

"That Special Something: Dennett on the Making of Minds and Selves" in A. Brook and D. Ross (eds) DANIEL DENNETT (Cambridge University Press, 2002)

That Special Something: Dennett on the making of Minds and Selves

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0. Introduction

Dennett depicts human minds as both deeply different from, yet profoundly continuous with, the minds of other animals and simple agents. His treatments of mind, consciousness, free will and human agency all reflect this distinctive dual perspective. There is, on the one hand, the (in)famous Intentional Stance, relative to which humans, dogs, insects and even the lowly thermostat (e.g. Dennett (1998)

p.327) are all pronounced capable of believing and desiring in essentially the same theoretical sense. And there is, on the other hand, a noteworthy (and increasing) insistence that human minds are special in that they exhibit a distinctive kind of “informational organization”: one that confers consciousness (Dennett (1998) p.347), and creates the space for agency, purpose, self-control (Dennett (1984) p.100), and “significant suffering” (Dennett (1998) p.351).

What follows is a critical examination of this dual perspective, and of Dennett’s account of the key factor that makes us special - human language and our immersion in the sea of culture (Dennett (1998) p.146, (1996) p.130, (in press) p.7). In particular, I shall ask whether Dennett’s dual perspective masks a deeper tension in his accounts of consciousness and personhood, and whether the appeal to the transformative power of human language and culture can bear the heavy explanatory burden Dennett places upon it. These turn out to be significant challenges but ones which also help clarify the scope and power of this complex, multi-layered account.

I end by commenting briefly on the wider significance of Dennett’s project as a major contribution to current debates concerning the continuity (or otherwise) of evolved cognitive strategies and the essentially hybrid (biological and non-biological) nature of human minds and persons.

1. Thinking Up The Self

I begin by very briefly rehearsing the main elements of Dennett’s account of the emergence of our “kinds of minds”. The story moves through several distinct stages. Ground Zero, for Dennett, is the presence of what might be called “minimally rational response”. Many of the animals and artifacts, around us are in some broad sense “well- designed” and thus reward treatment as rational agents. Examples include the human, the racoon, and the thermostat. Such systems are the proper objects of Dennett’s (in)famous “intentional stance” so well described in the Introduction to this volume.

Intentional systems, however, come in a variety of shapes and forms. In particular, Dennett likes to distinguish between what he nicely dubs “Darwinian”, “Skinnerian”, “Popperian” and “Gregorian” creatures. Darwinian creatures come in many forms. The most basic being the simple, hard-wired variety, whose ecologically adjustable, survival-enhancing responses are fixed by evolution. Next up is the Skinnerian variety, able to learn new strategies and responses by the reinforcement (via reward) of behaviour. Simple connectionist networks (artificial neural networks whose processing profiles are tuned by training and reinforcement) fall, Dennett comments, into this category (see Dennett (1996) p.85), and exhibit a simple kind of learning which Dennett calls ABC learning (op cit, p.87). Popperian¹ creatures, however, are able to deploy an additional (and mighty handy) resource. Such creatures exploit a kind of inner model of their world, enabling them to try out moves in their imagination in advance of committing their physical bodies to the act. This strategy sounds fancy, but it is one deployed, Dennett suggests, by most animals whose sophistication exceeds that of the simple invertebrates (op cit, p.92). Minds like ours, Dennett finally suggests, use all the tricks just mentioned but add a

¹ So-called because it was Karl Popper who memorably described certain cognitive designs as allowing “our hypotheses to die in our stead” (see Dennett (1996) p.88).

final, language-and-culture based twist. For we are (in addition) Gregorian² creatures: creatures 'whose inner environments are informed by the *designed* portions of the outer environment' (op cit, p.99). The idea here is that 'tool use is a two-way sign of intelligence: not only does it *require* intelligence to recognize and maintain a tool (let only fabricate one) but a tool *confers* intelligence on those lucky enough to be given one' (op cit, p.99-100).

