BODY LANGUAGE
THE KINAESTHETICS OF THOUGHT

Le « Standard Social Science Model » (modèle standard des sciences sociales) a prétendu pendant longtemps que chaque culture avait ses propres normes arbitraires, entièrement libres des contraintes d'une supposée nature humaine universelle. Pourtant ce relativisme culturel est mis en question par des recherches de psychologie cognitive qui démontrent l'existence de capacités universelles de cognition et de perception. La couleur, la forme, la grandeur et l'orientation spatiale semblent être traitées par l'appareil perceptif humain de façon invariable, donnant naissance à des principes universels de catégorisation et de nomenclature. De nombreuses métaphores conceptuelles et d'orientation issues de l'expérience corporelle viennent confirmer l'existence de tels principes au niveau du langage. À cet égard, l'anglais semble être une langue particulièrement « corporelle » avec un immense répertoire d'idiomes se rapportant au corps, tels les « phrasal verbs » qui expriment leur sens en termes de sensations et de perceptions.

If one were asked to identify a single, dominant *leitmotif* in the humanities and social sciences of the mid-twentieth century, a good candidate would be the notion of cultural relativism, according to which each culture has its own wholly arbitrary norms that are unconstrained by any such thing as a universal human nature. Thus the human subject or self is a construct of cultural (or ideological) and linguistic systems over which the individual has no control. Michel Foucault, for example, famously replaced man with language in *The Order of Things*, declaring it to be "comforting [...] and a source of profound relief to think that man is only a recent invention, a figure not yet two centuries old, a new wrinkle in our knowledge", and announcing that "he will disappear again as soon as that knowledge has discovered a new form",

and that "man is in the process of perishing as the being of language continues to shine ever brighter upon our horizon[1]". This short article will suggest that on the contrary, "our knowledge" is to a great extent the product of universal human cognitive-perceptual capacities, that thought and language have an immense metaphorical "bodily" component, and that what is going to shine ever brighter upon our horizon in the coming century is cognitive psychology and neuroscience.

Stephen Pinker describes cultural relativism as "the Standard Social Science Model" or SSSM. As he puts it, with his customary concision:

> The SSSM has not only been the foundation of the study of humankind within the academy, but serves as the secular ideology of our age, the position on human nature that any decent person should hold. The alternative, sometimes called "biological determinism", is said to assign people to fixed slots in the socio-political-economic hierarchy, and to be the cause of many of the horrors of recent centuries: slavery, colonialism, racial and ethnic discrimination, economic and social castes, forced sterilization, sexism, genocide. [...] At least in the rhetoric of the educated, the SSSM has attained total victory. In polite intellectual conversations and respectable journalism, any generalization about human behavior is carefully prefaced with SSSM shibboleths[2].

And indeed at the time of writing, a search at Amazon.com for books with *The Social Construction of...* in the title yields 481 entries.

Notwithstanding the quantitative success of social constructionism, the past two or three decades have seen a burgeoning counter attack on the SSSM by both anthropologists and cognitive psychologists. Much of the anthropological data commonly used to buttress the claims of cultural relativism has been called into question, leaving the "ethnographers' reflex" — the insistence that somewhere there will always be a tribe that does something differently — looking rather threadbare[3].

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1. Michel FOUCAULT, *The Order of Things,* New York: Vintage, 1973, p. xxiii and 386.

2. Steven PINKER, *The Language Instinct,* London: Penguin, 1994, p. 406-7.

3. For example, Derek Freeman demonstrated serious flaws in the evidence for Margaret Mead's account of adolescence in Samoa; Melford Spiro

Empirical work in psychology and linguistics has shown that the nature of the human cognitive apparatus goes a long way towards explaining how we perceive the world — as, too, does the world itself. As Dan Sperber puts it, "Anthropologists and psychologists alike tend to assume that [...] human beliefs are produced by cognitive processes which are on the whole epistemologically sound; that is, humans approximately perceive what there is for them to perceive and approximately infer what their perceptions warrant[4]".

