Is there a Sense of Justice? Comments to Noam Chomsky on Innate Human Morality

Ariel James, *UAM Gazette*, March, 2015, Unit for Scientific Culture (UCC), Autonomous University of Madrid, ISSN 2386-8287

Is there a Sense of Justice? Comments to Noam Chomsky on Innate Human Morality

ARIEL JAMES

Autonomous University of Madrid

2015

Dear Professor Noam Chomsky

Greetings

A year ago, I sent you my first notes detailing my vision on the relationship between language and morality. Since formulating those initial ideas, my perspective has been enriched by valuable comments and critiques from you and several colleagues in various disciplines, including moral philosophy, psychology, cognitive science, neuroscience, artificial intelligence, linguistics, anthropology, and sociology.

Over the years 2013 and 2014, I also discussed my viewpoint extensively with biologist and moral theorist Marc Hauser – one of the proponents of the hypothesis of a *universal moral grammar* (UMG). This was a very pleasant and fruitful dialogue. Today I see the whole picture in a much clearer and defined manner.

I think the central question is to know whether an innate sense of morality can be scientifically investigated and analyzed using certain tools that are specific to the study of language. This can probably be done in many specific ways and using different approaches. The next question is: Is there an example of that kind of endeavor? Some researchers have proposed that this can be fulfilled by moving the categories and the entire linguistic framework of the *universal grammar* (UG) up to the field of study of the moral faculty. That is, according to that proposal it is possible to apply the linguistic model of the generative grammar to another different field of the cognitive science which is the complex domain of moral cognition.

I am not very sympathetic to the hypothesis of a universal moral grammar for many reasons. Among them, I consider from an anthropological and evolutionary point of view, that the instinctive moral sense is a cognitive disposition prior to the appearance of verbal language. In other words, moral intuition, emotion, and thinking were human cognitive capacities long before the emergence of propositions and sentences. Consequently, the abstract principles governing the moral faculty cannot be "discrete" –digital or symbolic- mechanisms of mental computation. They must be a sort of *pre-propositional principles* which regulate the correlation between facts/events/actions and moral rules.

Accordingly, I understand the concept of "moral sense" as a set of cognitive patterns given in advance of experience which govern and constrain the processes of moral evaluation, through the application of analog mental principles and premises. In very simple terms, the moral sense is the

continuous biological-psychological regulator of human moral behavior. I choose to say "biological" but not "organic" regulation for several reasons that I will fully explain later in this essay. Basically, I think that higher mental functions, such as those involved in producing moral judgments, do not fit the anatomical description of mental and physical organs.

I shall go to the heart of the matter: the entire discussion concerning the pertinence of the linguistic analogy between language and morality deals with the nature of these universal principles or patterns and *not* with the shape of those mental mechanisms involved in moral cognition, which can be analog or digital depending on the descriptive framework.

For instance, moral judgment processes can be considered either *digital* units for processing information that obeys a linguistic format, or *analog* operators to control behavior, depending on the scientific or philosophical perspective. Consider the example of facial expressions indicative of basic emotions (fear, anger, etc.). While these are essentially pre-linguistic mechanisms, nevertheless they can be studied by applying conventional/digital units (See Ekman, 1992).

Accordingly, I will not investigate whether the neurological processes involved in moral intuition and conscious moral reasoning are digital or analog. Rather, I shall ask whether the abstract principles underlying the operations of our moral faculty are themselves discrete or continuous psychological mechanisms.

For this reason, I consider that the subject of our present conversation is about the shape and content of the principles, higher patterns or meta-rules that govern our faculty to distinguish right from wrong in moral terms. From my perspective, the cognitive parameters/principles/patterns governing the moral faculty are constituted as a non-digital and pre-grammatical disposition of mind.

In words of physicist and mathematician Freeman Dyson:

> "We define analog-life as life that processes information in analog form, digital-life as life that processes information in digital form. The next question that arises is, are we humans analog or digital? We don't yet know the answer to this question. The information in a human is mostly to be found in two places, in our genes and in our brains. The information in our genes is certainly digital, coded in the four-level alphabet of DNA.
>
> The information in our brains is still a great mystery. Nobody yet knows how the human memory works. It seems likely that memories are recorded in variations of the strengths of synapses connecting the billions of neurons in the brain with one another, but we do not

> know how the strengths of synapses are varied. It could well turn out that the processing of information in our brains is partly digital and partly analog. If we are partly analog, the downloading of a human consciousness into a digital computer may involve a certain loss of our finer feelings and qualities. That would not be surprising. I certainly have no desire to try the experiment myself" (Dyson, 2001).

Following this line of reasoning, I will assume that the human brain is *at least* a partial analog processor of information. Furthermore, I shall contend that higher mental functions such as morality or rationality are based on analog patterns (non-syntactical or non-symbolic) for the representation of reality. There is no digital grammar of morality. Otherwise, the moral/rational mind would be an *inexplicable* collection of logical, neurological, and psychological gaps. Specifically, the moral sense cannot use discrete states to communicate information because it cannot work via informational and energy gaps.

Universal grammar is a discrete and fixed mechanism which deals with the discrete entity of human language. But human behaviors are not a collection of foreseeable events that occur between "non-eventual" gaps and which can be united by some sort of discrete and conventional system of symbols. Gaps exist in language, not in actions. Unconnected actions are actions without meaning, and non-factual or meaningless gaps cannot exist.

The faculty of moral judgment depends on the proper evaluation of a *continuum* of actions. If the opposite case were true, I could say, using an impeccable syntactic order: "murder-is-correct." But in real life this claim is justified only when we have access to the continuum of actions and situations that make up the context. If the moral sense were really a set of syntactic rules there would be no form of differentiating between these two equally valid linguistic expressions: "murder-is-incorrect" versus "murder-is-correct."

As you pointed out three decades ago:

"The relations between "murder" and "assassinate," or "uncle" and "male," or "cheerful" and "unhappy," ought to be expressible in terms that are not drawn from the theory of syntactic forms and categories or the world of fact and belief. There are no possible worlds in which someone was assassinated but not murdered, an uncle but not male, cheerful but unhappy. The necessary falsehood of "I found a female uncle" is not a matter of syntax or fact or belief." (Chomsky, 1977: 35).

Therefore I will argue that there are multiple logical, practical and methodological problems arising from the *linguistic analogy* between morality and language if it is understood as a kind of fusion between the moral sense and a set of unconscious "grammatical" principles and rules. All these problems could be summarized with an idea derived from the necessary logical distinction between classes: The class MS [moral sense: an innate sense of justice, fairness and benevolence] and the class UG [universal grammar: unconscious grammatical principles] are two different sets expressing different regulatory principles –while MS is informed by analog and non-discrete principles, UG is a cluster of digital and discrete principles- which entails some inherent and unavoidable logical and practical consequences, as discussed below.

The possibility of correlating language with moral intuition consists in inquiring if below the digital code of verbal language there are principles that are not digital or discrete, but continuous or analog. My main goal in writing this letter is to share that path of research with you. In a few words, I will surmise that below the moral faculty, and perhaps below the language faculty, there is an intuitive pre-linguistic knowledge which establishes a link between facts and values, under some *moral* premises such as necessity, impartiality and universality.

There is a second issue that concerns me greatly, and it is also directly related to the linguistic analogy between the language faculty and the moral faculty. At the present, I am not too sure that you really share the idea that the cognitive disposition that we call the "moral sense" can be described as a definable, distinct, and specific organ or module of mind. Judging from what you wrote as a note to the book "Elements of Moral Cognition," by the researcher John Mikhail (2011), it seem that you sympathize with the hypothesis that there is an organ of morality which is inserted as a specific device in our mind/brain system.

The second main purpose of this letter may be synthesized as an invitation to answer a simple question: Do you really believe that our innate sense of justice is a module or a set of modules (organs, nodes, devices, or whatever you wish to call it) of the mind? Put it in another way: Do you support the hypothesis that some cognitive processes –such as those involved in moral reasoning– are the consequence of a specific and concrete *moral organ* within the architectonic of the human brain?

Before going any further, let me state that I think that no such moral organ or module exists. I also think that conceiving the moral sense as being a "moral module (or organ)" not only gives a wrong picture of moral cognition but, regardless of whether we take the term "module" as a poetic and

metaphoric or a literally expression, this mistaken view can be very problematic in moral, juridical and even political terms. In fact, I propose that the so-called "sense of justice" or "moral sense" is structured by non-syntactical principles or patterns which are not confined within a modular structure. The moral sense cannot be a particular subsystem inside the cognitive system, but a general psychological disposition - which is to say, it is a biologically prepared capacity, extended throughout the entire mind/brain system.