Given a tool (e.g. the nautical compass described in detail in Hutchins (1995)) the problem space confronting the biological brain (in respect of some real-world problem) is radically transformed and (often) simplified. In just this vein Richard Gregory (the psychologist from whom Gregorian creatures take their name - see note two) paid special attention to the use of words, conceived as themselves a special class of "mind tools". Mind tools, in this sense, are any designed (or culturally inherited) constructs which help transform and simplify problem-solving in the inner (mental) environment. The resources of public language, as just mentioned, constitute the original and most singularly potent such mind tool. Brains equipped with such resources, and populated by a rich culturally accumulated stock of concepts and labels, become able (Dennett claims) to make a crucial cognitive leap. Where the Skinnerian creature is able to learn new behaviours, and the Popperian creature is able in addition to try out possible behaviours in mental simulation, the Gregorian creature becomes able to actively think about it's own thinking. By turning the communicative and cooperative resources of public exchange and discussion in upon themselves, such creatures are able to concern themselves with such questions as: "What is my reason for believing such and such?" "Is it a good reason?" "How sound is the evidence upon which I am about to act?" And so on. Such self-questioning (and the crucial attendant possibilities of improved "rational hygiene") becomes an option, Dennett believes, only when the agent's rationales can become objects *for* the agent: only when the agent has available 'a representation of the reason [which may be] composed, designed, edited, revised, manipulated, endorsed' (Dennett (1996) p.133). And the inherited mind tools of public linguistic expression, it is argued, provide natural support for such objectification.

Much more, to be sure, needs to be said about the precise way in which this magic is supposed to be worked. But it is the larger picture which I want first to bring into focus. And what matters here is just that the Gregorian creatures, courtesy of their special fluency with mind tools, are able to :

Take a big step towards a human level of mental adroitness, benefiting from the experience of others by exploiting the wisdom embodied in the mind tools that these others have invented, improved and transmitted: thereby they learn *how to think better about what they should think about next* - and so forth, *creating a tower of further internal reflections with no fixed or discernible limit*. (Dennett (1996) p.101. My emphasis).

In Dennett (1984), the same kind of story (of a cascade of cognitive

² So-called after the psychologist, Richard Gregory, whose work stresses the role of designed artifacts in actively enhancing intelligence (see Gregory (1981) p.311ff, Dennett (1996) p. 99).

innovations) is pursued, but with the special agenda of accounting for the gradual emergence of moral agency and self-hood. There, Dennett contrasts the Skinnerian and Popperian creatures (these labels, however, are drawn from the later works) with creatures exhibiting (in addition) ‘the open-ended capacity (requiring a language of self-description) for “radical self- evaluation”’ (Dennett (1984) p.100). Such self-evaluation requires the explicit articulation of the values and ideals inherent in our actions and projects, and the development of deliberative skills that further enhance our capacity for controlled, value-reflecting action (op cit, chapter 4). Once again, it is the deployment of mind tools, especially those bequeathed by the capacity to make our reasons explicit using words that ushers human-like intelligence and agency into the natural order. The Gregorian creatures, and the Gregorian creatures alone, emerge as ‘loci of self-control, of talent, of decision-making. They have projects, interests and values they create in the course of their own self-evaluation and self-definition’ (op cit, p.100).

Finally, notice that the very same story is used (in Dennett (1991) (1996) and elsewhere) to account for the emergence of consciousness itself. Indeed, consciousness and personhood, for Dennett, seem to go pretty much hand in hand, courtesy of the crucial role played by certain mind tools in each case. Thus we read that:

In order to be conscious - in order to be the sort of thing it is like something to be - it is necessary to have a certain sort of informational organization that endows that thing with a wide set of cognitive powers (such as the powers of reflection and re-representation).

And this special kind of organization, Dennett clearly states is:

Not part of our innate “hard-wiring” but in surprisingly large measure an artifact of our immersion in human culture. (Both quotes from Dennett (1998) p.346-7).

Consciousness, personhood, moral responsibility, free will, and even real thinking (see e.g. Dennett (1996) p.130, (in press) p.4) are thus all tied together, and ushered into the natural world by our peculiar fluency with mind tools, especially those linguiform resources with which we are able to turn reasons into objects for reflection and refinement. The liberal embrace of the Intentional Stance notwithstanding, human thought is thus marked out as deeply different from the cognitive capacities of other animals. It is different courtesy largely of the culturally incubated mind-tools whose transformative powers open up the space within which we actively construct the experiencing and responsible self. Belief is cheap, but Gregorian creatures have that special something that makes their mental lives unique³ .

³ See e.g. Dennett (1996) p.162 for a clear statement of the uniqueness claim, and of the idea that the Gregorian creatures have crossed a genuine threshold in cognitive space.

2. How Might Mind Tools Do Their Work?

Let us call the matrix of special Gregorian features (consciousness, personhood, moral responsibility, free will, and “real thinking”) “mindfulness”. What makes mindfulness possible, on Dennett’s account, is, we saw, the operation of all those extra layers of mind tools we humans have added to our basic evolutionary heritage. Such a view is highly attractive, and it is certainly one that I myself endorse (see e.g. Clark (1997), Clark (in press) chapter 8). But it raises a number of deep and difficult questions which none of us (or so I believe) has yet fully addressed. The hardest such question is also the simplest: how, *exactly*, do the mind tools work their magic?

