The Role of Meaning in Human Thinking

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Abstract

The creation of meaning to interpret and communicate perceived phenomena is a fundamental trait of human intelligence. This article explains some major ways in which this is achieved, focusing on language and the perception of embodiment. It examines the representational aspects of natural language, which account for the ambiguity of linguistic signs, and describes how these manifest in metaphor, connotation and emotive expression. The article argues that the human propensity to create meaning lies largely in this representational ambiguity, which underlies all forms of symbolism. However, the ambiguity of natural language has a paradoxical side, since it is also at fault in many shortcomings of human communication, such as misunderstanding and prejudicial stereotyping. This article argues that any attempt to emulate human ways of thinking, for example in Artificial Intelligence research, should take this paradoxical factor into account.

He, who through vast immensity can pierce,
See worlds on worlds compose one universe,
Observe how system into system runs,
What other planets circle other suns
What varied being peoples every star
May tell why Heaven has made us as we are.
(Alexander Pope: *Essay on Man*.)

Humans create meaning. In fact, it is a fundamental trait of humans to attach meaning to the objects they perceive in the world, to their relationships with others, to their own physical form, and to the various manifestations of agency encompassed by the category "self" – a trait that is as universal as that of language. The complex operations that characterize human cognition carry this meaning-generating function on many levels. Classifying an object according to selected criteria, attaching value to it, and judging its aesthetic appeal, are all mental operations that, in one way or another, give meaning to the phenomenal world.

This article explores some ways in which meaning is produced, especially with the use of language. Using a semio-linguistic approach, it explains some of the basic principles of human language that affect thinking and underpin communication. Its aim is to discuss some aspects of Human Intelligence that distinguish it from Artificial Intelligence (AI) in its current state, and to suggest some areas that would require improvement if humans are to reach a post- or trans-human stage. I begin with an overview of theoretical approaches to meaning, continue with a description of pertinent linguistic features of communication, and end with an overview of areas where communication is problematic, if not defective.

Approaches to Meaning

Linguists and philosophers have created numerous definitions of meaning. Do we see what exists in the mind-independent, or external, world, or do we project assumptions, expectations and moods, and see what our minds create? Extreme relativists would claim that the signifying subject's beliefs and knowledge determine the meaning given to an object. This approach privileges subjectivity, and could lead to at least one of two problematic situations. One such situation would be where any sign could have any meaning, where no interpretation is "wrong," and where the producer of a set of signs, such as a speaker, writer, painter, etc., has no way of expressing intention in the signs he or she produces. The other situation would be where all meaning is reduced to the mental state of a subject, and where interpretation reflects the psychology of the interpreter and has nothing to say about the qualities of the interpreted object. As Marvin Minsky points out in his description of goal-setting (a meaningful activity), psychological definitions are limiting because they lead to an infinite regress continually pointing to a mystifying "self" as the central cause of everything (Minsky 2006, 187).

Similarly, extreme empiricists would claim that the world and its objects already have meaning before any attempts are made to interpret them. This approach could lead to a situation where the human subject is seen to be always finding meaning but never to be giving it, and where perceptions are either true or false. Such an approach would overlook the fact that someone has to determine this truth-value, even though this "authority" would also be part of the world of which it is deemed an expert, and would therefore be influenced by its constraints.

A semiotic and phenomenological position, like the one adopted in this essay, would acknowledge the importance of the interpreter in attributing meaning, but would also recognize the inherent qualities of the object that direct the interpretations that can be produced. Meaning, for this approach, arises from the interaction of qualities of the perceived object with qualities of the perceiving subject. In the philosophy of Maurice Merleau-Ponty, for instance, meaning is presented as a non-causal phenomenon, emerging in the various "existential fields" in which the human subject acts in his/her everyday life (Merleau-Ponty 1945; Marsen 2006b). The causes of meaning (in the unconscious, personality, genes, or any other kind of causal factor chosen by other philosophies) are indeterminate for Merleau-Ponty's existential phenomenology – a principle that turns meaning into a quality of *being-in-the-world* rather than *knowing-the-world*.