Jerry Fodor has argued that the human mind or brain is not a general, all-purpose intelligence, but a combination of many pre-programmed, domain-specific devices or "modules" that handle specific cognitive domains and process specific types of information. The genetically specified modules are "hardwired", and part of a fixed neural architecture[5]. This theoretical work has been supported by a large number of empirical studies showing that damage to particular areas of the brain results in particular sensory, cognitive, emotional or behavioural deficits. Recent work in brain imaging has revealed selective localized patterns of heightened neuronal activity associated with particular cognitive tasks.

Among the physical phenomena that appear to be processed by the human perceptual apparatus in universally consistent ways are colour, shape, size and spatial orientation. This gives rise to universal principles of categorization and of nomenclature. For example, colours as such do not exist in the external world. Visible light is electromagnetic radiation vibrating in a certain frequency range, which is not the kind of thing that can be coloured, any more than radio waves. Objects in the world reflect relative percentages of high-, medium-, and low-frequency light, but the actual wavelengths reflected depend on the nature of the light

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reinterpreted Bronislaw Malinowski's data regarding the different nature of the Oedipus Complex in the Trobriand Islands; and Ekkehart Malotki showed the inaccuracy of Benjamin Lee Whorf's claim that the Hopi language has no conceptions of time built into it (or embodies very different conceptions of time), so the Hopi perceive the world in a radically different way than we do. See Donald E. BROWN, *Human Universals,* Philadelphia: Temple University Press, 1991, chapter one.

4. Dan SPERBER, *Explaining Culture: A Naturalistic Approach*, Oxford: Blackwell, 1996, p. 85.

5. Jerry FODOR, *The Modularity of Mind*, Cambridge, Mass.: MIT Press, 1983.

illuminating an object, e.g. dawn, cloudless midday, cloudy afternoon, dusk, tungsten light bulb, fluorescent light bulb, etc. Yet the colour we perceive does not change very much, because of the nature of our eyes. There are three kinds of colour cones in the retina that absorb light of long, medium and short wavelengths, and the neural circuitry connected to these cones enables the brain to compensate for variations in the light source. Furthermore, this circuitry finds certain colours salient or focal. Our neurones respond maximally to green, red, blue and yellow (which we perceive in plants, blood, the sea and sky, and the sun and moon). Which is to say that, given the world, our bodies and brains have evolved to create colour. Colour concepts are not objective but interactional, a product of our bodies, our brains, the reflective properties of objects, and electromagnetic radiation. Thus it is not surprising that the basic colour terms in all languages are drawn from a hierarchy of only eleven colour words, referring to particular focal colours. Furthermore, these terms enter languages in a fixed order. As Berlin and Kay have demonstrated, if a language has only two colour words, they will be the equivalent of black and white. If a language has three words, the third will be red. If there are four, five or six words, these will include yellow, green or blue. And so on. Any language that has a given colour concept will also have all the words in the columns to its left in the list below:

black	red	yellow	brown	purple
white		green		pink
		blue		orange
				grey

Random combinations from eleven colour terms would give 2048 possibilities; in fact in all the world's languages only thirty-three exist[6].

It can also be shown that the names for both natural and man-made objects in all languages belong to hierarchies of categories

6. See George LAKOFF and Mark JOHNSON, *Philosophy In The Flesh : The Embodiment of Mind and its Challenge to Western Philosophy*, New York : Basic Books, 1999, p. 23-25, and Brent BERLIN and Paul KAY, *Basic Color Terms : Their Universality and Evolution*, Berkeley and Los Angeles : University of California Press, 1969.

reflecting the mental process that classifies objects according to shared features. Brent Berlin and colleagues have shown that there are universal taxonomies of "folk biology" — categories of names for plants and animals[7]. There is generally a hierarchy of five (and occasionally six) levels, going from the most abstract to the most concrete, for example *plant / tree / pine / Ponderosa pine / northern Ponderosa pine*. The more abstract levels are more difficult to represent with a single mental image, or to talk about: e.g. it is easier to have an image of a *chair* than *furniture,* or a *car* than a *vehicle,* and we can say more about chairs and cars than about furniture or vehicles in general.