For the sake of conceptual clarity, it is necessary to distinguish between different concepts which nonetheless are correlated with one another. These include:

1. *Cognitive judgment*, which may be perceptual, emotional, rational, thought-expressing, axiological, moral. It is usually based on heuristics (fast automatic inferences), and/or on slower conscious deliberations.

   1.1. The innate capacity for cognitive judgment or the *faculty of judgment*, which is an emotional, intellective, and rational ability of the mind, probably disseminated through various perceptual and cognitive domains.

2. *Moral judgment* (also called "practical judgment"), a type of *cognitive* judgment which expresses universal and impartial principles and rules for regulating behavior. It could be elicited by emotions, intuitions, or conscious reasoning.

   2.1. The *faculty of moral judgment*, which is a general *cognitive* ability for the application of moral rules, mediated by socio-cultural influences (propositions, beliefs, ideologies), but probably with an innate base.

3. The *sense of justice* which is an instinctive, innate, intuitional, and pre-propositional disposition that serves to regulate and constrain the faculty of moral judgment using *continuous* parameters for processing information.

At present, I will not endeavor to address points (1) and (2) in depth. Rather, I will focus on developing point (3) on the nature of moral sense. As I see it, there is no genuine separation between cognitive judgment (1) and practical judgment (2). Accordingly, there is no separation between the faculty of moral judgment and the faculty of cognitive judgment. Practical judgments are always cognitive judgments. Therefore, there is no such moral organ that is functionally independent from the rest of the cognitive/emotional system.

My central proposal is that there is a structural and functional unity between cognition and the moral sense. Said another way, the moral sense has no syntactical independence from the cognitive system. Not just moral sensibility and emotions, but even conscious moral reasoning is entirely based on assumptions and presumptions provided by the moral sense (as I will expound in point 7). The moral sense and the cognitive system constitute a single and continuous psychological domain.

Hence, a person who has severe cognitive problems probably does not have the capacity to judge morally; and the contrary is also true: a person who *cannot* judge morally –who cannot have the capability of moral judgment- is almost certainly a person with severe cognitive problems. Thus, no one is beyond good and evil insofar as their cognitive abilities are intact. But if we separate moral judgment from cognitive judgment using non-neutral categories such as "computational autonomy," "modularity," or "organicity," we destroy the concepts of moral agency and moral responsibility, and incidentally, we are breaking down the very concept of justice.

To better explain my interpretation of the sense of justice or moral sense I will take three steps:

First, I will critically analyze the theory that presents the moral sense as a grammatical competence, which is based on some arguments taken from the generative linguistic framework -the so-called "Universal Moral Grammar" (UMG)- trying to demonstrate its inherent problems and inconsistencies.

Second, taking into account the results given by the aforementioned critique, I will propose an alternative to these problems and inconsistencies, showing that it is possible to conceive the moral sense as a distributed and extensive non-modular disposition, which consists of pre-propositional and pre-grammatical principles, with relative, selective, and very partial encapsulation of certain *informational* items, but capable of integrating different perceptual and cognitive functions.

Third and finally, I will define some core features and formal traits of an innate sense of justice, in order to submit this proposal to possible refutation.

To the extent that the concept of "moral sense" is a matter of moral philosophy and of moral cognition, I will use specialized vocabulary to better explain my position. In order to make the reading easier, I will categorize the most important topics using mini chapters. Also, when I refer to your ideas, in order to be completely respectful and appropriate, I will prefer to use the third person singular.

1. The source of the universal moral grammar (UMG): Noam Chomsky's implicit theory of mind.

Universal moral grammar (UMG), based on Noam Chomsky's theoretical assumptions, is the most significant contemporary theory for establishing a typological analogy between the principles and rules of morality, and the structure and laws of a language faculty. It has been championed over the past two decades by Marc Hauser and John Mikhail, among other researchers. The core message of UMG's hypothesis is the idea that morality has a *specific* neurological basis as a perceptive *module* instantiated within the human mind/brain system, and therefore prepared by human genetic design (Mikhail, 2002, 2009, 2011; Hauser, 2006, 2008, 2009; criticized by Dupoux and Jacob, 2007; Johnson, 2014; James, 2014).

If I am correct, the theoretical and conceptual foundation of the hypothesis of a universal moral grammar is Noam Chomsky's generative theory of language. According to researchers John Mikhail and Marc Hauser, Chomsky's theory of language –the so called "transformational grammar"- is an epistemological framework from the field of linguistics that is completely valid to be applied up to the field of morality without having to make significant changes. Chomsky's linguistic proposal is based on the argument that the unconscious principles of the "universal grammar" are the same for everybody, independently of any semantic and pragmatic influences (Chomsky, 1977, 1980, 1986, 2004).

Accordingly, to the proponents of UMG, the "universal grammar" of morality must be independent of cultural conventions to the extent that it is a code of invariant universal principles, similar to the invariant code of universal grammar. Therefore, when they postulate a sort of *moral* grammar, following Chomsky's main assumption, this mental disposition must be understood as something universal, necessary, genetically given, informationally encapsulated, and independent of socio-cultural agreements and conventions.

One basic problem with this kind of reasoning is that "morality" is a general mental competence filled with different elements from semantic representation, ontological presuppositions, beliefs and knowledge about the real world, symbolic conventions and cultural attributes which are very difficult to distinguish and separate into autonomous sub-sets. In that order of ideas, an initial question seems to be: How can we separate all these elements from the biologically given state of the brain or the genetically *initial state* of the mind *necessarily* existent in Chomsky's thesis?

If we consider innate morality to be basically a mental module or a class of modules, it is almost impossible to conceptualize an ideal integration of all the different perceptual and conceptual contents pertaining to moral judgment (as automatic emotional responses, social sentiments, moral intuitions, moral reasoning, moral taboos, sacred values, etc.). Let us start with the problem of the mental "module" itself, charged as it were with the responsibility of following the rules of a "universal grammar."

Noam Chomsky's epistemological arguments follow logical premises and steps which necessarily *imply* a massive modularity's theory for the structure of the mind. I consider that Chomsky's research framework entails that:

1. The human brain has distinct mental functions or faculties with *propositional* contents; it possesses endogenously cognized propositions (Fodor, 1983: 10)[1]. Each mental faculty has a different body of inferential structure or *propositions*, which are regulated independently.

2. Inside each faculty, there is a set of universal *principles* or a universal grammar, which imposes several restrictions on its systems of rules.

3. Each universal grammar is autonomous in its internal functioning (it does not share horizontal resources with other systems) and can be observed by studying its own specific grammatical constraints.

4. The mind/brain system is a discrete/digital device: "We are like a Turing machine" (Chomsky, 2004: 41).

Noam Chomsky has pointed out that Universal Grammar (UG) is an explanation of the apparently human-specific conceptual-lexical apparatus which is related or perhaps identical "with the concepts that are the elements of the "cognoscitive powers," sometimes now regarded as a "language of thought" along lines developed by Jerry Fodor (1975)" (Chomsky, 2005: 4). Therefore, the brain is like a symbolic or digital super-organ, which hosts different and specific subsystems (organs) with its own innate rule schemas:

[1] However, in personal correspondence with me, Noam Chomsky clarifies that Fodor's points are not his and that he in fact disagrees with several of them. Chomsky also added that: "I never proposed – and reject – your adaptation of Fodor later on holding that grammars or UG are "a set of propositional rules." Not at all" (extracted from personal communication dated January 12, 2015).

"The biolinguistic approach adopted from the outset the point of view that C. R. Gallistel (1997) calls "the norm these days in neuroscience" (p. 86), the "modular view of learning": the conclusion that in all animals, learning is based on specialized mechanisms, "instincts to learn" (p. 82) in specific ways. We can think of these mechanisms as "organs within the brain" (p. 86), achieving states in which they perform specific kinds of computation. Apart from "extremely hostile environments" (p. 88), they change states under the triggering and shaping effect of external factors, more or less reflexively, and in accordance with internal design" (Chomsky, 2005: 5).

If we take the organicistic picture of the brain seriously, then the implicit concept of the psychological faculties inherent in Chomsky's research program presupposes logical assumptions related to the mathematical *theory of sets*. The association between Chomsky's generative theory and set theory is quite evident when we consider his own words:

"An elementary fact about the language faculty is that it is a system of discrete infinity. Any such system is based on a primitive operation that takes *n* objects already constructed, and constructs from them a new object: in the simplest case, the set of these *n* objects. Call that operation Merge. Either Merge or some equivalent is a minimal requirement. With Merge available, we instantly have an unbounded system of hierarchically structured expressions" (Chomsky, 2005: 11).