This is clearly the crucial question. But when it comes to the crunch, neither Dennett nor I have much to offer beyond some impressionistic speculation. Dennett stresses the role of culturally inherited mind-tools in labelling, organizing and controlling the inner environment of ideas and associations, and the importance of rendering explicit both knowledge and reasons for action⁴. And I have stressed the importance of harmonizing inner mental operations with external cognitive props and scaffolding, and the role of acquired linguistic labels in enhancing incremental learning⁵. At the heart of both these accounts lies a common factor: the idea of language (and public codes and foundations in general) as providing a new (and cheap!) realm of manipulable and re-recognizable objects upon which to turn more evolutionary basic capacities of recognition, imagination and learning. As Dennett nicely puts it:

Once we have created labels and acquired the habit of attaching them to experienced circumstances, we have created a new class of objects that can themselves become the objects of all the pattern-recognition machinery, association-building machinery, and so forth. (Dennett (1996) p.150-151).

This process, Dennett claims, begins with our encounter with public language words, and our subsequent habits of inner rehearsal of “voiced concepts”, and ends with the effective installation of a whole inner economy of (if you like) idea-processing technology:

We build elaborate systems of mnemonic association - pointers, labels, chutes and ladders, hooks and chains...turning our brains into a huge structured network of competences. No evidence yet unearthed shows that any other animal does anything like that. (Dennett (1996) p.152).

That all sounds right. But once again, the question looms: just how, *exactly*, is all this supposed to work? For it is not (I claim) until we see (in much more detail) how it could all work that we can be in a position to judge just *how much* this kind of move can really buy us. Dennett plausibly suggests, for example, that it is only courtesy of our linguistic capacities that we can think certain thoughts. Examples include considering whether a certain visually-identical penny is in fact the *very same* penny that someone brought with them to New York many years ago (Dennett (1996) p.116) and the explicit representation of *reasons* (see section 1 above, Dennett (1996) p.131-133). More generally, Dennett endorses the view (Clark and Karmiloff-Smith (1993)) that there are large benefits to making explicit knowledge that is initially locked away in some special-purpose, context-dependent encoding, and he suggests that language is a crucial tool for such processes of explication (Dennett (1996) p.132).

⁴ See especially Dennett (1996) chapters 4-6.

⁵ See especially Clark (1997) chapters 9 and 10, Clark (1998).

And once again, this all sounds promising. But the actual details remain uncomfortably vague. Why, for example, is the possession of linguistic mind-tools *necessary* for thinking the thought about the penny? Dennett seems to think this ('It doesn't take a rocket scientist to think such thoughts, but it does take a Gregorian creature who has language among its mind-tools' (op cit, p.117)). But it is not at all obvious why this should be so. The question of necessity (or lack of it) is, I concede, probably not crucial. Perhaps public language is not strictly necessary for such thinking but is instead the (contingent) route by which it is achieved in humans (see Clark 1996b). What looks more important, however, is the slightly weaker claim that such thinking requires the use of at least *some* kind of mind-tool capable of objectifying concepts and relations. This I in fact believe, but still cannot prove to my own satisfaction. One argument, roughly sketched, might be that certain kinds of abstract thought require the capacity to create and deploy what might be called 'perceptually simple inner objects' as stand-ins for complex concepts, ideas and relations. I know of one rather compelling demonstration of this which I think is worth mentioning here, even though I have treated it at some length elsewhere (Clark 1998). For it will help focus some further issues concerning the scope and power of Denentt's overall vision.

The example (Thompson, Oden and Boyson (1999)) involves a study of problem solving in chimps (pan troglodytes). What Thompson *et al* show is that chimps trained to use an arbitrary plastic marker (a yellow triangle, say) to designate pairs of identical objects (such as two identical cups), and to use a different marker (a red circle, say) to designate pairs of different objects (such as a shoe and a cup), are then (and only then) able to learn to solve a specific new class of abstract problems. This is the class of problems - apparantly quite intractable to chimps not provided with the token-based training - involving recognition of *higher-order* relations of sameness and difference. Thus presented with two (different) pairs of identical items (two shoes and two cups, say) the higher-order task is to judge the two pairs as exhibiting the *same* relation i.e. to judge that you have two instances of *sameness*. Some examples of such higher-order judgments (which even human subjects can find hard to master at first) are:

Cup/Cup	Shoe/Shoe
=	two instances of first-order sameness
=	an instance of higher-order sameness

Cup/Shoe	Cup/Shoe
=	two instances of first-order difference
=	an instance of higher-order sameness

Cup/Shoe	Cup/Cup
=	one instance of first-order difference and one of first- order sameness
=	an instance of higher-order difference

The token-trained chimps' success at this difficult task, it is conjectured, is explained by their prior experience with external tokens. For such experience may enable the chimp, on confronting e.g. the pair of identical cups, to retrieve a mental representation of the sameness token (as it happens, a yellow triangle). Exposure to the two identical shoes will likewise cause retrieval of (a token of) that token. At that point, the complex higher-order task is effectively reduced to the simpler lower-order task of identifying (internal representations of) the two yellow plastic tokens as "the same".

Experience with external tags and labels thus enables the brain itself, by *representing* those tags and labels, to solve problems whose level of complexity and abstraction would otherwise leave us baffled. Learning a set of tags and labels (which we all do when we learn a language) is thus rather closely akin to acquiring a new perceptual modality. For like a perceptual modality, it renders certain features of our world concrete and salient, and allows us to target our thoughts (and learning algorithms) on a new domain of basic objects. This new domain compresses what were previously complex and unruly sensory patterns into simple objects. These simple objects can then be attended to in ways that quickly reveal further (otherwise hidden) patterns, as in the case of relations-between-relations. And of course the whole process is deeply iterative - we coin new words and labels to concretize regularities that we could only originally conceptualize thanks to a backdrop of other words and labels.

This example, then, shows us several things. It demonstrates, in a quite striking way, how the provision of concrete labels can indeed "turbo-charge" biologically-basic modes of learning and comprehension. But it also suggests some of the apparent limitations of the larger story. For there is nothing about the "cognitive bonus" thus achieved that looks (superficially at least) to bear very deeply upon the development of self-hood, or of the capacity for consciousness and "significant suffering". What we get is a useful account of how certain types of intelligence may bootstrap themselves to new levels if augmented with some additional resources. But can the appeal to mind-tools really illuminate the *rest* of the matrix of mindfulness: especially the key aspects of responsible agenthood and consciousness? And is there still some biological difference that enables us humans to repeatedly create and exploit so many mind-tools in the first place? Finally, if there *is* such a difference, how can we be sure that is the use of the mind-tools, and not that difference itself, that is responsible for the bulk of the matrix of human mindfulness?

3. Can Tools Make The Self?

A natural worry about the appeal to mind-tools in the *constitution* of the self arises from the surface grammar of tool talk. For tools, in normal parlance, need a user. Yet on Dennett's account the nearest thing to a user we ever get is a kind of "user-illusion", an illusion itself created by the operation of certain mind-tools (specifically, those of narrative). The idea (see Editor's Introduction (this volume) and Dennett (1991)) is that our kind of conscious awareness depends rather directly on our culturally inculcated capacity to tell a story (to ourselves and others) concerning our own life, reasons and actions. It is the presence of this story that

makes our pains and pleasures *ours*, our choices our own, and our experience the way it is. We are nothing more than a bag of user-less cognitive tools (some natural, some artifactual) held together by a kind of illusion-of-selfhood: an illusion rooted in the operation of the narrative-spinning capacity acquired courtesy of our facility and language. The story Dennett tells thus depicts our kind of consciousness as dependent upon a narrative-spinning capacity which literally creates the self (or is it just the illusion of a self?) to which experiences and actions are referred⁶.

Once again, the question to press is simply 'how?'. How is it that the activity of spinning a narrative can bring into being a conscious self, a site of potentially "significant suffering"? It is tempting to think the proposal must be either false or circular. It would be circular if the narrative only *counted* when it was spun by a person: a pre-existing locus of awareness, understanding and experience. It would be false if it was imagined that the mere activity of (seeming to) tell a story about one's life and one's reasons for actions was somehow sufficient to construct "our kind of consciousness" from the void.

Or would it? I take it that, in some fairly dramatic sense, Dennett really is claiming something like the latter. He really is claiming that the constructing of a narrative distils consciousness and agency from the matrix of survival-enhancing innovations that constitute the biological organism. But the story hereabouts strikes me as less compelling than the previous story (the one concerning a specific "cognitive bonus" bestowed by the culturally-aided process of label production).