Descriptions of (visible, external) human body parts draw on a similar five level hierarchy (though in this case the members of the lower categories are not also members of the higher levels). As Elaine S. Andersen has shown in a comparative study, body-part terminologies across the world's languages reveal few surprises[8]. A typical hierarchization is *body / arm / hand / finger / fingernail*. (This is the common five-level pattern; adding *half-moon* after *fingernail* gives six.) The third level — the middle level of categorization — is generally the most useful, and is the first to be learned. Children tend to acquire *hand* before more specific terms such as *fingernail,* and *ear* before *earlobe,* but also before the more general terms *body* or *head*.

Thus there is little scope for variety in body part taxonomies, although some metaphorical invention is possible. English, for example, has *eyeball,* while in Finnish, the word for eyeball is literally "*eye-egg*", earlobe is literally "*earleaf*", and the word for arm

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7. See, for example, B. BERLIN, D. E. BREEDLOVE and P. H. RAVEN, "General principles of classification and nomenclature in folk biology", *American Anthropologist,* 75 (1973), p. 214-42.

8. Elaine S. ANDERSEN, "Lexical Universals of Body-Part Terminology", in *Universals of Human Language, Volume 3 : Word Structure,* ed. Joseph H. Greenberg, Stanford : Stanford University Press, 1978, p. 335-68. The only notable deviations from the standard hierarchy are the use of polysemous terms for two body parts (such as arm and hand, or leg and foot). Interestingly — for Anglophones — separate terms for fingers and toes are rather rare. Although there seems to be little variety in body-part *taxonomies*, there are different ways of conceptualizing the body as a whole. See, for example, Guillemette BOLENS' fascinating study of the logic of the articulated body (associated with oral cultures) and the logic of the body as envelope (associated with literate cultures), *La Logique du corps articulaire,* Rennes : Presses Universitaires de Rennes, 2000.

literally means "*hand-handle*". The eye in English also contains a *pupil,* and words with meanings closely related to "little person" are found in approximately a third of the world's languages (because you see a small reflection of yourself in people's eyes). About a fifth of the world's languages use words for small animals as the sources for words for muscles (as small animals dart around in a manner analogous to the motion of muscles under the skin; *muscle* itself is from the Latin for *mouse*)[9].

The universal nature of folk taxonomies somewhat undermines Quine's well-known discussion of rabbits, or parts thereof. Quine imagined a linguist studying a newly discovered tribe, seeing a rabbit scurrying by, and hearing a native shout "Gavagai!" He insists that, logically speaking, this need not mean "rabbit" at all. It could, he suggests, refer to that particular rabbit. It could equally mean any furry thing, any mammal, any member of that species of rabbit, or any member of any variety of that species. It could mean scurrying rabbit, scurrying thing, rabbit plus the ground it scurries upon, or scurrying in general. It could mean footprint maker, or habitat for rabbit-fleas. It could mean the top half of a rabbit, or rabbit-meat-on-the-hoof, or possessor of at least one rabbit's foot. It could mean a collection of undetached rabbit parts. It could mean "Lo, Rabbithood again" or "It rabbiteth[10]". Or rather it could if the members of the tribe were all analytical philosophers. In reality, their taxonomy would more likely include categories containing a word for animals, perhaps one for mammals, one for rabbit, and several words for animal body parts, and so on. Consequently any classification of animals such as the following is likely to be a literary invention:

> (a) belonging to the Emperor, (b) embalmed, (c) tame, (d) sucking pigs, (e) sirens, (f) fabulous, (g) stray dogs, (h) included in the present classification, (i) frenzied, (j) innumerable, (k) drawn with a very fine camelhair brush, (l) et cetera, (m) having just broken the water pitcher, (n) that from a long way off look like flies.