The logical criticism of the classical set theory, particularly after the emergence of Russell's Paradox, implies that a superset containing all sets cannot be of a structure similar to a particular set within it. Then, assuming Chomsky's position for a moment, we need to postulate a super-set to overcome the difficulty of unifying the different and distinct rule systems inside a distinct organ of computation; and that superset or meta-set could be denominated a "universal grammar" (UG).

Noam Chomsky himself noted that one "cannot include within the rules themselves the restrictions placed on their application" (Chomsky, 2007a: 181). That is, the rules cannot constrain themselves. Therefore, we need to suppose the existence of a fixed system of meta-rules to regulate them, from which arises the idea of an ideal *mental* grammar, that is based on a hierarchical structure of sets (or syntactic objects) also called *Merge* (Chomsky, 1995). These syntactic objects are "real objects, part of the physical world, where we understand mental states and representations to be physically encoded in some manner" (Chomsky, 1983: 156).

Chomsky explicitly recognizes that the universal grammar must be some kind of "superset": "Note that 'universal grammar' is not of the set of grammars made available by linguistic theory. Rather, it

is a schematism that determines the form and character of grammars and the principles by which grammars operate" (Chomsky, 2007b: 219). Likewise, Chomsky acknowledged that particular rules cannot include the constraints which serve to regulate those same rules (i.e. something cannot contain what contains it).

But when we apply this Chomskyan line of reasoning to the higher realm of the mind/brain system, some logical and practical problems immediately appear. There is something cumbersome in the idea of a universal grammar *limited* to a mental organ because universality and organicity are concepts that hardly fit together. The universality of certain psychological functions is not an exact replica of the anatomical shape and boundaries of the bodily organs and does not necessarily fit within the physiological limits of a mental module. This is a fact well known since as early as the late nineteenth century, with the first psychological studies of conversion disorders and "glove anesthesia" by Jean Martin Charcot and Sigmund Freud (Rosenberg and Kosslyn, 2011: 361).

Let us examine the problematic relationship between the idea of *universal* principles and the concept of biological and cerebral *organicity* in some detail using a logical example.

Basically, what Russell's Paradox and the Fallacy of Composition show is that, based only on the sum of different individual sets, it is impossible to reach a meta-set or a universal-aggregate[2]. In other words, there are at least some mental faculties that cannot be *particular* organs: the sum of all the different and specific organs cannot produce by itself a superset (which we can call the "mind" or "brain" for simplicity), because there is no super-set (mind) able to summarize all the sets (organs), and to be by itself a specific set at the same time.

In simple terms, the "set of all sets" cannot be itself a set within itself. In the case at hand, the psychological functions based on universal principles cannot be confined to the limits of a brain sub-system. I think, for example, on the case of higher cognitive capacities governed by universal and necessary principles such as rationality (the capacity of reason) and morality (the capacity of moral judgment).

The hypothesis of a massive modularity of mind, in any of its versions, must overcome serious logical and practical problems to be rationally coherent. Then, if we strictly follow the logic derived

[2] Russell's paradox is an example of the philosophical *fallacy of composition,* the supposition that the whole should share the same meaning as the sum of their individual parts. Another example is the Condorcet's Paradox on majority voting.

from Russell's Paradox and the Fallacy of Composition, some mental capacities which possess generalized and extended functions -as I will propose is the case with the moral competence- cannot be something syntactically separated or isolated from the entirety of the mind/brain system.

There is no *autonomy* of the moral sense from the cognitive system, therefore there is no universal moral grammar. Otherwise the same notion of human cognition would be trapped in the contradictions of endless semantic and logic paradoxes. A theory of a *massive* modularity of mind, in any of their possible formulations, is a logically inconsistent idea. To see clearly why a super-set cannot be a singular set by itself, we should pause momentarily to consider some of the logical consequences of Russell's Paradox.

In June 1901, the philosopher and mathematician Bertrand Russell proposed a paradox that has come to be known as "Russell's Paradox," and it speaks about the classification of all classes not members of itself, "which springs directly from common sense, and can only be solved by abandoning some common-sense assumption" (Russell, 1938: 105). The general meaning of this paradox can be captured using the *Librarian example* as illustration.

Imagine that you are the owner of a library containing many of the books referenced in the world, but you have decided, not to catalog those books, but to make a special catalog of all the books that are not represented in any catalog. When you finish writing the catalog of all the books that are not in any catalog, you must decide if you are going to include the very catalog that you've just written within the list of all the books that "do not belong" to any catalog. If you include it, it cannot be a catalog of all books that *are not* in any catalog; but if you do not include it, it cannot be truly the complete catalog of *all books* outside of any catalog[3].

The clue to decoding Russell's paradox is the difference between *normal sets* and *singular sets*. The central point is that these two sets are *mutually exclusive*, an impossible crisscross (Russell, 1938). The two sets that are excluded between them are defined as follows:

a. *Normal Set*. A set that *is not* included in itself. For instance, the set of "all the red cars in Paris" is not a red car.

[3] The first version of this paradox, in logical terms and with other examples, was presented publicly in May of 1903, in the chapter X ("The Contradiction") of the book "The Principles of Mathematics," written by Bertrand Russell (Russell, 1938: 101-105).

b. *Singular Set*. A set that *is* included in itself. For instance, a set of ideas is an idea. The Russian *matryoshka* could be rendered as a singular set; being the nested doll that includes similar nested dolls.

From the point of view of our imaginary cataloger, it is not possible to establish whether the catalog of "all the books that are not in the catalog" is by itself a Singular Set or a Normal Set. The central issue is how to classify the classifications. In Bertrand Russell's own words, "Likewise there is no class (as a totality) of those classes which, each taken as a totality, do not belong to themselves. From this, I conclude that, under certain circumstances, a definable collection (Menge) does not form a totality" (Russell's Letter, quoted in Van Heijenoort, 1967: 124-125).

In his theory of a language organ, Noam Chomsky's implicit solution for avoiding the logical implications of Russell's paradox is the powerful idea that each organ has its own meta-system of principles in order to constrain their own rules of functioning (a sort of "universal grammar" with autonomy from external pressures). Thus, Noam Chomsky has ingeniously evaded the paradoxical problems that underlie the concept of a meta-set, placing the necessary meta-set *within* the particular sets.

In other words, it is like saying: "in order to avoid Russell's paradox, I will postulate that the meta-set is not the set of all organs (the mind), but a code of principles and constraints *within* each organ." It is a brilliant derivation. Noam Chomsky's genius has been able to place the theory of massive modularity on an almost indestructible pedestal. This move is tantamount to isolate the contradiction far outside of the singular mental organs. However, the paradox remains to the extent that individual sets cannot be translatable to each other using their own singular hypothetical grammars.

Despite this, Noam Chomsky does not acknowledge any logical paradox in believing that mental processes can be defined as syntactically structured mental principles and representations *within* different modules. Chomsky states:

"What's drawn from set theory is extremely trivial. None of the paradoxes arise. The discussion that follows is not to the point, including the quotes from me, which have nothing to do with problems of set theory. Set-theoretic problems never arise in systems as simple as these. There was nothing to avoid." (Noam Chomsky, personal message via email, January 12, 2015). In the same vein, Chomsky emphasizes: "I think you'll find that the issues arise only for very rich versions of

set theory, and don't arise at all in circumscribed systems. In the present case, the reliance on set theory is so trivial than there's no reasonable expectation that any paradoxes arise." (Ibid; January 13, 2015).

Indeed, by placing the regulatory principles within the mental organs, Chomsky is very careful, assuring that "set-theoretic problems never arise in systems as simple as these," because "the issues arise only for very rich versions of set theory, and don't arise at all in *circumscribed* systems." I should clarify that I am not the only one who has noticed a direct relationship between generative grammar and set theory. The linguist Paul M. Postal has noted that:

"Noam Chomsky has, however, obscured the ontological issues by implying that his use of set theoretical apparatus is parallel to e.g. physicists' use of various pieces of abstract mathematical apparatus to describe physical phenomena and so is entirely unproblematic. But this is thoroughly untrue.

The reason is that physicists use abstract formal structures to characterize physical things, not abstract ones. The objects of description have temporal, spatial, causal, etc. properties. But within Noam Chomsky's set-theoretical-based linguistics, not just the descriptive statements are set-theoretical. The objects described, NL sentences *themselves*, are invariably (rightly) taken as set-theoretical" (Postal, 2012: 7).

The fact remains that all the logical difficulties are not resolved by this kind of set-theoretical linguistics: avoiding the paradox does not mean resolving the paradox. The first problem is to determine how the mind unifies all these singular grammars each with its own syntactical autonomy, because the whole must be *other* than the sum of the parts (Kurt Koffka's maxim). The second problem is that the internal rules of functioning for one organ of computation cannot fit into the second organ, which is an inherent problem of any *vertical* conception of psychological mental faculties. And these are not at all trivial problems.

