophysiology, clear evidence of the mind's general preference for single-mindedness over completeness.

MPD provides a window into alternative possibilities. In the same way that the force of gravity is well-nigh invisible until you have imagined the weightlessness of outer space, so single-selfedness is hard to discern in a body until you have seen, or imagined, multiple-selfedness.

I have not had time to show you the detailed view through this window, but I hope I have succeeded in opening it for you.