According to this approach, the human subject perceives properties of the object in particular fields of existence, and the meaning of the object is formed in the subject's consciousness through this act. This allows for an object to have different meanings for different subjects since the subject perceives, or is solicited by, particular properties of the object, which may not appear to another subject. It also allows for the same object to have different meanings for the same subject in different fields, since each field allows particular properties of the object to appear. This way, both empiricism (philosophies that position meaning in the object), and intellectualism

(philosophies that position meaning in the subject) are questioned. In the words of Merleau-Ponty,

> What is missing from empiricism is the internal connection of the object and of the act that triggers it. What is missing from intellectualism is the contingency of occasions to think. In the first case, consciousness is too poor, and in the second too rich for a phenomenon to solicit it. Empiricism does not see that we need to know what we are looking for, otherwise we would not be looking for it; and intellectualism does not see that we need to be ignorant of what we are looking for, otherwise, again, we would not be looking for it (Merleau-Ponty 1945, 34, my translation).

In a similar vein, semiotic approaches attempt to identify the mechanisms through which meaning is produced in texts and in social life situations. The object whose meaning we seek becomes a datum of our senses, through which it enters our consciousness: its reality and ours merge in the process of interpretation. For this meaning-creating merging to occur, the independent existence of the object is as necessary as the independent existence of the subject. As Umberto Eco notes, "if there is something to be interpreted, the interpretation must speak of something which must be found somewhere, and in some way respected" (Eco 1992, 43). The same author gives a colorful illustration of the limits of purely subjective interpretations when he points out that we would have difficulty in trying to interpret a book by the Marquis de Sade as if it were written by St Thomas Aquinas, because of the intrinsic differences between the ideologies of these two authors, which produce contrasting textual patterns (Eco 1990, 26).

Within this theoretical framework, I propose a definition of meaning that will guide the subsequent discussion: *Meaning is the judgment and evaluation of an object, word or phenomenon that leads us to see, feel and understand this object, word or phenomenon in a certain way.*

Meaning and Truth

It is important to distinguish "meaning" from "truth" or "reality." Meaning is associated with semiosis – that is, sign-producing activity. Semiosis does not depend on factual verifiability, statistical frequency or logical possibility, and therefore occurs independently of "truth." Imaginary constructs, such as fictional worlds, fairy tales, and myths consist of signs, and so produce meaning according to their own rationalities, but they are not "true" in the sense of the word as it is used in analytical philosophy. In fact, meaning is related to conceptual thinking, which in turn draws from perception – and perceptions can be "false" as often as they can be "true" (Gibbs 1994). However, much post-Fregean analytical philosophy focuses on ways in which language refers to physical entities, leading to a true-false classification of utterances. Such approaches link language with formal propositional logic, at the expense of its more social and individual manifestations that involve utterances of aesthetic experience and subjective perception (Devitt and Hanley 2006).

Interpretative and qualitative semanticists, who attempt to trace links among speakers, utterances, reality and meaning, generally agree that language is used for various purposes, and that different kinds of utterances and contexts produce different modalities of truth, that is, they relate to the mind-independent world in different ways. For example, Alain Berrendonner has proposed a tripartite typology of statements in relation to their truth-value. *Onto-alethic propositions* have an axiomatic aspect and carry their own truth in their composition, such as formal statements such as "2+2=4." *Koino-alethic propositions* are culturally based and reflect the values and principles of a community in their composition such as "killing is wrong." *Idio-alethic propositions* can be

judged as "true" only in relation to the mental and emotive state of the speaker such as "I am happy" (Berrendonner 1981). These propositional truth-values are more than criteria of classification: they underlie different ways of engaging with the world and interacting with others.

Consider, for instance, koino-alethic propositions, which are "true" in relation to community values, and are therefore pivotal in understanding the social dimension of communication. It is generally recognized among social scientists that much social interaction depends on shared beliefs among members of a community, more than it does on a transcendental or universal truth. In fact, access to resources depends to a large extent on expertise in using socially legitimate signs of identity and exchange. Presenting oneself suitably dressed and attired for a job interview, for example, increases credibility and maximizes the chances for success, as does possessing socially appropriate signs of identity legitimation, such as passports, identity cards, driver's licences, etc. – whatever a community deems as "proof" of who one is.