In his classic essay "Problems and mysteries in the study of human language," first published in 1974, Chomsky admits no possibility that certain cognitive structures were not specific domains, but general capacities in the sense postulated by Jean Piaget and the connectionists. An ideal researcher, according to Chomsky, would have to reject the hypothesis that there is a general learning theory common to all organisms, undifferentiated in a single organism with respect to cognitive domain.

On the contrary, the ideal researcher would have to come naturally to the finding that "the intellectual organization of a mature human is a complex integrated system that includes cognitive structures that are acquired on the basis of rather specific initial adaptations" (Chomsky, 2007b: 159). Nonetheless, my suggestion is that the fundamental capacities of the mind cannot all belong to *vertical* faculties because the final sum of different vertical faculties cannot produce by itself the super-set that we call the "mind."

The hypothesis of a massive mental modularity entails at least two serious logical difficulties: The first difficulty is that a general set, composed of different subsets (systems of rules, grammatical principles, organs), *cannot be by itself a subset* (an organ); that is, it *cannot exist* in a logical sense. The second logical difficulty is that there is a conflict between different mental modules because these modules are not entirely translatable into each other using their particular system of grammatical principles and rules (This is exactly the meaning of concepts as "encapsulation" and "modular autonomy").

Actually, the logical consequences of Russell's antinomy, applied to the concept of human cognitive faculties, lead us to consider the possibility of a *non-massive* modular theory of mind, with at least the following two minimum requirements:

1. There will necessarily be general restrictions and constraints *on the entire mind/brain system*, not only specific constraints dedicated to partial and distinct sub-systems. The mind is not only a collection of organs of computation, but something even more complex, which includes *general capacities* not reducible to specific organs.

2. Although it is debatable whether some cognitive functions could acquire a grammatical form, that is, that it can be formalized using digital codes (a syntax of symbols), what does seem clear is that they cannot all have a modular or organic structure, because, if the mind is exclusively a set of cognitive modules, then there is no way to pass from these individual modules up to the configuration of one generalized meta-set, called the "mind" or "brain."

From now on I will try to demonstrate that the human sense of morality meets the former two conditions. If there is really a *moral* sense, it cannot be a different module inside of the mind, but a general and distributed disposition, matching point for point with the entire "superset" mind/brain. Further, upon this essential notion – that is the *non-modularity of the processes of moral evaluation* – rests the very possibility to study scientifically the architectonic of moral cognition.

2. Marc Hauser's and John Mikhail's theoretical proposals.

Using the idea of universal grammar as a fulcrum, Marc Hauser put forward the thesis that our moral faculty is equipped with a universal "moral" grammar. This may be thought of as a toolkit for building specific moral systems, or culture's specific moral norms, by which we can judge whether actions are permissible, obligatory, or forbidden (Hauser, 2006: VIII). I will not make an overall judgment on this hypothesis, but I shall concentrate on the points that I consider debatable.

To Hauser, intuitions should not be elevated to the level of rules; and conscious reasoning and emotions are not enough to explain the process leading to produce moral judgments. Then, we need a moral sense or an "organ of the mind" that carries a universal grammar for action (Hauser, 2006: 12). The alleged "moral organ" would have as its main function to compute the relationship between cause and effect, which may be thought of as the permissibility of an action based on its causes and consequences.

"What is at stake, however, is whether reasoning precedes or follows from our moral judgments" (Ibid; 21). The answer according Hauser is more than clear: in the first place we have an instinctive, automatic, and unconscious evaluation of actions, which is triggered by the moral sense (under the form of universal grammatical principles). "Moral" emotions and conscious moral reasoning always take second place, and perhaps are not completely necessary, because: "Serial killers, pedophiles, rapists, thieves, and other heinous criminals may recognize the difference between right and wrong, but lack the emotional input to follow through on their intuitive deliberations" (Ibid; 31).

The underlying thesis is that the universal set of rules of the moral grammar are computationally autonomous from other cognitive capacities, such as emotions and moral deliberation, based in a clear distinction between syntax and semantics (Ibid; 37-38). In accordance with his own interpretation of some of John Rawls' assumptions, Hauser points out that the process of moral evaluation is the sequence of the following steps:

1. The *perception* of an action or event triggers a computational process.

2. The computational process is an *analysis of causes and consequences*, intended and foreseen consequences, motivation, and the intentional-accidental distinction.

3. That in turn triggers a *moral judgment* regarding what is permissible, obligatory, and forbidden.

4. *Emotions* are produced as a final step (Hauser, 2006: 46). The unconscious analysis of the causes and consequences of an action must always precede the emergence of emotions (Ibid; 9), because damage to the emotional circuitry has no impact on moral judgments (Ibid; 46).

Hauser's ordering of the key processes involved in moral evaluations makes little sense if moral judgment is conceptualized as requiring a complete and exhaustive analysis of causes and consequences of every action. For instance, Hauser says nothing about what happens prior to the point (1), the stage of the perception of events. How does an individual can determine a priori that some events have moral significance and relevancy while others do not? I consider this to be the most important issue in terms of the genesis of moral cognition. It is the *problem of the initial conditions* of moral perception/cognition. Perhaps we need a theory of relevance in order to address this issue (cf. Wilson and Sperber, 2004). This is the crucial (-1) point.

Basically, what I mean is that something must be considered ethically relevant *before* the triggering of the computational process. And it is probably at the (-1) perceptive assessment level that the intuitive basis of an innate moral sense lies. All the subsequent points in the chain of perceptive and cognitive causality can be activated by some kind of environmental/cultural intervention. But, before we can recombine actions and their causes and consequences from a moral perspective, we need to decide what actions are *significant from a moral point of view* (and perhaps all actions are relevant to some extent according different contexts).

It is not clear that this "a priori" ability is necessarily a perceptive device with a *linguistic-like*/*digital* format. Immanuel Kant would say that it is the *continuous* capacity for cognitive synthesis under the premises and principles of apperception (the *permanent* unity of consciousness). For Charles Sanders Peirce it is also a *non-digital* or continuous capacity of mind. Peirce's "Synechism" is essentially the "doctrine that continuity rules the whole domain of experience":

"This idea is essential in Peirce's theory of cognition developed in 1868. In "Some Consequences of Four Incapacities," Peirce explains that a cognitive process is not a succession of separated ideas at different instants, but a continuous flow. "At no one instant in my state of mind is there cognition or representation, but in the relation of my states of mind at different instants there is" (W 2.227, CP 5.289, 1868). Therefore cognition or representation cannot exist at one specific instant in a state of mind, but it is a continuous flow of relations" (Havenel, 2008: 89).

In any case, the process of moral causality cannot be dependent upon the modular structure of a specific mental grammar. *Moral causation* is an active and universal capacity of the whole mind/brain system. If the moral cause of actions is attributed to a particular portion or network of the brain, in some sense a *person* could be absolved of moral responsibility for his actions if this part of the brain is somehow impaired.

Thus, moral responsibility depends on the fact that *moral causation cannot be a modular or a domain-specific mechanism of mind*. What generates moral evaluations is a moral capacity that belongs to the whole brain, including the cognitive unity between intuition, emotion, and conscious reasoning. That cognitive unity between intuition, emotion and conscious moral deliberation is precisely the moral sense.

Therefore, ethical accountability is attributed to the *whole* person. Otherwise, it would be possible to do something as absurd as to attribute moral responsibility to a specific part of the person (such as the frontal lobe, the amygdala, or a hand, etc.). The example used by Hauser of the "psychopath" who can recognize the difference between good and evil without compromising their emotions is thoroughly inadequate to prove the existence of a moral grammar because some people can exhibit strong moral emotions and yet behave the same or worse than a psychopath. One need only reread Aeschylus and Sophocles. In such a case, one would have moral evaluations without any evidence of their connection to autonomous unconscious moral principles.

However, Hauser signals his intention to understand whether moral dilemmas have specific "design features" (Hauser, 2006: 7), because we are equipped with a moral sense just as we are endowed with the sensory systems of seeing, hearing, tasting, touching, and smelling. That would mean that we possess *specialized receptors* for morality (Ibid; 25). But Hauser's reasoning comes across as biased. If we have moral emotions and conscious moral reasoning, it is because the moral sense is automatically expressed in both cases. Moral evaluation cannot be a discontinuous system.

