

On the exocerebrum

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This is an exchange of letters by email occurred in 2005. They reflect a discussion on fundamental issues of the study of consciousness and the brain. The starting point was Bartra's text on the exocerebrum. This text is now expanded into a book published in English by Cambridge University Press in 2014: *Anthropology of the Brain: Consciousness, Culture, and Free Will*. All Harnad's texts are in italics.

23 June 2005

Dear Professor Harnad,

I enjoyed your recent letter to the NYRB on Searle's article. It reminded me that one of your articles ignited my work as anthropologist on the problem of consciousness. I am sending you an English-language version of my original Spanish piece. I hope you will find interesting the way your reflections helped me to develop a hypothesis on the exocerebrum.

Sincerely,
Roger Bartra

P.S. I am a Catalan/Mexican anthropologist mainly working in European mythology and cultural history of mental diseases.

24 June 2005

Dear Professor Bartra,

Thank you for your message and kind words.

If I have understood your article correctly, what you mean by an "exocerebrum" is our capacity to generate both sensorimotor analogs (drawings, imitative sounds) and symbolic descriptions (in words or maths or computations) of both things (e.g., shapes) and what they feel-like to us. These analogs and descriptions are both physical objects and means of communicating with one another. This you call an "exocerebrum," like a chameleon that turns red when it sees/feels red, allowing its conspecifics to "mind-read" its feelings.

I would say that this metaphor about communication is interesting and apt, but it misses a critical feature of the mind/body problem (or what I prefer to call the feeling/function problem), namely, that feelings and physical functions are correlated, but otherwise incommensurable. What it "feels" like to see the shape of a triangle or the colour of green or the sound of a trumpet does not "resemble" what the shape of a triangle, colour of green, etc. really "are" like, physically speaking; it is merely systematically correlated with those physical properties behaviourally, in an input/output sense: It allows us to "do" things that correlate systematically with the shape of those things.

Hence all of those "exocerebral" functions are merely our physical doings (or our physical/morphological structures and dynamics), which are then "translated", in our communication with other feeling organisms (and in the case of language, language-understanding organisms) back into the feelings of the recipient, just as they are when the recipient sees directly the thing that we describe, or that our chameleon-gestures pantomime.

This still leaves the mystery of the how/why of our feelings -- their correlation but incommensurability with function -- completely untouched. Our analog depictions and symbolic descriptions (which are just adaptive physical structures/functions, after all) would have precisely the same social-communicative -- hence adaptive -- role and value, if they were not felt at all, but merely "functed". So the fact that they are exocerebral alas does not explain anything at all about the how/why of feeling -- merely, as usual, about its functional correlates.

As with all functions, one is left unable to explain how/why "exocerebral" function should be felt, rather than merely functed.

My "next round" with Searle (though I don't know whether NYR will go ahead and publish it) is at: <http://eprints.ecs.soton.ac.uk/11007/>

Best wishes,
Stevan Harnad

24 June 2005

Dear Stevan Harnad,

Thank you very much for your kind and illuminating letter. I would like to clarify some of my ideas, since maybe in the preliminary paper I sent to you they are not as clear as they should.

1. What I am interested in is the problem of consciousness, understood as self-consciousness. Of course, is a problem of self-awareness of our feelings. Not just feeling but being conscious that a subject symbolically called "I" or "Ego" is feeling something. The mystery of the how/why must, beforehand, be illuminated by solving the mystery of "where".
2. Where is consciousness to be found? Most neuroscientists are convinced that consciousness exists in a private internal place: inside the skull. I think instead that consciousness is a continuum that connects parts of the central nervous system with symbolic circuits in the external cultural realm. Self-consciousness is possible because the division inside/outside is not clearly delineated: the exocerebrum is like a Klein bottle.
3. Now comes the problem of how this exocerebrum, a kind of cultural prosthesis, looks like, and how it works. I think we recognize exocerebrum characteristics in language, music, dance and many symbolic activities. A neuroscientist's look into these exocerebral activities may prove to be productive, instead of putting all the external in one bag, as "habitat", "environment", or "inputs". I propose that the workings of the exocerebrum indicate that important parts of the neuronal circuits are incomplete, sociodependent structures.
4. If there are "incomplete" neuronal structures that are completed and become one with the exocerebrum, we have to explain how this unified flux work could, since the neuronal circuits use basically transmitted signal codes and the cultural circuits use symbolic codes, as well as signs and signals. The key, I assume, must be found in the capacity of the exocerebrum to use both symbols and signals.