Money is another example of interaction through social values. Money as a physical object is nothing but pieces of metal or paper with numbers and faces drawn on them. What gives it meaning and appeal is not what it is in itself, but its adoption as an object of value and exchange by the community. Language is in many ways equivalent to money as a source of signs of exchange. Linguistic expertise is vital for success in many areas of social life. For example, forensic linguists have found that the linguistically adept (that is, those who can use language strategically to support their interests) have a far greater chance of swaying legal decisions than the linguistically inept or inarticulate – whatever the "objective" or ethical merits of the latter may be (Gibbons 2003).

These observations indicate that meaning, being related to values and beliefs, tends to have closer links with persuasion than with an objective demonstration of "truth." Discourses that rely on mass appeal by falsely individualizing the audience (for example, by using a second person pronominal construction, "you," that individual recipients are led to identify with) may be motivating and persuasive, and, therefore, meaningful, but it is doubtful whether they have any relation to "truth." Such discourses, which include New Age self-help texts and much marketing, employ discursive techniques that activate human responses of empathy and identification, inducing recipients to recognize vague or arbitrary statements as "true." As Ludwig Wittgenstein said of the mass-appeal discourses of psychoanalysis, "If you are led by psychoanalysis to say that really you thought so and so or that really your motive was so and so, this is not a matter of discovery, but of persuasion. In a different way you could have been persuaded of something different" (Wittgenstein 1967: 27).

Finally, any attempt to theorize the ways in which human thinking distinguishes between meaning and truth, or between subjectivity and formal logic, would need to take into account the different systems of logic and of propositional structure that humans have created. For example, the Western system that we have inherited from classical Greek thought seems rather restrictive compared to other possibilities. Some non-Western systems of thought have broader classifications of statements about the world than the true-false dichotomy and accept indeterminacy as a logical principle. For example, John Barrow describes the Jainian logic of ancient India, which recognizes seven categories of statement classification: "1) maybe it is; 2) maybe it is not; 3) maybe it is, but it is not; 4) maybe it is indeterminate; 5) maybe it is but is indeterminate; 6) maybe it is not but is indeterminate; 7) maybe it is and it is not, and is also indeterminate" (Barrow 1992: 15).

Embodiment

Embodiment, that is, existence in a physical form, is vital in the meaning-making process. In fact, there seems to be general theoretical consensus on this: cognitive linguists (Lakoff and Johnson 1999), computer game theorists (Myers 2003), and phenomenologists (Ruthrof 2000) agree that human conceptual forms are determined by embodied consciousness and a sensory experience of things. Although the language function provides important structures for conceptualizing and thinking, it is not necessary for our perceptions to be meaningful. For example, if we taste or smell something, or feel the water on our skin when swimming, we do not need a word to explain what this sensation is. The fact that we like or dislike, are attracted or repulsed by, a sensation shows that this sensation has some meaning for us. The verbal aspect would be an ulterior rationalization of the immediate sensation. The verbal component, however, does have a normative effect in that it will create a mental category (a set of expectations) that will activate when we experience the sensation another time or when we attempt to describe it to someone else.

Actually, it is not so much that we signify through the body, but more that the body itself signifies. Physical traits, gender, race, movement, shape and appearance are already invested with socially constructed meanings, which exist independently of conscious intentions. As signifying and speaking subjects, humans have some power of negotiation over how they are seen and what reactions they attract, but this power is constrained by cultural beliefs and filtered by social stereotypes.

To give just one example of this, Terasem Movement organized a mock trial involving Bina48, an imaginary conscious computer (*The trials of Bina48*, 2007). This trial hypothesized a social situation where the civil rights of such a being would be scrutinized, and speculated on the various debates, definitions and reasoning that would accompany this scrutiny. What is significant for our present purpose is that Bina48 "chose" to represent itself as a black woman, which, in Western societies, is a sign of "otherness" – "woman" is culturally positioned as the negative form of "man" and "black" as the negative form of "white," giving the double sign "black woman" a stronger connotation of "alien." The choice of this embodiment, therefore, is not arbitrary but strategic. It would be justified to say that a different embodiment, say as a middle-aged, white, male business executive, would have a completely different effect, and would influence considerably the discourses that were produced concerning the computer's identity and rights. This is compounded by the fact that in North American culture the black body also signifies its history in the slave system, making the arguments in the mock trial over what defines an independent person, as opposed to property, even more poignant.