The real sequence of moral evaluation is not the following: a mental moral grammar that produces computational analysis which then triggers a moral judgment –*gap* – after which there are emotions –*gap* – then maybe conscious moral reasoning at some later point. Rather, the contrary seems to apply: What we probably have is the persistence and constancy of the cognitive unity between moral intuition, emotion, and conscious reasoning. The sense of justice is always present in moral intuitions, emotions, and deliberative reasoning, which are not different cerebral systems but correlated signatures of the selfsame whole.

The sense of justice cannot be isolated in some arbitrary segment of the entire process, and it cannot be discontinued. There are no "mental instants" isolated from the continuous cognitive flow, as Peirce says. Moral judgment is not an exclusive possession of a computational analysis of causes and consequences. Ethical emotions are also a moral judgment. Moral conscious reasoning is also a moral judgment. Hauser has confused the matter a great deal in his eagerness to build nonexistent borders which could serve to justify the supposed autonomy of the universal moral grammar.

Even the most basic analogies become unsustainable: contrary to Hauser's belief that we recombine actions as the language faculty recombines words, human actions are not similar to words in any sense. Actions can only be separated using verbal language in a very artificial way. Human interactions are not discrete signs accumulated between gaps, as if expecting to be evaluated using a grammatical analysis to find meaningfulness.

The central fact is that, for the unconscious/intuitive mind, there are no pauses, gaps, or holes. Hence there is no sense to saying that the moral sense is: 1) an unconscious capacity, which is 2) articulated as a syntactic code based on discontinuous units of meaning. If it is (1) then it cannot be (2), and vice versa.

The scholar John Mikhail has proposed another version of the universal moral grammar that follows exactly the epistemological postulates of both Rawls and Chomsky, adapting the linguistic analogy between rules of justice and rules of grammar. "I defend Rawls' claim that moral theory can be usefully modeled on aspects of universal grammar" (Mikhail, 2011: 7). Basically, what the linguistic analogy says is that morality is like a digital device, a symbolic grammar, or a set of propositional rules. To Mikhail, the moral system of the human mind/brain is a "biological given object," or a mental apparatus (Mikhail, 2011: 26).

In order to unfold his particular rendition of a moral faculty, Mikhail poses four central questions:

1. What constitutes moral knowledge?

2. Is it innate?

3. Does the brain contain a module specialized for moral judgment?

4. Does the human genetic program contain instructions for the acquisition of a sense of justice or moral sense? (Mikhail, 2011: 12).

Mikhail answers numbers 2, 3, and 4 in the affirmative. Then he transcribes point by point the linguistic research program designed by Noam Chomsky in "Rules and Representations" (Chomsky, 1980); and in "Knowledge of Language" (Chomsky, 1986), and proposes it as the ideal research program for understanding the moral faculty. According to Mikhail, the result is that, what constitutes moral knowledge is a generative moral grammar or moral sense - an unconscious system of moral rules, concepts and operative principles which enables individuals to determine the *deontic* status of a potentially infinite number and variety of actions (Mikhail, 2011: 15).

The primary subject of the theory of moral cognition according Mikhail is to attempt "to describe the operative principles of moral competence" (Ibid; 21). Accordingly, *universal moral grammar* is "[a] theory of the initial state of the moral faculty, assumed to be a distinct subsystem of the mind/brain, along with an account of how the properties UMG postulates interact with experience to yield a mature system of moral knowledge" (Ibid; 15). Then, following Mikhail's line of reasoning, we have:

i) A moral faculty, or a mature system of moral knowledge,

ii) which *initial state* is a universal moral grammar (an unconscious set of propositional rules), and

iii) The universal grammar having the form of an autonomous module of computation (it is a cerebral subsystem).

Accordingly, human genetic programming includes concrete *instructions* for the acquisition of such a moral sense or universal moral grammar. The central point is that moral grammar is acquired through the unfolding of a *specific* genetic program, under the relatively modest triggering and shaping effects of the environment (Mikhail, 2011: 17). Moral perception is similar to language or vision: "When a person encounters or imagines a particular action, performed under a particular set of circumstances, her rule-system assigns it a structural description that in some manner specifies those properties" (Ibid; 17).

Therefore, in accordance with Mikhail's arguments, a congruent theory of moral cognition must accomplish the task of building a genuine *empirical* theory, grounded on a number of basic properties with mentalist, modular, nativist and computational requirements (Mikhail, 2011: 38). However, hardly anyone in the *empirical* literature on moral psychology agrees with the idea of a

moral grammar limited to a mental organ, or anything similar. The linguistic analogy attributed to John Rawls has been developed primarily by theoreticians such as Hauser and Mikhail, and none of their hypotheses regarding the "moral organ" has really found a place in the empirical literature.

What I find most curious is that Mikhail, like Hauser, seems to be fully convinced that through verbal language they can accurately determine the very set of unconscious moral principles which are behind the moral faculty (Mikhail; 2011: 26-27). Such a claim for determining an empirically adequate universal moral grammar (Ibid; 30) can only cause perplexity. They freely argue about this magical operation, as if manipulating the foundations of morality might have the same implications as manipulating the foundations of verbal language.

3. Problematic issues within the basic postulates of UMG.

Hence, we have both Marc Hauser and John Mikhail agreeing on a delimited number of assumptions, which can be summarized in a brief conjunct of points:

3. 1. *Prior to the advent of cultural concepts and social judgments, we have a moral sense genetically prepared*, understanding "moral sense" as the corpus of abstract, unconscious, and syntactical principles governing the moral faculty.

I think the hypothesis of a moral sense or a sense of justice is defensible from many angles, and that it is reasonable from both logical and biological points of view.

Nonetheless, the central idea that Marc Hauser and John Mikhail defend, and whose authorship is attributed to Noam Chomsky and John Rawls, is that the sense of morality can be understood as a *grammar of action* with genetic underpinnings, which is materialized through non-semantic (syntactic) computations. I completely disagree with the latter idea.

It is worth recognizing that the question of whether universal mental rules possess a digital format is not new: Umberto Eco has pointed out that the hypothesis of a universal grammar has its historical origin with the Methodists grammarians of the thirteenth century. The philosophers Boethius of Dacia and Roger Bacon were the creators of the first intuitions of a universal grammar. Back then the physician Zerahiah of Barcelona contradicted them in a famous debate that took place around 1290, where he argued that there cannot be an innate universal "language" in physical terms (Eco, 1997; chapters II and III).

The difference between thought (a continuous process) and verbal language (a discrete system) is not a novel idea. Psychologist Lev Vygotsky already noted in 1934:

"Thought, unlike speech, does not consist of separate units. When I wish to communicate the thought that today I saw a barefoot boy in a blue shirt running down the street, I do not see every item separately: the boy, the shirt, its blue color, his running, the absence of shoes. I conceive of all this in one thought, but I put it into separate words. A speaker often takes several minutes to disclose one thought. Precisely because thought does not have its automatic counterpart in words, the transition from thought to word leads through meaning. In our speech, there is always the hidden thought, the subtext. Because a direct transition from thought to word is impossible, there have always been laments about the inexpressibility of thought" (Vygotsky, 1986: 251)

My concern is that if the sense of morality is a type of digital program (very much like programming code, a grammar, or a computational software) that immediately means that in an ideal scenario, it could be "programmed" and "deprogrammed" at a whim. The fact is that any syntactic game depends on a previous *conventional* codification or design. Chomsky assumes that universal grammar has been somehow designed, programmed or encoded by force of biological necessity, but never alludes to the fact that everything that was programmed/designed/encoded can also be deprogrammed/decoded. I say 'in an ideal scenario' thinking in a possible *thought experiment*, because it is difficult to imagine what "deprogramming" or "decoded" would mean for a universal grammar.

I must highlight here that Noam Chomsky has confessed me that he does not admit the possibility of coding/decoding the universal grammar (Ibid; January 13, 2015). However, it seems that a mental grammar is essentially a mental *program* (Mikhail; 2000: 54), a type of recipe or program that can build unlimited set of sentences out of a finite list of words, and a *code* for representing concepts through symbols (Pinker; 1994: 22, 78). This universal code or program depends completely on the *arbitrariness* or *conventionality* of its symbols (Pinker; 1994: 84).

What I suppose is that human cognition should be something more than modular computing (codification) through syntactically-based derivation rules. This "something more" means *global* mental processes as I infer must be the case of the moral sense. The moral sense is not digitally structured. If the moral sense were structured by formally "grammatical" operations, it would be dependent on some conventional and arbitrary program. This idea gives rise to some ethical derivations that may be disturbing.