We do not classify animals, or body-parts, or anything else, in such an arbitrary fashion, as Foucault points out at the beginning of *The Order of Things*, a book that he says arose out of this

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9. See Brown, *Human Universals*, p. 44-5.
10. Willard van Orman QUINE, *Word and Object*, Cambridge, Mass.: MIT Press, 1960, chapter 2, "Translation and Meaning", p. 26-79.

splendid list, supposedly from a Chinese encyclopaedia called the *Celestial Empire of Benevolent Knowledge*, invented by Jorge Luis Borges[11]. Foucault *does* insist, however, that the coherence of our classifications "is neither determined by an *a priori* and necessary concatenation, nor imposed on us by immediately perceptible contents" (p. xix), but is instead tentative and culture-bound. Yet cross-linguistic study shows that lexico-semantic categories are not the result of arbitrary semantic mapping but of the way people universally categorise perceptual information and organize their conceptual knowledge. We impose form on an underlying (perceptual, physical, or conceptual) substance common to all languages.

A further example of terms that tend to be equivalent across languages is spatial ones. The terms describing extent along a dimension (*high, wide, far, thick,* etc.) are invariably unmarked and positive, and the terms for lack of extent (*low, narrow, near, thin*) are linguistically marked and negative (unless the language treats both equally). Thus the more basic or unmarked adjective appears in questions (we usually ask "How *high/wide/long/far* is...?" and not "how *low/narrow/short/near*?") and nominalizations (*height, width, length,* not *lowness, narrowness, shortness*). We tend to say that small things lack size, not that big things lack smallness. We ask "how many?" and not "how few?" In French, Italian and Spanish the only word for *shallow* is the negative of deep. (Similar linguistic universals include unmarked terms for *good, happy, beautiful,* etc. No language has a neutral *ugly* and a negative *unugly*.)

When we talk of three-dimensional objects we generally mention their most extended dimensions (length or height) first and then their width and thickness. This is presumably a consequence of human verticality (and gravity), and the horizontality often given by ground level, which is a natural plane of reference. In most bodily positions (apart from lying down) the space in front of us and above the ground is clearly optimal for perception by eye, ear, and touch. Thus upward and forward should be "positive" directions, even if they are not always linguistically

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11. In Jorge Luis BORGES, "The Analytical Language of John Wilkins" (1941), translated by Ruth L. C. Simms, in *Other Inquisitions, 1937-1952,* Austin: University of Texas Press, 1993, p. 103, quoted by Foucault in the Preface to *The Order of Things,* p. xx.

unmarked. Most languages have binary relational terms for describing space that derive from parts of the body and their up-down, front-back, and left-right dimensions, such as the English *ahead, in front, in back, on top* and *beside*. Study of child language acquisition shows that dimensions that are perceptually salient are the easiest to acquire terms for. Terms related to "natural" directions (*in front of, ahead, above*), while not linguistically unmarked, are easier to process[12]. Here again, we see that our bodies shape conceptual structure.

Quite apart from explicitly spatial terms, English, along with a great many other languages, makes use of orientational metaphors which organize whole systems of concepts in terms of spatial orientation: up/down, in/out, front/back, on/off, deep/shallow, central/peripheral. A few examples of up/down metaphors (in which up is always the positive term) include: more is up, less is down; happy is up, sad is down; good is up, bad is down (things are looking up, it's been downhill ever since); virtue is up, depravity is down (high-minded, high standards, a low trick, I wouldn't stoop to that); conscious is up, unconscious is down (get up, wake up, fall asleep, sink into a coma); health and life are up, sickness and death are down (peak of health, in top form, fall ill, sink fast, drop dead); rational is up, emotional is down (the discussion fell to an emotional level); mundane reality is down (down to earth).

As Lakoff and Johnson have shown, we also use a great many conventional metaphors, which use an area of experience that is understood directly (i.e. non-metaphorically) to describe another

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12. See Eve V. CLARK and Herbert H. CLARK, "Universals, Relativity and Language Processing", in *Universals of Human Language*, Volume 1, *Method and Theory*, ed. Joseph H. Greenberg, Stanford: Stanford University Press, 1978, and, more technically, Terry REGIER, *The Human Semantic Potential: Spatial Language and Constrained Connectionism*, Cambridge, Mass.: MIT Press, 1996. Regier hypothesises that primitive spatial relations concepts arise from specific neural structures that make use of topographic maps of the visual field.
Compared with some other languages, the bodily projections used to conceptualise spatial relations in English are not particularly rich. For example Mixtec, a Meso-American language, has no concept corresponding to *on*, but uses body-part projections. To say "He is on top of the hill", a Mixtec speaker says the equivalent of "He is located head hill". "I was on the roof of the house" is "I was located animal-back house", with an animal's back, canonically horizontal, projected onto the house. "I am sitting on the branch of a tree" is the equivalent of "I am sitting arm tree". See Lakoff and Johnson, *Philosophy In The Flesh*, p. 35.