5. So, I think the main problem is not one of correlation or analogy between inside and outside, between body and mind, or function and feeling. But we still have to understand how there is a kind of "translation" between the body signals and the cultural symbols. I believe (hope) that part of the solution of the mystery of the how could be found in the "external" workings of the cerebrum. A task for both neuroscientists and anthropologists/sociologists.
6. You said once that the M/B problem "is about causation, not correlation. And its solution (if there is one) will require a mechanism in which the mental somehow manages to play a causal role of its own..." (on Humphrey). I think that we can observe, analyze, classify, and dissect the mechanisms that, in cultural circuits, are part of consciousness. They are consciousness, not analogues or correlates. Feeling is both inside and outside the cranium.
7. Why, you ask, did the signal have to be felt, rather than merely transmitted? Maybe because consciousness is part of a continuum that mixes signal transmission and symbolic meaning. Because symbol is an external prosthesis that the internal neuronal signal system needs in order to complete its operation. This does not happen to zombies: they only use signals. When signals and symbols are mixed you feel that you are feeling. And sometimes you feel anguish... Of course, this may explain why you feel that you feel. But does not explain why you feel. That's another story.

Those are some reflections on the problems you raised. I am developing partial answers in a work that is still ongoing. Please forgive my English, which is not as fluent as it should.

With my best wishes,
Roger

P.S. In another occasion I will comment on your last reply to Searle.

I am afraid I must disagree. Descartes' "cogito" (which should really be "I feel; therefore, it makes no sense to doubt that I feel") already picks out what there is, and what the real problem is (how/why we feel). "Where" we feel is not a mystery. (Very likely it's in our brains, but that does not help.) And the problem of "self-consciousness" is certainly not the real problem, for if anyone could explain how/why we feel, self-consciousness would be trivially easy to explain.

I'm afraid that that sounds like free-floating fantasy to me. It is not the locus of the feelings that is the problem, but the how and the why -- and your inside/outcome continuum does not cast any light whatsoever on that.

26 June 2005

*I am afraid you are getting lost in the hermeneutic hall of mirrors that you yourself have projected on this inside/outside/social continuum. You do not explain how/why it feels any more than the neuroscientist explains how/why the brain feels. You have begged that question and moved directly to the easy question (if only we knew how/why we feel) of *what* we feel (which includes everything and anything we are aware, including the fact that we are aware).*

*Again, you have built a hermeneutic castle, and are now treating it not only as a reality, but as if it had explained something (which it has not): Like all hermeneutics, it has merely *interpreted* something in terms of the hermeneutic system you are recommending. The m/b problem will not be solved by projecting an interpretation onto it*

I am afraid that you are using “inside/outside” equivocally. Process may be going on in my body or outside, or both. That’s one (unproblematic) sense of inside/outside. Then there are things that I feel: My feelings are private, in that only I feel them; no one else does. If you don’t think the processes that cause or constitute feelings are just inside the brain, fine. Let them be as extended and distributed as you like. You still have not explained how/why those extended processes are felt, rather than just functioned. So, we are back to the beginning. (The other equivocal sense of “in” is of course “in my mind” – which strictly speaking means nothing more than: I feel it, or better still, it is felt!).

I’m afraid your “translation” task begs the question of how/why come functions are felt; it simply changes the subject to something else (just as the theorists I was criticizing in that “No Easy Way Out” papers you read were doing).

One gets out of a hermeneutic projection exactly what one has put into it: That is why it is a hall of mirrors. Your extended system does not explain feeling; it probably isn’t even correct (about the physical locus of what does cause and constitute feeling: that’s almost certainly all within the brain). But even if it were correct, it would no more explain why/how that extended system feels than marrow neuroscience explains how/why the brain feels.