In the phenomenological tradition, which sees meaning as inextricably linked with lived experience, the body assumes a pivotal role in the process of signification. According to this approach, the body is not the vessel of a transcendental self – it is the material forming the intentions, ideas and actions that present the various phenomena we classify as "self." The body-mind duality is put to question in a similar way as the dichotomy between subject-object is challenged. Existence as "being-in-itself" and "being-for-itself" converge in embodied experience. In subjective perception, the body cannot be an object like the others, because the space it occupies is the home of the consciousness through which all others are understood. However, it is also an object, since it exists in the world, and its objectivity allows consciousness to act (Marsen 2006b, 107). In the words of Merleau-Ponty,

> It has always been noted that movement and speech transformed the body, but it was generally accepted that they developed or manifested another force, thought or soul. It

was not recognized that, in order to express them, the body must, in the final analysis, become the thought or intention that it signifies. It is the body that shows, the body that speaks (Merleau-Ponty 1945, 230, my translation).

Language

Besides embodiment, language is crucial in the creation and communication of meaning. As is known, there are two main categories of language: *formal* and *natural.* Formal languages use numbers, equations, and algorithms to communicate, and are based on precise measurement and unambiguous reference. Natural (also known as *conventional*) languages are based on the verbal signs that we use to communicate in our everyday interactions. They are representational, or symbolic, systems of signs – that is, their signs always refer to something else. For example, the word "tree" (the *signifier* in Saussure's linguistics, Saussure 1983) and the plant it denotes in the world (the *signified* in Saussure's linguistics) are separate, and speakers can conjure images of the plant by using the word, even if no physical tree is present. Also, the image of a tree in one speaker's mind may be considerably different from the image of a tree in another speaker's mind, yet on a certain level, both understand the general properties of the object that the word denotes – a quality of "tree-ness" that makes communication in natural language possible.

Accordingly, natural languages depend on vagueness and carry the potential of individual and social negotiation. For instance, "tree" is *polysemic*, containing more than one denotation – we can denote hierarchical diagrams as "trees" because of their resemblances in shape to the plant "tree." Speakers also have the power to agree that the word "tree" will be used as a signal for something other than the object(s) it denotes, and thereby create a code, able to be decoded only by those who know or can decipher its syntactic patterns, without any reference to the natural world. This power too is part of the negotiative aspects of language, and also underlies artistic expression.

Formal language systems are universal and exact. Natural language systems, on the other hand, are varied and dynamic. There are currently 6,912 living languages (www.ethnologue.com), many of which are divided into dialects and sub-dialects. Natural languages lend themselves to the formation of discourses, that is, specialized variants of the main language reflecting the idiom and usage of specific social groups – slang, jargon and "honorific," status-related speech are examples of such discourses. For instance, technical jargon serves to minimize the risks of misunderstanding and ambiguity by delimiting the uses of particular words to specific instances, and by capturing distinctions that everyday language, with its polysemic aspect, misses.

Despite the misunderstandings it can bring, ambiguity is not a disadvantage of natural language, but rather a necessary quality of social communication. There are countless instances where precision, formalization through abstraction, or quantification would be contextually inappropriate, and would hinder or obfuscate the transmission of the intended message. A zesty illustration of this comes from Leo Finkelstein's advice on clear communication for engineers, where he notes the inappropriateness of the following jargon-dependent statement in the context of a romantic encounter: "Whenever I look into your eyes, I know that, from my perspective, I share with you a strong, interpersonal passion or enthusiasm statistically related at .05 or better to increased levels of self-disclosing behavior" (Finkelstein 2000, 7).

In fact, the opacity of representational sign systems underpins symbolism, humor, and negotiation of meaning, and enables the creative use of signs to challenge established norms and prejudicial conventions – as the example of Bina48 described above illustrated. Horst Ruthrof explains,

The approach to language by formal semantics tends to begin by seeing opacity as an enemy to be sought, identified, and exterminated. However, our inability to pin down the meanings of ordinary and literary discourse can be seen from quite the opposite position: as an indication of an emancipatory potential which needs to be recognized (Ruthrof 1992, 7).