conceptual domain[13]. Very often, the source domain which grounds the metaphors is in some way human and bodily. Well-known examples include life is a journey (making one's way in life, giving one's life some direction, getting somewhere with one's life); ideas are people (they are spawned, live on, die off, have new life breathed into them), and love is madness (crazy about him, madly in love). Eve Sweetzer has given this account of conceptual metaphor a historical dimension, showing how the same kinds of meaning change recur over and over at widely scattered times and places throughout Indo-European languages[14]. For example, words meaning *see* regularly acquire the meaning of *know,* demonstrating that there is an ancient conceptual metaphor that *knowing is seeing* (which gives rise to modern English expressions such as I see what you're saying, your argument is clear, I've got the whole picture, that was a clear presentation, an opaque statement, a transparent ploy). Similarly, *understanding is holding* is a basic conceptual metaphor, so words for physical holding (or manipulation) come to mean intellectual understanding. The Latin *comprehendere* (seize) is the ancestor of the French *comprendre* (understand), while Ancient Greek *kata-lambáno* (seize) becomes modern Greek *katalambaíno* (understand). In French we either can or cannot *saisir* what someone means, while in English we *grasp* a concept, and *catch onto* an idea. Thus as new words for seeing and holding develop they find a ready-made pathway for semantic change, and eventually extend their meanings to knowing and understanding. Mental processes are widely understood in terms of bodily activities.

Yet despite all the evidence accumulated during the past quarter century regarding the universality of various human cognitive-perceptual capacities, significant inter-language and inter-cultural differences remain. People may process information concerning colour, shape, size and space in similar ways, and have standard hierarchies of categories for classifying objects such as parts of the body, and share similar orientational and conceptual

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13. See George LAKOFF and Mark JOHNSON, *Metaphors We Live By,* Chicago: University of Chicago Press, 1980, and *Philosophy In The Flesh, passim.*
14. Eve SWEETSER, *From Etymology to Pragmatics: Metaphorical and Cultural Aspects of Semantic Structure,* Cambridge: Cambridge University Press, 1990.

metaphors, but individual languages can still *use* the body in different ways. And indeed it can be — and has been — argued that English excels in this respect.

In the 1920s, the philologist or "man of letters" Logan Pearsall Smith drew attention to the quantity of body idioms in English. He showed that "about almost every external, and many of the internal parts of the human body, are clustered whole constellations of phrases and figures of speech of extraordinary vividness and variety[15]". Smith lists approximately 625 body idioms featuring about fifty body parts. Many are translated from Biblical Hebrew and Greek, while others date from the Middle Ages. Several seem to be borrowed from French, although they could have arisen independently in both languages or have been translated from English to French. (Examples of French / English idioms include to be all ears, to hold one's head high, to lead by the nose, to make the hair rise, to make the mouth water, to receive with open arms, to see beyond the end of your nose, to throw dust in someone's eyes, to have something on the tip of the tongue, to turn a deaf ear and to turn someone's head.) Hence there is nothing specifically English about the use of body idioms. Many of the idioms found in French and English are also current in German, Italian and Spanish. Idioms make use of words from important domains. Our bodies play such an important role in our lives that it would be amazing if we *did not* use bodily idioms.

Some body idioms are purely metaphorical. People tend not literally to bite the hand that feeds them, have other people eating out of the palm of their hand, have a right hand that does not know what the left hand is doing, have one hand tied behind their back, bite people's heads off, hold guns to people's heads, or have two left feet. But the majority of body idioms use a bodily action as a metaphor for a mental process, just like the conceptual metaphors analysed by Lakoff and Johnson. Thus rather than participate we take a hand in something; rather than find ourselves constrained we are bound hand and foot; instead of denying responsibility we wash our hands of something; instead of finding something too difficult we get in over our heads. And so forth: this list could include hundreds of examples.