Roger: I know I feel, and you know you feel. You have picked a wide system and baptized it as feeling, and have said it feels because such feels must feel, that they are not zombies. What you have missed saying is how, or why...

Su ingles es bastante bien. Eso no es el problema. El problema es con su explicacion -- porque en verdad no explica nada. Su explicacion es solamente una interpretacion, y las interpretaciones son todas arbitrarias, solamente preguntas de gusto.

*Best wishes,
Stevan*

Dear Stevan,

I am happy to be challenged in the intelligent way you do. I thank you very much for this. I have the following ideas regarding your remarks:

1. I am sorry to see how far our visions are one from the other. I think consciousness is the real problem, and if we explain how and why we are conscious it will be easy to understand feeling. “Where” is not a mystery because you axiomatically have decided that feeling and consciousness are in the brain. Of course the postulate that feeling and consciousness are inside our nervous system does not help. What helps is to break the postulate that they are inside.
2. I am sorry to see that you remain chained to the idea that we only have one equation to consider (m/b), and that other views look like fantasies. The locus is important because it helps to look for the how and why. If you only consider body and mind (or brain and feelings), you will never understand a third space or “substance”: culture. Changeux, pressed by Ricoeur’s criticism once accepted the necessary abolition, “même s’il est encore difficile de donner des bases expérimentales sérieuses a l’idée d’une possible «abolition» de la relation intérieur/extérieur”, and he cites just here precisely the discovery of mirror neurons that I use as an example (and that condemns me into a mirror’ cage?)
3. I am sorry to be closed in your crowded hermeneutic hall of mirrors. I do not feel in family with the people you have locked in the hermeneutic cage during the last fifteen years or more. I do not explain how and why we feel: I say that some “external” symbolic circuits express how and why we feel, and that we should look into them for explanations. A piano trio by Karl Goldmark, a painting by Magritte, or a poem by Rubén Darío give us more keys than the 40 hertz correlate explained by Crick. An advantage we have, when caged in your hall of mirrors, I must confess, is that stimulates the need to be free.
4. I am sorry to contradict you. The cultural reality is not an invention that exists only in the hermeneutic castle. Symbolic cultural circuits cannot be understood as part of the “mind” in the m/b equation.
5. I am sorry to see how you think that the mystery of feelings relies in the assumption that they are private (because only “you” feel them). The real mystery is that they are also public, and that societies work on the basis of this “public” communication of feelings.

I don't claim I have "explained" how and why feelings, even extended, are felt. I claim that probably the "explanation" is outside the m/b cage. You will not find the "explanation" inside the skull. The mystery is that we can observe (in cultural circuits) that there is an on-going translation just in front of our noses.

6. A mechanism that is a hybrid of flesh and culture is not the explanation of feeling; it's just a different – and better, I believe – way of trying to solve the mystery, to escape from your hermeneutic hall of mirrors. How can we escape? Through the mirror, of course, as Alice has taught us...
7. I suspect you feel frightened because you used the term "afraid" five times in your letter. In retribution I used "sorry" also in five occasions. So you may suspect that I am sorrowed by you being frightened. That's a hermeneutical mirror game, sure: I feel that you feel what you tell me you feel: you are afraid to disagree, to confront a fantasy, of a Mexican lost in the hermeneutic labyrinth, of equivocal use of in and out. How to explain this? You think it's impossible because las interpretaciones son todas arbitrarias. I think instead that I can escape through the looking glass... That means through culture: literature, music, and many other tricks.

Yours friendly,
Roger

Dear Roger

*So do I. But I think the real problem of consciousness is **feeling!***

To explain how/why we are conscious is to explain how/why we feel. They are the same thing. It is just that one can equivocate on "consciousness", whereas with feelings it is harder to fool ourselves that we have explained them when we have not.