It would seem, therefore, that the greatest human strengths, such as reflecting on contradiction, which is the basis of humor, are closely connected with the greatest human weaknesses, such as prejudice, and both are connected with the inherent ambiguity of representational signs. I will return to this issue in the final section; I will now turn to three major manifestations of the ambiguity of linguistic signs: *metaphor, connotation* and *emotive language*.

Metaphor

As mentioned earlier, humans give meanings to observed behaviors and to felt sensations, and, over time, these meanings become codified into cultural and linguistic systems. The representational and sensory qualities of natural language converge in metaphor. Metaphor is much more than a play on words; it is a way in which humans understand their relationship to the world, and a basic cognitive process underlying the production of meaning. As Aristotle aptly pointed out, "midway between the unintelligible and the commonplace, it is metaphor which most produces knowledge" (Aristotle 1952, III, 1410b). Interestingly, the word "metaphor" itself is a metaphor, meaning "to carry elsewhere." It signals the spatial aspect "movement," and the process of creating meaning by abstracting perceived qualities from two objects that are not physically connected, and combining them to form a conceptual image.

The work of cognitive linguists, such as George Lakoff and Mark Johnson (1999 and 2003), has shown the pervasiveness of metaphorical expressions in human communication. What is more, such research has underlined that not only is metaphor ubiquitous as a cognitive faculty, but also it is closely connected with awareness of embodiment and with sensory perception. Theories of art support this. For example, in his seminal study of visual perception, Rudolf Arnheim showed how verbal and non-verbal systems of representation are connected, because both are based on similar sensory modelling forms (Arnheim 1974). These findings indicate that abstract or conceptual thinking is constructed systematically from physical data through metaphorical reasoning.

The study of metaphor is also productive in tracing universal cognitive patterns and distinguishing them from culture-specific manifestations. To illustrate this, consider the spatial concepts "high" and "low," and the numerous metaphorical expressions that have become idiomatic in English. I can feel low, or be in high spirits; I can live the high life, or be a low-life; I can rise high in status or fall from grace; I can have high principles or stoop low; I can have a high or low profile; I can have high aspirations or lie low; I can aim high or accept a low station in life. All these metaphors allude to two things: first, they allude to sensory experience, since the spatial relation between high and low must first be physically perceived before it is cognitively understood; and, second, they allude to cultural knowledge, in that all these metaphors evaluate "high" positively and "low" negatively. Similarly, there seems to be a universal pattern of metaphors of heat to describe emotional states of arousal (Kövecses 1986). Unrelated languages, such as the Indo-European family, Chinese, Hebrew, and Thai, describe physical states of rage, enthusiasm, and sexual stimulation with metaphors of heat, possibly because of the rise in body temperature that accompanies these states. This suggests that the physiological condition of the human species is the basis of many metaphorical concepts, although cultural values come into play in judging this condition and making it meaningful.

The metaphorical structures of language and of experience are fundamental traits of human thinking. Together with the human ability to hold contradictory beliefs (to which metaphor is related), they still pose a lot of difficulties for AI specialists. There is a long-standing joke among linguists about the computer that translated the expression "out of sight, out of mind" as "invisible idiot." Although, admittedly, recent developments in AI technology have made this rather outdated, the fact remains that metaphor, and its related linguistic construct, irony, are still difficult to emulate in non-human intelligences. What is important is that not only do humans recognize and use idiomatic metaphors, but also they continually create new ones, and use them to comment on what they perceive in the world. Significantly, a study found that a speaker of English produces on average 3,000 new metaphors each week (Danesi 2003).

Connotation

The idea that reality is constructed and not just described by language is further supported by the existence of words with different connotations, whose meaning is not related to reference but to the speaker's attitude and to contextual factors. We can choose to designate a phenomenon as "appetite" or as "gluttony," another as "perverse" or as "erotic." We can refer to a person as "child" or "brat," and to another as "human subject," "man," or "dude." We can designate an action as "collateral damage" or as a "terrorist act," and we can describe a military act as "liberation" or as "invasion." In all such cases, the connotative nature of language allows us to implicitly but powerfully evaluate and classify appearance and behavior, without explicitly justifying our ideological assumptions–and in many cases without even being aware of them (Marsen 2006a).