How might the spinning of a narrative (one that cannot be assumed to be *already* the narrative of a conscious agent) help bring minds like ours into being? Dennett offers a number of ideas none of which, I think, can quite carry the load. They include:

- The idea that linguistic formulation yields a kind of shallow determinacy of content that simple belief-like states lack⁷.
- The idea that linguistically rehearsed contents are especially well-positioned to win the struggle for control of action⁸.
- The idea that any notion of a "point of view" depends on one story winning out over others, and that linguistic judgments are what allow such victories to occur⁹.
- The idea that certain kinds of morally significant self-control require the capacity to confront one's own beliefs and reasons for action, and that the linguistically-supported objectification of our own mental states contributes deeply to this process¹⁰.

I suspect that the other contributors to this volume will have much to say about the first three of these ideas, so I shall restrict myself to one single comment. It is that even if all these points (the first three) are conceded, it remains unclear why conscious experience and "significant suffering" should depend on having these capacities in place. Certainly, neither determinacy of content nor linguistically-based capacities of wielding local control seem to have much to do with qualitative experience. And even the third idea, concerning the construction of a "point of view", seems to be pointing to a feature of typical human consciousness that may well be unnecessary for pleasure, pain and suffering.

⁶ See e.g. Dennett (1998) p.351, and Dennett (1996) p.156-7.

⁷ E.g. Dennett (1998) p.89-90.

⁸ E.g. Dennett (1996) p.155.

⁹ E.g. Dennett (1998) p.348.

¹⁰ E.g. Dennett (1984) p.86, 90.

I propose to dwell, however, only upon the fourth suggestion: the idea that certain kinds of morally significant self-control depend crucially upon something like a capacity to treat one's own thoughts, beliefs and reasons as objects. For it is here, I believe, that we come closest to seeing some kind of conceptually deep connection between the operation of certain mind-tools and the presence of fully-fledged human agency.

Dennett suggests that it is, in large part, our capacities of self-description that allow us to actively create ourselves as persons: 'what you are is that agent whose life you can tell about' (Dennett (1996) p.156). Such self-description is said to begin in early childhood, with fantasy self-descriptions such as 'I am an ace fighter pilot', and carry on throughout life (hopefully, though perhaps not actually, with a greater grip on the facts). But to get a full sense of the potential role of such self-description in constituting knowing moral agency, we need to go back to Dennett's (1984) discussion of "self-made selves". The key idea here, which we already touched on in section 1, is that the availability of a language of self-description opens up the morally crucial possibility of "radical self-evaluation". Dennett is here deeply influenced by Charles Taylor (see e.g. Taylor (1976)) who depicts such self-evaluation as involving first an attempt to formulate what was previously inchoate: a sense of what is important, and why it is important, that was previously merely implicit in the patterns of activity in which we engaged. And then a direct confrontation of that newly achieved articulation, during which we question, refine, affirm or reject certain elements. It is in this way that (as Dennett glosses Taylor) 'we create our values while creating ourselves' (Dennett (1984) p.90).

Such special deliberative skills, Dennett suggests, enhance our potential for self-control and for the improvement and stabilization of character. And a self, for Dennett, is 'above all, a locus of self-control' (op cit, p.81). We are thus presented with a cascade of types and levels of self control somewhat analogous to the cascade of adaptive strategies rehearsed earlier. At the bottom level is the simple capacity to control the motions of one's own body. But the self emerges (if I read Dennett correctly) only when that control becomes in various ways self-conscious or transparent. Such a process reaches a kind of apex when the self-controlling agent can ask meta-level questions about their own general operating strategies, or styles, and assess how well these strategies and styles serve their desires and needs, and even (see Frankfurt (1971)) whether their desires and needs are the ones they really want.

Such dizzy heights of self-control become available, Dennett claims, only once organisms acquire a language of self-description. And this is because:

The aspirant to a high order of self-control must have the capacity to represent his current beliefs, desires, intentions and policies in a detached way, as objects for evaluation. (Dennett (1984) p.86).

The equations at the heart of Dennett's account of the emergence of fully fledged human agency and self-hood thus look to be these:

Maximal Control = Maximal Self-Hood and Responsibility

Radical Re-Evaluation = The Route to Maximal Control

If Radical Re-evaluation requires a language of self-description, then a link between fully-fledged agency and the presence of some language-like resource seems indicated.