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15. Logan Pearsall SMITH, *Words and Idioms : Studies in the English Language,* 4th edition, London : Constable, 1933 (1st edition 1925), Chapter 5, English Idioms, p. 167-278 (p. 249), and "Appendix, Corporeal Idioms", p. 279-292.

Many of these physical-for-mental metaphorical idioms exist in other languages. Yet Smith points out one significant attribute of English, in this respect, which he describes as the "genius" of the language:

> In this effort, however, to render human thought in phrases descriptive of the acts and attitudes of the body, English possesses one great advantage over the romantic languages in what I have called "phrasal verbs" — verbs whose full meaning is conveyed by the adverb or preposition which follows it, and which is often placed at some distance from it. For when we examine these phrasal verbs, we find that by far the greater number of them also render their meaning into terms of bodily sensation. They are formed from simple verbs which express the acts, motions, and attitudes of the body and its members; and these, combining with prepositions like "up", "down", "over", "off", etc. (which also express ideas of motion), have acquired, in addition to their literal meanings, an enormous number of idiomatic significations, by means of which the relations of things to each other, and a great variety of the actions, feelings, and thoughts involved in human intercourse, are translated, not into visual images, but into what psychologists call "kinaesthetic" images, that is to say, sensations of the muscular efforts which accompany the attitudes and motions of the body. (p. 250-1)

For example, where Latinate or French vocabulary give *concede, confront, succumb to, retain, maintain* and *recover,* English also allows the "kinaesthetic" *back down, come up against, go down with, hold back, keep up*, and *pull through*. The most common preposition in kinaesthetic idioms is *up,* which Smith describes as being "of all our prepositions the most charged with motor suggestion", and he goes as far as to suggest that *up* in wake up, hurry up, cheer up, clean up, and so on, "replaces the gestures of speakers of Latin languages which are poor in the emphatic use of particles !" (p. 255). Writing long before Hiroshima and Chernobyl, Smith enthuses about the "radioactive quality of popular idioms, this power to give out life and never lose it" (p. 269). He suggests that "these verbs of motion and effort possess so protean and self-multiplying a power of entering into combinations, and throw off idioms in so kaleidoscopic a variety that, compared with the other inert elements of our vocabulary, they seem to possess, like radium, an inexhaustible store of life and energy" (p. 251)[16].

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16. Smith also argues that generalised and abstract verbs of thought and

A cultural relativist would probably interpret Smith's account of phrasal verbs as yet another demonstration of the essential arbitrariness of languages and cultural codes. Yet it can equally be seen as a further piece of evidence that human perceptual schemas are not fundamentally arbitrary at all but, on the contrary, to a large extent a consequence of "the embodiment of mind". Languages and cognitive strategies are impregnated by our everyday bodily experience. This is not a matter of "biological determinism" — indeed the very example of the difference between the "bodily" phrasal verbs available to English speakers and the arm waving to which speakers of Latin languages are reduced, is an instance of cultural and linguistic difference — but merely a case of acknowledging the existence of biological constraints on thought and speech. Our conceptual and linguistic categories draw heavily on the commonalities of our bodies and the environments we live in. Cognitive science is making progress in showing how the ways in which we perceive the world, move around in it and manipulate objects in it, are the result of the detailed structure of our brains, shaped by evolution and bodily experience.

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perception, such as *know, think* and *feel,* arouse no muscular sensations and consequently enter into no or few idiomatic phrases. He was wrong about this: as an example of our immense repertoire of lexical phrases, Pawley and Syder list forty-six phrases using the words *think, thinks* and *thought,* and perusal of a couple of good bilingual dictionaries swiftly reveals over thirty more. See Andrew Pawley and Frances Hodgetts Syder, "Two Puzzles for Linguistic Theory: Nativelike Selection and Nativelike Fluency", in *Language and Communication*, ed. J. C. Richards and R. W. Schmidt, London: Longman, 1983, p. 191-226, and Ian MacKenzie, "Institutionalized Utterances, Literature, and Language Teaching", *Language and Literature*, 9 (2000), p. 61-78.