The cognitive scientist Steven Pinker defined the mind as a “blind” programmer (Pinker; 1997: 36). If there is a blind programmer, can we imagine that there could be also "sighted" programmers? John Mikhail has imagined something perturbing: “Could a computer be programmed to make moral judgments about cases of intentional harm and unreasonable risk that match those judgments people already make intuitively? If the human moral sense is an unconscious computational mechanism of some sort, as many cognitive scientists have suggested, then the answer should be yes.” (Mikhail; 2009: 27). Curiously, Mikhail does not wonder whether the opposite possibility could exist, that is whether it is possible to program a human being’s moral code *from* a computer.

I do not think that moral mental states, driven by unconscious intuitions or by conscious reasoning, may be subject to programming and subsequently to deprogramming, but, rather, that they can be strongly inhibited. They will, however, never disappear completely. In short, it is quite possible that the moral sense implies analogical, continuous, and permanent evaluations about justness and goodness previous to any process of digital (discrete) codification.

It seems that language itself was backed by a general cognitive system that had evolved to a high level before it invited the linguistic code to participate as a co-player on the evolutionary scene (Paivio, 2013). In one line, I would surmise that our innate moral sense is previous temporally and evolutionarily to the emergence of the discrete codes of the mind. Therefore, their patterns of functioning should not be conceptualized as grammatical/notational principles. Moreover, digital computation can only very diffusely map the moral capacity.

The semiotician and cultural theorist Yuri Lotman noted that no ideal linguistic code is able by itself to reflect the complex diversity of reality and of human experience (Lotman, 2005, 2009). Lotman has indicated that verbal language is only a means of symbolization, amid a macro-sphere of diverse meanings that are not all of a digital character, and which are not all subject to an unchanging grammatical structure:

> “It may now be possible to suggest that, in reality, clear and functionally mono-semantic systems do not exist in isolation. Their articulation is conditioned by heuristic necessity. Neither, taken individually, is in fact, effective. They function only by being immersed in a specific semiotic continuum, which is filled with multi-variant semiotic models situated at a range of hierarchical levels. The ensemble of semiotic formations precedes (not heuristically but functionally) the singular isolated language and becomes a condition for the existence of the latter. Without the semiosphere, language not only does not function, it

> does not exist. The different substructures of the semiosphere are linked in their interaction and cannot function without the support of each other" (Lotman, 2005: 218-219).

The very idea of an innate syntactical code –for language or for morality – is not at all clear. According linguist Eric Lenneberg, in the case of human language:

> "Syntax does not have a genetic basis any more than do arithmetic or algebra; these are calculi used to describe relations. It may be that the activities or circumstances to which the calculi are applied are in some way related to genetically determined capacities. However, merely the fact that the calculus may or may not be applied obviously does not settle that issue." (Lenneberg, 1969: 642).

The cumbersome fact is that if we reduce all cognitive capabilities to a type of syntactic code (such as the "mentalese" proposed by Fodor and Pinker), or to a sum of digital codes ruled by universal grammatical constraints (Chomsky's main suggestion), we are implicitly dismissing many of human actions and competences, which are not governed by discrete parameters.

According to the psychologist Albert Mehrabian, only 7% of human messages are strictly verbal, while 38% are paralinguistic elements, and the remaining 55% are basically non-verbal expressions, as it is clearly expressed in the "7% - 38% - 55% Rule" (Mehrabian, 1981). Anthropologist Edward Twitchell Hall, a leading expert in the study of nonverbal communication, meanwhile argues that between 50% and 90% of all human information is transmitted through nonverbal and non-digital means (Hall, 1974).

Similarly, the central idea of William of Ockham remains in place many centuries later: the difference between (1) nonverbal communication and (2) verbal language is the difference between a *primary* significance, based on passions and concepts belonging to the "soul," and a *secondary* significance, mediated by conventional words (Ockham, 1974). Ockham understood the concept "mental ideas" to be the intentions or passions of the soul which cannot be truly exposed using verbal language because words are merely *subordinate* signs. Ockham notes that the primary meanings are mainly affections, passions, and feelings – a collection of primitive sentiments that certainly do not change their own meaning at the will of a subject.

When I say "analog" significance, or analogical meaning, I mean that the moral sense can be a set of continuous, non-discrete and iconic patterns that cannot be expressed and explained simply by

using words, conventional symbols, or mathematical digits. I suppose that we cannot deny that moral judgment comes directly from the evaluation of facts, not only of words. Such an evaluation is an analog operation which establishes direct relationships between representations and actions:

> "Anti-realism about morality aside, moral judgments are about *things*, broadly construed. In much the same way that a visual system seeks to construct a stable percept of the world, so does a moral cognitive system seek to construct a stable projection of the interface of cognition and action. Moral judgments tell us what we ought to think *so that* we know what to do. Isolating the doing from the knowing via an artificial experimental regimen can remove the directedness of moral cognition" (Casebeer and Churchland, 2003: 186-188).

The moral sense (i.e., the set of moral principles and assumptions) is an ever-present analog mechanism underlying both moral intuition and conscious moral reasoning. It seems that moral intuition is *represented* by the brain in the so-called "affective system" (hypothalamus, anterior cingulate cortex, amygdala); and conscious moral reasoning usually *stand for* the denominated "cognitive system" (primary motor cortex, premotor cortex, prefrontal cortex, orbitofrontal cortex*)* (Greene, 2005; Mercier & Sperber, 2009; Pascual et al, 2013). The idea that these "systems" are opposite modules is completely baseless: intuition and emotions have prompted both thinking and reasoning (Damasio, 2005).

The sense of justice is much more than the source of moral intuitions because it includes the regulation of moral emotions such as guilt, shame and pride (the "affective system"), and it is also the basis for the mechanisms of moral deliberation (the "cognitive system"). Moreover, higher cognitive processes like thinking and reasoning are *regulated* by emotions, senses, and affections (Leontiev, 1967; Tikhomirov, 1983, 1988). The cognitive system is structured as a unity of affective and intellectual processes in which emotional activation is a fundamental prerequisite to solve thinking problems and determine the logical structure of a contradiction, an "emotional detection of rational problems" very well studied by psychologist Oleg K. Tikhomirov and his colleagues at Lomonosov Moscow State University.

Consequently, only a few possibilities remain in order to adequate the correspondence between intuition/emotion/conscious reasoning in moral terms. These are:

1. The patterns underlying moral evaluations are digital (symbolic) processes with the format of grammatical principles. Moral intuition is a grammar of digital symbols or a syntactic logic

unrelated to the semantics and pragmatic of a given culture (Hauser, Mikhail, among others).

2. The principles behind mental faculties cannot be digital mechanisms because there cannot be symbolic (arbitrary) processes in general for human mind. This is more or less the position of V. I. Lenin in his famous "Materialism and Empirio-Criticism" [1908] countering the Kantian "theory of symbols" defended by Hermann Von Helmholtz (Lenin, 1947: 237).

3. The cognitive patterns underlying any *moral evaluation* (both intuitive reasoning and conscious reasoning) are an analog mechanism of mind very difficult to describe using digital means as words and sentences. Moral judgment is based upon these non-discrete principles of regulation. The moral faculty is a sort of "multiple-processing" mechanism, using iconic images, mental models, and propositions according to the case. The overall process of moral judgment cannot rely upon an organ of mind. This is basically my position.

Unlike the moral sense, which is a completely *analog* and *pre-propositional* knowledge with the capacity to provide *innate* premises for constructing moral evaluations, the ability to produce explicit moral judgments makes use of verbal language, and it is therefore interlaced with the digital or discrete capacity of the human brain.

However, even if someone cannot make use of some digital means (sentences, propositions, symbols) in their actual performance, it still remains morally responsible of their actions, to the extent that this person preserves intact their general cognitive capacity. In other words, *verbal language and any language-like capacities are not the markers of moral agency and moral responsibility*. The marker of moral knowledge is the cognitive system.

3. 2. *"Universal moral grammar" is an initial state of the moral faculty, capable of distinguishing between moral norms, and social/non-moral norms.*

If we speak of a genetically given initial state of the mind, this thesis –based on the fact that young children can intuitively recognize the distinction between *social* and *moral* conventions- does not make much sense. Several reasons may be cited.

The 3.2 assumption is supported by a particular interpretation of experiments done by psychologist Elliot Turiel et al., on children's conceptions of morality (Turiel, 1983) whereby it was asserted that children can distinguish between moral rules and non-moral rules a few years after birth. "At early ages (4–6 years), children do not confuse morality with nonmoral issues like prudence, conformity

to rules and authority, or personal choices. These constitute distinct social domains with separate developmental pathways" (Turiel, 2008: 26). The central point is that "children at all points in development are capable of evaluating actions and social norms in moral terms" (Nucci and Turiel, 2009: 157).