One breaks postulates when it brings empirical dividends in terms of predictive and explanatory power: Action at a distance did that with gravity; but not such dividend comes from imagining that the locus of feelings (sic: you see how it keeps one from cheating?) is outside one's head!

I am quite happy to consider improbable hypotheses, but only when their dividends are empirical rather than merely hermeneutic.

But why would I want to look for the locus of my headache (or any other feeling) anywhere else but in my head?

First, this has the same equivocation on inside/outside the physical system and inside/outside the "mind" (which really just means felt and unfelt). Moreover, the quote is a

conditional, and what is missing is the second part, which states the dividends from hypothesizing this abolition of inside/outside (whichever it means). Inside/outside an organism seems like a reasonable distinction to keep; Felt and unfelt does too. One awaits the grounds (if they are not "yet" empirical, for doing otherwise.

Mirror neurons are simply neurons that are active when an organism sees some pattern (usually a movement pattern) as well as when the organism generates that pattern. There is nothing whatsoever about mirror neurons that implies an abolition of inside/outside in either of the two senses, nor anything that touches on the how/why of feeling (consciousness) -- unless one elects to create a hermeneutic hall of mirrors out of mirror neurons, by projecting mentalistic interpretations on them, and then reading them back from their reflection as if they were a confirmation of something (other than that you get out of an interpretation exactly what you put into it!

External symbolic circuits? External to what? A written sentence may express how and why I feel, or a painting. But those are simply representations of what, not explanations of how/why we feel. And they are almost certainly part of the physical state (the "circuit") that constitutes my feeling, when I feel it (though they might be part of its Input or Output).

You are celebrating feeling (and it certainly deserves it), not explaining it.

Human artifacts include writings, paintings, music, performance art, etc. To say they are not part of the (brain!) circuit that constitutes feeling (whatever that may turn out to be), but merely I/O to/from it is not to denigrate human artifacts. But we have to be careful, in celebrating them, not to award them explanatory power merely because we find them so moving and illuminating.

And the hermeneutics I am referring to is not the interpretation of art and literature, but the interpretation of X -- whatever X may be: for you it seems to be a "wide" circuit including many people and their products and actions -- as if it were the embodiment and the explanation of feeling. It is not. Individual people feel, with their brains (somehow, unexplained by anyone). Feelings are not felt by amalgams of people and objects, though doings are sometimes done collaboratively. It is a hermeneutic error (akin to deism) to project a feeler (consciousness) onto all doings (including collective ones). Individuals feel; collections of individuals and artifacts do not. And the problem of consciousness is the problem of (individual) feeling.

My headache, or toothache, or heartache is public? I wonder on what basis you say that? I may (deliberately or inadvertently) give some public cues as to my feelings -- and our well-developed capacity for "mind-reading" can often correctly detect those signs. But Y detecting signs of what X

is feeling is not the same as Y feeling X's feelings (of indeed anyone or anything other than X feeling X's feelings).

Yes, "mind-reading" (i.e., inferring what other think, feel, want, will-do) is part of social functioning, but this public detection and use of correlates of feelings is not itself feeling the feelings, nor does it explain feeling.

I'm afraid that that has lost me. I understand only that individual people feel, others can sometimes infer their feelings from behavioral and anatomical and circumstantial cues; that we can create objects that "express" our feelings (in the mirror-neuron sense that others can, from seeing our products and performance, not only infer what we are feeling, but even come to feel something similar to it themselves). But that's all. There is no cross-individual, inside/outside-obliterating entity or state or nexus that constitutes feeling, in the way my brain state constitutes feeling (when I feel).

But what is the mystery, if it is not how/why we feel? And what is the "solution" to the mystery, if it is not to be an explanation of how/why we feel? You have lost me (in the hermeneutic hall of mirrors)...

No, I think both expressions are just academic politeness. One wishes to soften disagreement and criticism, don't you think?

You may indeed escape from something that way. Many of us wish to escape from the stress and despair of reality to something that feels better, and art can feel better, and can even give us something that feels like understanding. But when it comes to objective empirical explanation (and prediction), "feels like understanding" is alas not good enough. It has to actually be understanding, for that there has to actually be an explanation, not just an escape...