Considered as an account of the pre-conditions of morally responsible agency, this argument (or equation) has much to recommend it. Moreover, it comes closest to displaying a truly critical role for the mind-tools bequeathed to us by public language. True, it might be possible in principle to acquire and exploit a “language of self-description” even in the absence of public language or practices of abstract symbolic communication. But for human agency, it surely *is* the practice of public, language-dependent, criticism and reflection that instills in us the kind of meta-reflective skills that Dennett and Taylor highlight. The “cognitive bonus” that language confers thus seems central not just to the incremental learning of abstract concepts (see section 2) but also to the emergence of morally responsible agency (for further arguments to this effect, see Clark (1996-a), (in press-a)).

And this, I think is an intuitively appealing result. Non-linguistic creatures are not prominent candidates for thick moral agency. Given a morally-loaded concept of self-hood, they are likewise not likely to count as persons or selves (though weaker notions of personhood and self-hood may remain available). There is still nothing here, however, which speaks to the rather bulky remainder of our matrix of mindfulness: the presence of qualitative consciousness and the potential for significant suffering. To make the rest of the case requires one further move which I still find unwarranted, viz, to claim that *experiences need a thick subject* i.e. a subject whose capacities of self-knowledge and self-control lie at, or close to, the apex of deliberative reason described by Taylor. It is this last piece of the puzzle, the imagined link between qualitative consciousness, significant suffering, and the presence of a ‘*complex subject to whom [things] matter*’ (Dennett (1998) p.351, emphasis in original), that I still cannot seem to fit into place. As a result, the appeal to the transformative role of mind-tools (especially language) buys us a whole lot while (I suspect) not *quite* making the complete case that Dennett requires. The matrix of mindfulness has many parts, and the appeal to culturally incubated mind-tools may not fully illuminate the whole¹¹.

4. On Being Cyborgs

Shortfalls aside, the appeal to culturally incubated mind-tools must surely play a crucial role in any account of what’s *special* about human thought and reason. In this final section I shall examine some of the bigger issues, opportunities and problems that this looks likely to involve.

The most basic problem, of course, concerns the use and origin of the mind-tools themselves. Take, for example, Dennett’s pre-eminent tool: the capacity to use words to label states of oneself and of the world. What does it take to acquire and exploit such a tool? The rats, hamsters and snakes of the world cannot seem to acquire this skill to any significant degree, no matter how hard we humans try to inculcate it. Chimps and dolphins, it seems, do significantly better. But no other animal looks capable of acquiring a linguistic framework comparable in depth, breadth, and expressiveness to our own. Doesn’t this suggest, rather strongly, that the crucial cognitive innovation (that special something) actually *precedes*, and in fact makes possible, the acquisition of human-style language and the subsequent cascade of designer mind-tools?

¹¹ For my own recent, and quite Dennettian, attempt to complete the puzzle, see Clark (2000).

Well, yes and no. Consider a somewhat analogous (or so I claim) question. What is that special something that makes Granny's fruitcake so good? Let's rule out all the things that Granny's fruitcake has in common with other, demonstrably fruitcake-y yet not-half-so-good, confections. What, we want to know, is Granny's special trick? Here is an answer: Granny marinates her raisins in a special over-proof Jamaican rum, yielding an exceedingly heady product. But wait. Not just any old raisins will do. In fact, many of the raisins used by inferior cooks would be unable to benefit from the proprietary over-proof immersion, being too small, spindly and burnt to absorb any significant amount of the Jamaican elixir.

So what *is* Granny's secret? Is it the rum or the raisins? The question is kind of silly. The difference in taste is attributable, let's suppose, to the rum. But the capacity to *take that difference on board* lies with the raisins. The case of language and mind-tools is, I suggest, perfectly parallel. The cognitive bonus that yields human levels of thought and reason may well be (as Dennett claims) largely due to what certain mind-tools do to, and with, the brain. But the capacity to acquire, develop and exploit such mind-tools may well itself depend on some prior (perhaps small) neural innovation.

It seems rather likely, in fact, that there is a double biological difference at work here. First, there is the neural innovation that lets a recursive, recombinable public language get a grip. But second, there is an additional biological difference involving unusually extensive neural plasticity (centered on the cortex)¹² coupled with an extended period of sheltered learning and development (the extended human childhood). Thus consider the evolutionary story sketched by Griffiths and Stotz (in press). These authors (who cite Furth (1987)) suggest that 'human evolution has given rise to a new stage of development: childhood'. And childhood, they suggest, provides a window of learning in which 'cultural scaffolding [can] change the dynamics of the cognitive system in a way that opens up new cognitive possibilities' (both quotes from Griffiths and Stotz (in press) p.11). This whole account resonates deeply with the Dennettian ideas explained earlier. Thus the authors convincingly argue against what they term a "dualistic account of human biology and human culture" in which a process of biological evolution *first* produced the "anatomically modern human" and was *then* followed by the (ongoing) process of cultural evolution. Such a picture invites us, they note, to conceive of a kind of true biological human nature underlying the culturally-clothed product. But the project of investigating this naked biological nature, they argue, is 'as misguided as seeking to investigate the true nature of an ant by removing the distorting influence of the nest!' (op cit, p.10). By contrast, Griffiths and Stotz depict human nature as the complex product of a "developmental matrix" in which the influences of biology, artifact and society are pretty well inextricably intertwined. They conclude, nicely in line with recent work on situated and embodied cognition (see Clark (1997)) that:

The individual representational system is part of a larger representational environment which extends far beyond the skin. Cognitive processes actually involve as components what are more traditionally conceived as the expressions of thought and the objects of thought. Situated cognition takes place within complex social structures which 'scaffold' the individual by means of artifactual, linguistic and institutional devices...culture makes humans as much as the reverse. (Griffiths and Stotz (2000) p.?).

¹² See recent work on "neutral constructivism", e.g. Quartz and Sejnowski (1997), Quartz (1999).

Notice, then, an intuitive but fallacious idea that we need to firmly reject. It is the idea that mind-tools cannot make us fundamentally more intelligent since we had to be *exactly that intelligent* to create them in the first place. Such an argument is multiply flawed. It is flawed because not all artifactual innovation is the result of deliberate design. It is flawed because multiple individual intelligences, spanning multiple generations, are involved in the production of the culturally-inherited set of mind-tools. And it is flawed because even a tool that I myself design and use can do more than merely enhance my practical problem-solving ability. Experience in using such a tool can, over time (and especially during the sensitive periods of early development), alter the way my brain actually works, so as to yield a better brain-tool union. (This latter process, in which human brains alter to fit the tools created by (previous) human brains, I call “cognitive dove-tailing” - see Clark (1998)).

All of which serves to reinforce the conclusions reached by Griffiths and Stotz. It is a mistake to posit a biologically fixed “human nature” with a simple “wrap-around” of tools and culture. For the tools and culture are as much determiners of our nature as products of it. Ours are especially plastic brains (see note 12) whose biologically proper functioning has always involved the recruitment and exploitation of non-biological props and scaffolds. More so than any other creature on the planet, we humans are *natural-born cyborgs*, tweaked and primed so as to participate in cognitive and computational architectures whose bounds far exceed those of skin and skull.

In his own pursuit of such themes, Dennett has tended to stress the transformative effects of the cultural, linguistic and artifactual surround upon the brain (the creation of the “user-illusion”, for instance, is the creation of an *internal* kind of “informational unification” - see Dennett (1998) p.346-7). I have tended, by contrast, to stress the new dove-tailed wholes comprising brains, bodies and complexes of external props and scaffolding (see e.g. Clark (1997) chapter 9). These two (entirely compatible) perspectives converge, of course, in the developmental matrix highlighted by Griffiths and Stotz. I think it remains an open question, however, just how extensive and important a role is played by the “internalization” of mind-tools, as against a process (falling somewhat short of full internalization) in which the brain adapts so as to better use and exploit tools that remain firmly located in the external environment (see e.g. Hutchins (1995) for a wonderful exploration of this scenario).

Let me end, however, by flagging just one more issue - one that suggests a possible tension within Dennett’s overall picture. The issue concerns the cognitive continuity between human minds and the minds of other (non-Gregorian) animals. Just how special *are* human minds in the earthbound natural order? At times, and increasingly so in recent years, Dennett seems to think our minds are very special indeed. He writes, for example, that:

[Chimpanzees] may well be incapable of *thinking about thinking*. They may, indeed, not really be capable of thinking at all (in some florid but important sense of thinking) (Dennett (in press) p.4).

Or again, consider the claim about consciousness:

My claim is not that other species lack our kind of *self-consciousness*...I am claiming that what must be added to mere responsiveness, mere discrimination, to count as consciousness *at all* is an organization that is not ubiquitous among sentient organisms. (Dennett (1998) p.347).

And again:

'It may not be able to talk, but surely it thinks!' - one of the main aims of this book has been to shake your confidence in this familiar reaction. (Dennett (1996) p.159).

In all these quotes (and there are many more) Dennett seems to be linking real thinking to the presence of the kind of description language necessary for the project of radical self-evaluation and meta-level reasoning. Yet elsewhere (sometimes on the very same page) we encounter what appears to be a much more liberal story:

What structural and processing differences make different animals capable of having more sophisticated beliefs?...there are many, many differences, almost all of them theoretically interesting, but none of them, in my opinion, marking a well motivated chasm between the mere mindless behavers and the genuine rational agents. (Dennett (1998) p.331).