But contrary to the way that Hauser and Mikhail have interpreted these findings, Elliot Turiel and their colleagues suggest, in fact, that in the initial state of the childhood mind, the distinction between moral and non-moral rules, is *not* very clear or obvious. Furthermore, it seems that moral judgments actually prevail over non-moral considerations while children are younger.

> "Young children tend to focus on the moral implications of acts and are less likely to incorporate situational information that would lead to consideration of moral and non-moral features. Paradoxically, the increased social and moral understandings of older children and early adolescents, which allow them to attend to and incorporate situational information, leave them more likely to be influenced by the ambiguity of the gray areas of moral situations. This increased ambiguity also means that their resoluteness in moral situations tends to become more variable. On a strictly probabilistic basis, their likelihood of selecting the ''non moral'' choice in a conflict situation is increased" (Nucci and Turiel, 2009: 155).

From a genetic and biological perspective there is no difference between moral and non-moral rules because all constraints have a normative and universal content, and all the possible facts should match within a normative framework.

In the developmental path of normal human beings, the understanding of social (non-moral) rules always appear *after* the previous application of moral and universal restrictions, as Turiel's reasoning seems to imply. The point I find more interesting is that Elliot Turiel agrees with Lawrence Kohlberg's basic idea that the stage (1) of moral development is an indistinguishable unity of moral and non-moral judgments. Therefore, the cognitive system would be a normative-moral system in its initial state.

According Piaget, Kohlberg and Turiel, the stage (1) of moral development, which is the closest thing we would have of an "initial state" of mind in Chomksy's terms, entails the recognition that the values of the self's point of view are undifferentiated from the moral and universal values (Turiel, 2008: 25). But this conclusion is exactly the *opposite* of the idea of an "innate" capacity to distinguish moral from non-moral rules as proposed elsewhere by Mikhail and Hauser (Mikhail,

2011: 104; Hauser, 2006: 5, 22, 30).

If universal moral grammar is a theory of the "initial state" of the mind (Mikhail, 2011: 15), then it cannot be the mechanism entrusted with the task to distinguish moral from non-moral norms, because in the ideal initial state of the mind there is no distinction between personal values and finalities, on one hand, and the universal and moral corpus of norms and rules, on the other. This is so because that the *"initial state" of mind should be completely normative by nature*.

There is another problem related to the idea that we have an innate capacity to distinguish between moral and non-moral norms and sanctions. It is a contradiction that I had noted in another place as the "aporia of the clairvoyant genes" (James, 2014).

The idea is that it is logically unsound to postulate the existence of some kind of innate knowledge about social and cultural norms at the stage of genetic predispositions. If genetic programming can know in advance the shape and content of specific socio-cultural norms, then it cannot truly be a genetic code. The result is that the moral faculty, in its *initial state*, cannot know, by any logical means, the content or the form of specific and particular cultural norms of a given society. I suppose this logical impossibility is self-evident to any observer and needs no further explanation.

3. 3. *Universal moral grammar is supposedly a module, an organ, or a specific entity within the mind/brain system.*

Both Mikhail and Hauser have been very clear on defending this last point, inherited from Chomsky's linguistic framework as an unalterable dogma. The idea underscoring the concept of a UMG is that the brain contains a distinct module specialized for moral evaluations and moral judgment, which curiously matches point by point with the moral grammar mechanism. John Mikhail literally postulates that the universal moral grammar is the very *scientific study of the moral sense* (Mikhail, 2011: 11).

However, it is imperative that we do not confuse the idea of a mental *module* with the idea of a mental *grammar*. These two concepts do not necessarily have the same meaning. There is no single form of relationship between these two complex ideas. As a matter of fact, there are several possible combinations of these two concepts (mental module and mental grammar), among which perhaps only one option can be possible. In the case of the UMG, the available options are:

a. The (universal) moral *grammar* is indeed the same moral *module*, a distinct sub-system

within the brain. That is the Hauser/Mikhail hypothesis in a nutshell. This position involves accepting 1) the tenets of Chomsky's research program, and 2) the principles of a comprehensive theory of mind rendered as a complete system of cerebral modules, or some type of massive modularity.

b. There is neither a moral *grammar*, nor a moral *module* inside the mind. Then two possibilities are evident. We may have b1) morality could be explained without any reference to nativist arguments, probably by defending some type of culturalist, empiricist, behaviorist or learning-based explanation; or b2) morality could be explored using a scientific explanation capable of offering a non-modular description of the *cognitive processes* involved in moral evaluation (mainly three: emotion, intuition, conscious reasoning).

c. There may be a moral *module*, without implying necessarily a formal *grammar*. This is based on the fantastic belief that mankind was endowed with a moral organ responsible for differentiating between good and evil (a homunculus, some type of Gall's mental organ).

d. There could be a moral *grammar* without the necessity of being part of a mental *module*. This would be a very attractive possibility if we speak of the moral faculty, not just of the moral sense (James, 2014), but it means accepting some portion of Chomsky's approach, and rejecting the other part. It appears that neither Hauser nor Mikhail were willing to do that kind of revisionism within the postulates of Chomsky's approach.

e. Probably there are different mental modules, but none of them is a *moral* module. This is exactly the position I advocate. The consequence of this hypothesis is that there is a moral sense, but it is surely not a mental module; further it has an analog or non-discrete structure, and it is not completely encapsulated (it cannot be autonomous from cognition).

4. Some inconsistencies behind the idea of a moral organ/module.

There are many practical, logical, juridical, and philosophical problems related to the hypothesis of a moral *module*. I will mention three main logical and theoretical problems derived from the UMG's hypothesis.

4.1. *Practical and Logical problems.*

We do not need a mental organ for morality to be moral beings. As a matter of fact, the higher cognitive functions are not a faithful copy of the physiological, anatomical, and organic regularities of the brain. The expression "the map is not the territory" is valid even within the very sphere of the human brain. Psychological processes are invariably biological processes, but they do not need to strictly follow the lines of the territory as if they were a carbon copy.

For instance, a person can have all his or her mental *organs* in perfect condition, and still be immoral. The innate sense of justice cannot be independent from the neurological system, but nonetheless it does not fit within the boundaries of the anatomical organs. The result is that even if the totality of my mental and bodily organs can be very healthy, nevertheless I am able to violate every one of the moral rules at any moment. Obviously, there is something stopping me, and it is not my anatomy.

There is no direct logical and factual relationship between moral judgments (which are based upon functional capacities) and mental modules (which are structural "entities"). It is impossible to reconcile the idea of the inner functioning of biological organs, with the idea of a moral sense which applies to all organs and bodies. That is to say, the *specificity* of a biological module cannot fit within the *universalism* of unconscious and conscious moral reasoning. *Specific biological organs cannot meet universal functions.* Moreover, mental modules cannot be both finite biological organs and discretely infinite objects (Langendoen and Postal, 1984: 131-136; Katz and Postal, 1991: 547-548; Postal, 2009: 251-256).

Therefore, the moral sense cannot be a specific set, but, rather, some kind of "set of sets." Particular cerebral "organs" meet concrete, quite narrowly defined functions inside specific neuronal regions. The moral sense, by contrast, pervades all the senses, all the cerebral regions, and even all the psychologically organs and functions. If the moral sense is a modular device, it cannot perform the functions of moral judgment, which have impartial and universal content, because *all specific modules have partial, delimitated, and non-universal functions.*

In other words, the biological functions of an organ are for the benefit of just one organism, the same organism to which the organ belongs, not to the benefit of other organisms within a given context. Mental "organs" are particular sensory systems that fulfill specific tasks which do not go beyond the individual organism. It is therefore impossible to reconcile the concepts of *morality* and *organicity* because they belong to two completely different dimensions of human condition.

Similarly, there is no mental organ for rationality. Morality and rationality are not only capacities exhibited by individuals, but they also express universal rules belonging to all minds. The concepts of morality and rationality are not the exclusive domain of an individual psychology, but also pertain to social psychology, to the extent that it expresses mandatory, necessary, and universal rules which are valid for all who are involved.

4. 2. *Moral and Juridical Problems.*

According to Marc Hauser's model, some unconscious moral principles are responsible for generating moral judgment without the necessary intervention of emotions and of conscious moral reasoning (Hauser, 2006: 25, 30). For Hauser, the unconscious moral judgment ruled by the moral grammar is the first stance. It is considered the center of any moral deliberation. Universal moral grammar comes first, and emotions and explicit moral reasoning are secondary steps (Ibid; 31).

I think that moral judgment can be generated both by moral perceptions/intuitions, moral emotions, or moral conscious deliberation. I do not see why we must keep some part and reject the other. Some current theories of moral cognition usually support a strict separation between these concepts (intuition-emotion-conscious reasoning). But I do not know why this compartmentalized vision must be always the case. I can imagine many examples of *emotions* that include an *intuitive* and *conscious* content at the same time.