*Best wishes,
Stevan*

June 28, 2005

Dear Stevan,

Of course, I like your academic politeness. My jokes about you being frightened are also part of the necessary ritual of softening disagreements and criticisms.

Now I wish to comment only on one fundamental (for me, as anthropologist) issue: culture. I think that you cannot prove that the "public" cultural symbolic circuits have no explanatory power.

The obvious fact that social groups or artifacts do not feel (of course: only individuals do) does not prove that the symbolic systems are not part of consciousness.

Human consciousness implies that my headache is not only in my head, because I have to name it, name remedies: I have to apply symbols that only exist because I am part of a society and a culture.

The issue here is not that you know about my headache only because I tell you. The problem is that if I don't tell anybody (because I'm an isolated being with no speech), I will not know that I feel (although my head is still giving me pains).

I believe that culture is part of human consciousness, and has causal and explanatory power. I assume that this qualifies me as an "externalist" (as Searle would say).

Of course, culture has not all the power, but a significant portion of it. And this is so not because art is moving and illuminating, but because contains part of the explanation (i.e. is part of the problem). Grammar is not just a nice language tool for representing things. Musical tonal systems are not just fine ways to represent emotions. Their structure gives us insights of how to explain consciousness.

If we introduce culture as part of the mystery of consciousness we will have nice dividends at an empirical level in the study of consciousness and feelings. I am afraid that most neuroscientists do not accept culture as part of the mystery. If culture is regarded just as epiphenomenon everybody, not just anthropologists, will be in trouble.

With warm wishes,
Roger

Sure, but for explaining what? I was asking about how/why we feel...

This changes the subject. When I see red, it becomes "part of consciousness" -- in other words, it feels like something to see red: why? how?

If I write/read/paint something, it feels like something: how? why?

No point saying they are "part of consciousness." That just means it feels like something to write/read/paint: why? how?

I'm afraid I can say no more. We are not talking about the same thing. It feels like something to have a headache. I ask how and why, and you reply that I can name it. So what? We are talking about different things.

And the full problem will be there, if you are feeling, irrelevant what else you feel, or feel you know (it feels like something to have information too: how, why?).

Culture is things we do and make, and it feels like something to do, make and see/hear/read what we do/make/

say: How? why? why don't we just do and make, without feeling anything?

Power to what? We are not talking about the same thing. I am not saying that turning one's ears at a painting or a book is not a causal process, just that it is a mystery how/why it's a "felt" process. But you are systematically missing this point, and it is because for you consciousness is something else than feeling, for me it is just that.

They don't give me a clue of a clue of how/why we feel. I have no idea what you mean by "explain consciousness" if you cannot answer that question.

I am afraid we are not at all talking about the same thing, but simply talking past one another. I understand what you mean, but I cannot detect that you are understanding what I mean!

*Best wishes,
Stevan*

June 30, 2005

Dear Stevan,

I will add now to our discussion some reflections on your last reply to Searle. You are right: explaining neuronal functions is not explaining feelings. How and why body functions and actions are felt? The survival role of feelings may explain functions but not the reasons why we feel rather than "funct".

You state that feeling has no causal power of its own, like magnetism. I claim that there are exocerebral causal powers (cultural symbolic circuits) that may help to explain feeling and consciousness. You probably will object that this is like finding a kind of 5th force, telekinesis for example. Maybe it's a way out or escape through the looking glass. The question therefore is to ask if cultural symbolic circuits are a peculiar causal force connected with the brain.

You say that this symbolic cultural circuits are not relevant to the main problem of explaining how and why we feel. But culture is not only things we do and make. This is a narrow definition useful only if you want to reduce makings and doings to what we feel when we act.

You are excluding symbols, probably because you cannot reduce them to feelings. The question of how and why you feel a symbol is useless, in the same sense that is useless to affirm that cultural and social institutions have, in last instance, a physical nature.