Describing an animal as "dog," "puppy," or "cur," for example, may refer to, or *denote*, the same object in the world. However, not many would trust their dog to a vet who refers to it as "cur," because each choice of word *connotes* the speaker's attitude toward the object, and therefore each word constructs the object differently. Through connotation, language carries markers, or traces, of the speaker's emotional relation to the objects described, and often to the social "personas" that are expected to embody these emotions. For example, if we consider words such as "puppy," "kitty," or "bunny" to be infantile expressions, we should not overlook that children learn to use these words to reflect the emotional attachment to animals or objects that society attributes to the social role "child," and that any speaker who chooses these words is, intentionally or not, alluding to the characteristics of this role.

An interesting manifestation of connotations lies in the linguistic category of "cross-varietal synonyms," which are words classified on a continuum according to their level of social appropriateness. *Euphemism,* "sweet-talk" or polite speech, is on one end, *dysphemism* or impolite (and sometimes informal) speech is on the other, and *orthophemism* or neutral, speech lies between the two (Allan and Burridge 1991 and 2006). Consider, for instance, the connotative distinctions among the cross-varietal synonyms "disabled" (orthophemism), "physically challenged" (euphemism) and "crippled" (dysphemism), or "died" (orthophemism), "passed away" (euphemism) and "snuffed it" (dysphemism), or "overweight" (orthophemism), "plump" (euphemism) and "fat" (dysphemism). Choosing one out of the three options affects considerably the meaning of the object or phenomenon described. The choice of a word with euphemistic or dysphemistic connotations appeals to a set of established expectations about how language can access the emotional state of the speaker and reflect his/her relationship with the recipient – expectations that can be adhered to or challenged.

Cross-varietal synonyms are dynamic classifications that are in constant flux, reflecting changes in social values: what used to be a dysphemism may now be an orthophemism, or an orthophemism may once have been a euphemism, etc. For example, the verb "occupy" was a dysphemistic term for "copulate" in the seventeenth and eighteenth centuries. It was re-introduced in its current meaning when it was no longer used as a dysphemism (Allan and Burridge 2006, 43). Also, context is very important for this linguistic category. Dysphemisms may be taboo words in some contexts, but be the appropriate choice in others: "crippled" would be more appropriate in a poem, for example, than "physically challenged," because of its dramatic impact due to its emotive connotation. Also, technical jargon may be dysphemistic in a context where the speaker/writer is addressing a lay audience.

In cases where the term describes an emotional state (Berrendonner's idio-alethic propositions, described above), the situation is complicated. Consider, for example "depressed." By selecting this term we perceive a set of phenomena as symptoms of a disease, which would not be the case if we selected "sad" or "unhappy" for the same set of phenomena. However, behavioral signs that we interpret as "depression," such as apathy, withdrawal, or lack of energy, can represent a response to powerlessness as much as they can indicate a physical illness. So, if one says "I am depressed," one is seeing oneself from an external position, through the lens of medical science. If one says "you are depressed" or "he/she is depressed," one is not only seeing the person referred to from a scientific perspective, but is also containing that person within that perpective (in other words, one is implicitly dictating a form of behavior to that person). In fact, as Wittgenstein suggested, saying *I* activates an entirely different "language game" than saying *he* in statements that involve subjective states (Wittgenstein 1957).

The situation is that we have a limited number of ways to symbolize and communicate wishes, fears and desired identities. Some of these ways overlap with signs which already carry meanings from authoritative discourses, and may be stifled by them. This situation makes the process of defining, classifying and interpreting not only semantic but also political.

Emotive Expression

The social dimension of connotations is clearly evident in the case of taboo language – language that a community considers anti-social. Interestingly, most taboo language universally involves aspects of body functions, especially sexuality, excretion, disease and dying (Allan and Burridge 2006). Also, taboo language, such as cursing, is highly emotive and has been shown to activate the limbic system of the brain, which includes the brain's emotion-processing areas (Jay 2000). Therefore, it presents a clear case of the connection among embodiment, emotion, language and community.