Or on the matter of consciousness:

The very idea of there being a dividing line between those creature "it is like something to be" and mere "automata" begins to look like an artifact of our traditional presumptions. (Dennett (1998) p.349).

Granted, there are many careful phrasings in Dennett's corpus which allow these two perspectives (roughly, one of cognitive continuity and one of cognitive discontinuity) to exist side by side. For example, there is said to be a continuity of belief-states and a discontinuity at the level of linguistically -infected "opinions" (see Dennett (1998) chapter 4). But there seems (to me at least) to be a deeper tension here which cannot really be massaged away by the careful use of words. Sometimes, Dennett tries to reject the very issue that I am here (with some trepidation) raising, as when he writes:

At what point in evolutionary history did real reason-appreciators, real selves, make their appearance? Don't ask...it is a fool's errand to try to identify a first or most simple instance of the "real" thing. (Dennett (1998) p.362).

But while I agree that firm dividing lines and clear first instances are often (indeed typically) not to be found, it does not follow that there are no profound organizational differences which demarcate (even with vague mid-points) the true selves and reason-appreciators from the rest. Indeed (and this is why the tension still strikes me as potentially important) Dennett himself, as we just saw, often seems to assert as much - and recall also his (1984) discussion of the construction of the morally responsible self via the linguistically mediated installation of habits of self-criticism and self-evaluation (as discussed in section one above). Yet in this latter case, at least, Dennett is never tempted to speak elusively of "our kind of morality", or to deny the existence of a firm (even if fuzzy-at-the-edges) distinction between the radical self-evaluators and the rest. In short, I suspect that Dennett really needs to make a hard call in the case of thinking itself, and to decide whether the presence of various linguistically mediated transformations and enhancements does or does not mark a truly deep discontinuity in the space of mind-designs.

The question may perhaps be put like this: just how *important* are opinions? How important, cognitively-speaking, are the special linguistic mind-tool generated states underlying our capacities of self-evaluation and meta-deliberation? My own hunch is that these capacities are crucial neither for the genesis of 'real' thought, nor consciousness. But that once present, they make a large difference to the space of learnable concepts and hence to the space of possible mental contents. In sometimes speaking of 'our kind of thinking' (Dennett (1996) p.130) or 'our kind of consciousness' (Dennett (1998) p. 346), Dennett elides the difference between the

types of contents of thoughts and experiences, and the very presence of thinkings and experiencings. This helps mask the tension. But it will not, I suspect, make it go away.

It is, of course, part of Dennett's even *larger* project to re-cast many major issues as (precisely) turning on the *contents* of representational states rather than the presence or absence of the 'mythic light bulb of consciousness' (Dennett (1998) p.349). So one way to interpret my portrayal of an apparent tension would be to try to cast it as a simple failure to appreciate this major element of the story. But that, I suspect, is a little too fast. For even if it is (if you like) *content all the way down*, it remains possible that the appreciation of reasons requires the capacity to entertain and manipulate specific kinds of content that are (absolutely) beyond the reach of other animals, while the contentful states necessary for the presence of qualitative consciousness and simple thoughtfulness do not.

As I finish writing these words, I find myself unsure whether the tension I seem to detect is real, or if real, important. For without a doubt any decent scientific image of mind must be an image of multiple, criss-crossing continuities and discontinuities. What matters most, and where Dennett truly excels, is in the careful elaboration of the warp and weave of multiple design elements, both inner and outer, and of their roles in generating the patterns of whole-agent behaviour that inform our intuitive understandings of minds and selves. By this unusual (philosophically speaking) means, Dennett hopes to show us who and what we are. He hopes to show us what makes us special, while reminding us that we are neither miraculous, nor fundamentally disjoint from the rest of nature's adaptive engines. We too are bags of user-less survival tools. But in our case, there is the additional shimmer of the user-illusion and the potent capacity - in cultural, linguistic and artifactual context - to engage in biologically novel acts of self-evaluation and self-definition. We are about as natural as a Palm Pilot on a sunny day, and as special, and mundane, as any new technology built on a platform of old parts. In pursuing such a delicate balance between pride and humility, and in displaying the essentially hybrid (biological/non-biological) nature of human minds and persons, Dennett sets a rich and complex agenda: one whose full cultural, scientific and philosophical implications remain as unclear as they are visibly fundamental.

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