I am not systematically missing the problem of how and why a cultural causal process is a felt process. You want

a clue of how/why we feel. In what language you want me to explain the clue? You are trying to nail me, to force me to use a functional language for explaining an emotional situation. You want me to speak in Functionese when I use Feelingnese language. But I am also searching for more.

Since I am perfectly aware that functional language will not explain feelings, and that Feelingnese speech is useful for expression but insufficient for explaining, I am trying to find and understand something in-between: the symbolic circuits that need to be explained in their own terms, nor functional neither emotional. (This was the challenge, by the way, accepted by Susanne Langer when she tried to find a "new key".)

You cannot perceive that I understand you, while you are sure you understand me. An unequal situation, indeed, if it's true. But are you sure this is true?

Truly yours,
Roger

Verbally, we don't disagree on that, but based on what follows, it is not clear to me that you have seen the implications of what it is to agree to the above.

I am afraid you have answered your own question. We cannot redefine the meaning of "causal force" (nor of "matter" or "energy") for the special purposes of a hermeneutic account. That "cultural symbolic circuits" are a "causal force" is merely a metaphor. There is no 5th force. Figures of speech do not alter this empirical fact. I don't want to reduce makings and doings to what we feel when we make and do. I want to explain how and why we feel whilst we make and do! A "cultural/symbolic causal force" does not explain this, it merely beclouds it, replacing a literal question about the physical bases of feeling with a figurative reflection (sic) on the meanings of symbols.

But in a world of just makings and doings, including the making and doing of cultural symbols, but without feeling, everything you are referring to would remain exactly intact. Hence it is saying nothing about the how/why of feeling, whereas (according to me) the how/why of feeling is the real question of consciousness. You are speaking about something else, but describing it (for some reason) as an explanation of consciousness. But without feeling there is no consciousness, hence without explaining feeling, you do not explain consciousness. You merely talk about conscious creatures "do", which includes all of their cultural/symbolic doings.

There is no "functional language." There is just language. I am asking you to explain function. Function is explained in terms of cause/effect. In particular, the question is

1 July 2005

*how/why are some functions *felt* functions. The *phenomenon* to be explained is felt function. The “language” of the explanation is just ordinary cause/effect. And there is no explanation (apart from telekinesis, which is false).*

No, you are using language, period. There is no language called “functionese” or “feelingese”. There are functions, describable (and explainable) in language. And there are feelings, describable, but not explainable. That’s all. I ask how/why certain functions are felt functions. I make no stipulations about the “language” of explanation, except that it must be in a tongue I understand, and it must be a causal explanation, not just a hermeneutic one.

I think this is a perfect formula for begging the question (which, to repeat, is, how/why is function felt, “not” explain feelings to me in ‘functionese’ rather than in ‘feelingese’).

I am sure only of the two Cartesian certainties: (1) the provable truths of mathematics/logic and (2) the fact that I feel. The rest is just probability. But like the highly likely -- but not certain -- fact that the sun will rise tomorrow and that there is no Creator in Heaven and $F=ma$, I think it is highly like that you (3) do feel (just as I do), (4) you have not understood me, and (5) you have not explained how/why we feel...

*Best wishes,
Stevan*

Dear Stevan,

You say: «I don’t want to reduce makings and goings to what we feel when we make and do. I want to explain how and why we feel whilst we make and do! A “cultural/symbolic causal force” does not explain this, it merely beclouds it, replacing a literal question about the physical bases of feeling with a figurative reflection (sic) on the meanings of symbols»». In this case, please explain me how and why are you explaining what you want? How and why are you trying to explain feelings? How are you eluding to beg the question?

What I understand is that you are working very hard to explain that feelings are not explainable. You only express a want, but do not think it is possible to satisfy it. You have a desire, but no hope. You are thirsty, but no water exists for your need.

I prefer to stay in the side of probabilities (even if they are low), than to close myself in a Cartesian castle of certainties. As you said at the beginning of our discussion: “I feel therefore it makes no sense to doubt that I feel”. Probably it makes no sense to escape the castle and try to explain feelings. But I prefer the air of outside freedom, even contaminated with the perils of senseless hermeneutic viruses.

Yours,
Roger