An interesting example is found in Tourette Syndrome, where sufferers are compelled to vocalize obscene words and phrases. Significantly, it is precisely the taboo nature of the words, not the words themselves, that induces sufferers to select them (Berecz 1992). In fact, Tourette is a case where the brain seems to be hi-jacked by cultural prejudice. For instance, sufferers are not able to replace a dysphemistic word with a euphemistic one that denotes the same act or object, nor can they replace a dysphemism with a similar sounding word. In one example, a five-year-old vocalized words that he thought were dysphemistic. When he realized that he was mistaken, and that in fact they were not, he stopped using them. In another case, a sufferer from the southern United States was compelled to vocalize the word "nigger" (Allan and Burridge 2006, 247-8). Although he was not at all racist himself, "nigger" is one of the worst insults in his community, so his vocalisations did not reflect his beliefs, nor did they refer to individuals of a particular race. Instead, they symbolized the anti-social itself, and reflected his culture's values in an inverted

way. So, in Tourette Syndrome, although biology determines the form of the disease, it is culture that shapes how it is expressed. In the words of the mother of the five-year-old sufferer described above, "society shapes the noise that is made" (Allan and Burridge 2006, 249)

Emotions play a major role in other aspects of human thinking, besides linguistic expression. Memory is one of these aspects. Brain research has shown that emotive memories (such as remembering a car accident) are processed differently from non-emotive ones (such as remembering a routine business meeting). In non-emotive memory processing, information from the visual cortex goes to the hippocampus, the brain's central memory processor. After processing, the information of the event goes to the pre-frontal cortex for long-term storage. In emotive memory processing, the amygdala, the brain's emotion processor, becomes active and instructs the hippocampus to increase the strength of the memory, and thereby distinguish it from other, non-emotive, memories. Because of the amygdala-hippocampus crosstalk, memories of emotive or traumatic events are engraved deeper into the mind, and may become persistent, leading to symptoms described as "post-traumatic stress disorder" (Anderson and Phelps 2001; Dolcos et al 2005).

These findings support the claim that humans are designed to give meaning to their experiences, and that this meaning is influenced by physical, emotive and social factors. This combination of what we may consider the cornerstones of human thinking – embodiment, emotion and language, all modified by community – prevents humans from understanding the world only as quantifiable data or information, and distinguishes human from non-human intelligence.

Problems of Human Communication

The preceding section described some major aspects in which humans give meaning to the world, and communicate this meaning to others and to themselves. The question that arises form this is: Does human communication need improvement? I propose that the answer is yes, and suggest two reasons why this is so.

First, human communication is riddled with hurtful and awkward misunderstandings and prejudices. We evolved to "read" cues and emotions so as to co-exist more effectively, but we constantly "misread" them, and, consequently, often wrongly restrict or disadvantage others. In fact, using a software design metaphor, we could say that human communication has serious "programming bugs." We are designed to see a human form and to immediately analyze it in terms of its objective features, such as appearance, age, gender, etc. We then very rapidly infer its status, emotional condition and attitude, and draw conclusions about the form's potential behavior and its possible interactions with us. Such perceptions evolved as a protective device in recognizing danger, and as selective focus in identifying potential mates. However, such perceptions are fundamentally primitive, and so they are just as likely to be wrong as they are to be right. The more sophisticated, complex and diverse the population with which we interact becomes, the more pronounced the risk of misinterpretation. We have developed ways to monitor and check our responses, through techniques such as questions and reasoning, but these are language-based and therefore suffer from the problems entailed by linguistic ambiguity, as described above. So, they are not likely to produce accurate results, or to "get to the bottom of things" – to use one of the numerous spatial metaphors that equate "depth" and "the invisible" with "truth" in English.

The prejudice that saturates first impressions, or reasoning by appearance, becomes codified into a cultural practice and is manifest in such phenomena as racism, ageism, and the exclusion of individuals seen as challenging the norm. This is compounded by the fact that humans are

designed to rationalize and legitimize their behaviors in order to distinguish themselves from other animals (including humans from other communities) – the idealization of "culture" over "nature" being a universal human trait. Powerful mythologies are constructed around this legitimation of behavior, from whose grasp the "experts" are not always spared. The well-known case of Dr Cartwright's 1851 description of "drapetomania," the disease causing slaves to run away, and the fact that the American Psychiatric Association did not discard the term "homosexuality" from the *Diagnostic and Statistical Manual of Mental Disorders* until 1994 (Jutel 2006, 2269) show that science is not as free of such systematic prejudice as it would like. They also indicate that the disadvantaged, the "different," and the "ugly" remain the ones who are most readily under scrutiny, and the ones who are called upon to justify their actions.

Since communication involves a balance among body, language and emotion, any excess in one direction would jeopardize the effectiveness of intended meaning. Therefore, in addition to social prejudice, self-defeat can be a problem of communication. Humans have difficulty in projecting their desired meanings, or in "coming across" as they wish. When intentions conflict with beliefs and both conflict with contextual factors, humans are prone to sabotaging themselves. Since the body is meaningful irrespective of one's words, there are cases where one's body says one thing while one's words say another. Inhibition, lack of confidence, over-confidence, inaccurate judgment of context, and contradictory desires are some reasons for this unintentional self-misrepresentation, and they are, in some way or another, related to the elements of meaning-creation described above. Søren Kierkegaard described colorfully the vicissitudes of desire and communication, of *being* and *world*, in his *Seducer's Diary*. In this, the "hero" attempts to gain the favors of and elicit a loving response from the "heroine" by complimenting and otherwise articulating his admiration for her in words. Every time he succeeds in winning her over, and she tries to express her affection for him, he stops her by giving her a sarcastic look (Kierkegaard 1987 [1843]).

Fear and guilt are often at play in the phenomenon of self-sabotage, and, once again, they are examples of evolved emotions whose primary function (fear is related to self-preservation, and guilt to pro-social behavior) is overshadowed by the many instances where the programming bugs take over. Humans often fear those they should trust, and trust those they should fear, because of the prejudicial inaccuracies of judgment mentioned earlier. Also, while guilt may lead one to act morally, it can also deceive victims into believing they are responsible for their suffering – as is often the case with rape and child abuse victims.

The second reason why human communication requires improvement lies in the ideological positioning of the human and the human's life. This positioning is based on modernist ideology, which favors continuity, progression through accumulation, and permanence in identity. Our social imagination is saturated with metaphors which reflect this ideology, such as "at this stage in life," "life direction," "life is a journey," and the many popular metaphors of "growth" ("to grow through experience", "to outgrow a belief," etc.). At the same time, contemporary post-industrial life has already started to contradict such attitudes. Many professions, for example, favor skill and innovation as opposed to experience, while the linear, climactic, continuity of modernism is rapidly being replaced with the serial, random access of the digital era. Also, many post-modern individuals share a value system with peer groups, often scattered throughout the world, rather than with families or immediate communities, as they did in the past.

Based on modernist ideology, existing conceptual structures and metaphors may restrict recognition of these changes, and may prevent contemporary, pre-posthumans from engaging with them creatively. In fact, a shortage of symbolic forms that would help to legitimize these developments may well account for what is sometimes described as the hypocrisy of

contemporary life. It seems that, although human conceptual and representational systems, such as language, are dynamic and adaptive, they do not adapt quickly enough to cater for the socio-emotional upheavals of transitional periods of human evolution, such as the one we are arguably undergoing now.

Weaknesses in human thinking and communication, such as those described above, require more research. The quest to design artificial intelligences that resemble human intelligence should not obscure the fact that human design is as defective as artificial design can be. Also, designing artificial life that is more intelligent and more powerful than human life but which carries all the prejudices of humans is a danger we must guard against. Indeed, this situation has been explored in dystopian science fiction, which has shown that it is not a pleasant prospect. At the same time, however, the higher emotions of humans, their ability to represent, create symbolism, laugh, personify qualities and play different roles, and tell jokes are connected with their tendencies to misunderstand, stereotype, deceive and be deceived. Understanding how we can retain the creative aspects, without falling into the traps of the prejudicial biases, would be a great leap forward in a positive transformation of the human.

In this endeavor, storytellers, artists and interpretative scholars need to play a role as important as that of scientists. In contrast to scientists, humanistic theorists and artists explore, analyze and speculate on individual cases, which statistical averages ignore. This enables them to single out and describe the exceptions to rules, the ones that defy the odds, and the ones that do not easily fit pre-established categories. This way, they can express and interpret symbolic worlds where we may find new ways to create meaning. Such worlds can use language and other representational sign systems to construct images of reality, ourselves, and our relations with others so that more possibilities of existence may become apparent.

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