The central ethical problem of this compartmentalized view of moral cognition is that if there is a moral module for producing moral evaluations, its absence or its impairment can serve as justification for the dismantling and subsequent denial of the concepts of moral, legal, and social *responsibility*. The problematic issue here is that it is possible to use the abstract idea of a moral module to deny moral responsibility.

If innate morality is a singular sub-set, then we cannot reclaim the moral and legal responsibility for wrongdoing, because moral and legal responsibility depends on the idea of a general set, not of a singular subset. In other words, the arm does not voluntarily commit a crime, but *the entire individual person*. It is absurd to think of a judge who condemns the ventromedial prefrontal cortex to be responsible for committing a crime. Moral and legal responsibility rests entirely on the idea that a rational and moral decision cannot be a *part*-specific but applies to the entire person. Otherwise, if the *specific part* in charge of moral responsibility disappears, the concepts of moral guilt and legal responsibility evaporate as well.

Another related *juridical problem* is that moral actions have a permanent meaning: a crime is always a crime, even after having been committed many years ago. By contrast, moral modularity entails that modular functions can be bypassed completely and even disappear, in this case taking with them the mechanism responsible for the moral judgment. Moral and legal responsibility cannot be linked in any sense to a specific cerebral organ or module.

4. 3. *Philosophical problems: The argument of infinite modular regression.*

The idea that the "moral sense" is a Fodorian module is highly problematic from its very inception. If it is true that the alleged moral module has its own bank of perceptual data, we can also imagine that it has its own database of memory linked to the organism's moral decisions and deeds, a possibility consistent with the features of any vertical faculties.

That being said, we can imagine a person who has experienced some delimited loss of a particular segment of memory charged with moral content, because of some psychological trauma that he/she suffered in the past. This does in fact occur through a common dissociative process, well-known in many cases of post-traumatic disorder (labeled as "selective" and "localized" amnesias).

The question is: Within the same *moral* module, does the loss of certain specific parts of the moral memory imply that the overall database of moral memory has also been affected? This may occur only if the lost segment of the moral memory is not by itself a specific mental module. If this lost segment is a non-modular structure, thus the entire database of moral memory would be equally affected by the trauma. But, let me ask: How many subsets can fit within a single subset? Is there any rule delimiting the possible number of subsets inside a particular subset?

Further, we may ask: Is the specific and distinct segment affected by the traumatic event (and which has been apparently "lost" to consciousness) itself a mental module? Is it encapsulated? Does it have its own database of moral memory? If the segment affected by trauma has its own bank of mnemonic data, which is encapsulated and attached to some kind of neural network, then it is probably a type of Fodorian module.

Finally, how many modules should exist within a module in order to ensure its correct functioning? This issue has no obvious solution. How many other hypothetical modules must exist within a module to effectively address these kinds of internal problems? The problematic of modular faculties is that we need to postulate more and more of them as a requirement for solving simple

and practical problems within a single module. Straightaway, the theory of massive modularity of mind confines us to accepting some raw version of a mental homunculus, and consequently to an infinite series of regressive paradoxes.

Consider the following questions: Who or what controls the rules of the first module? Is there another module inserted into the first? How many databases can be there? Is there a sort of universal grammar within the module? And then, who can control the controller of the first rules? What is the conclusion to such regressive chain? How many universal grammars are needed if the first grammar just fails? In this vein, who or what then defines and constrains the freedom of action of the universal constraints?

By using the logic of a massive modularity of mind there is no way to escape from the infinite regression. There must be an *endpoint* beyond which it simply does not make any sense to postulate more and more organs or modules. Inside the general structure of the mind/brain system there could be mental faculties which are inherently not modular, but distributed and with massively processing, performing a set of coordinated continuous computations throughout different parts of the brain/body system. I surmise that the moral sense has a kind of "infinite sameness" (Damasio, 2011), a continuous mental disposition which, although fundamentally unconscious, can be distributed across other different cognitive domains and levels, like the phenomenal consciousness and the self-consciousness.

5. Where is the burden of proof of the moral "organ"?

According to Marc Hauser, the *specialization*, *encapsulation*, and *automaticity* of *unconscious* moral judgments is the clearest evidence we have on the possible existence of a moral organ:

> "I do believe that we will find circuits that are specialized for handling morally relevant actions and their consequences. Part of this is already moving as we find deficits that impose rather specific consequences for handling moral material. The ventromedial patients that I worked on with Damasio and my students showed that their deficit was very narrowly focused on a particular class of moral issues, not social issues in general. This is a piece of the story on specialization.
>
> Second, part of the modularity issue comes from encapsulation, and the fact that when we make certain kinds of judgments, they are not available to us. They operate automatically

and unconsciously, two signatures of a module. Third is the fact that the operations that underpin moral decisions are different from those that underling other social decisions. Is this a clean distinction? Not yet. So, these are the empirical and theoretical reasons that led me to consider the notion of morality as a module."[4]

But this line of reasoning is misleading for several reasons. Hauser and Mikhail have lumped together concepts as different as genetic determinism, neural specificity, unconscious content, encapsulation, and automaticity. The confusion can be tremendous because these concepts involve many different things in many various scenarios and are highly dependent upon their contexts. The concept of "encapsulation" is often confused with the idea of unconscious mental processes. However, the two concepts are quite different from a theoretical and practical standpoint:

1. In reality, there are many mental processes which are unconscious but cannot be encapsulated because they are continuously exposed to cultural influence and environmental variation. For example, it is the case of the adherence to social and cultural taboos which can be modified over time (See the example of "sacred values" studied by Scott Atran, 2007).

2. There are mental processes that are encapsulated but which are not strictly dependent of a single perceptual module. This is the case with neural and ontological processes avoiding the illusory conjunction of features of different objects.

3. There are non-modular mental processes that can do the same kind of tasks as modular cognitive systems, as with the classical Fodor's example of sentence completion (Fodor, 1983).

4. There are cognitive processes which are neither encapsulated nor modular, but which could be partially unconscious, as with certain contents of long-term memory.

5. There are cerebral/mental processes that are at the same time unconscious, automatic, and encapsulated, but nonetheless are not reduced to a single module. These include different types of complex perceptual judgments related to the "problem-binding," whereby the singular features of an object (or being) are processed in separate areas of the brain.

[4] Personal communication to me from Marc Hauser sent via email on May 31, 2014.

In short, the cognitive judgment is not necessarily modular. The same applies to moral judgment, which is a class of cognitive judgment. Categories such as autonomy, automaticity, encapsulation, unconsciousness, neural and domain specificity, which define the concept of *vertical* cognitive systems, can hardly fit altogether when describing the neuronal and cerebral basis of the moral capacity. It is necessary to make conceptual distinctions for terms such as unconscious, automatic, and encapsulated, which are not interchangeable – as moral grammar proponents seem to suggest – but separate features of mental processes. An attempt to adapt moral intuition to the concept of modularity could become a sort of Sisyphus' task. Such an undertaking can be quite problematic because all these subsets (features) cannot belong to the same logical set (disposition).

Regarding the neurological features of the ventromedial prefrontal cortex (VMPFC), the hypothesis of moral modularity remains just as confusing, and appears more complicated. This "region" of the brain, which according Hauser appears to be the best candidate for filling the forms of a moral module, actually serves many other functions that are not strictly moral. For instance, it is involved in:

a. Triggering personal and social decision-making, like planning the workday, as well as in some difficulties in "choosing" friends, partners, and activities (Bechara and Damasio, 2005),

b. Knowledge pertinent to the situation, general intellectual compromise, language comprehension or expression, working memory, and attention (Anderson et al, 1999),

c. Representing social and emotional structured events that guide the perception and execution of goal-oriented activities (Moll, 2005),

d. Associative learning, evaluation of behavioral contingencies, and some abilities in interpersonal behavior (Moll and de Oliveira Souza, 2007),

e. Stimulus-outcome processing, or the ability to represent particular rewards and punishments (Blair and Fowler, 2008),

f. Perspective-taking, self-processing and monitoring individuals' internal states and motivations (Forbes and Grafman, 2010),

g. Inferring a person's psychological state by interpreting the directionality and expression of

their eyes (Baron-Cohen et al, 2001).

Indeed, it is a long and perhaps endless list of mental capacities and particular tasks not necessarily related to morality. The fact is that the VMPFC performs other functions not directly focused on the production of value and moral judgments. In any case, it is not a distinct and highly specialized area of the brain devoted exclusively to the generation of moral "evaluations" guided by unconscious principles. *The human brain does not have a specific and delimited mental module specialized and dedicated solely to producing moral evaluations or moral judgments*. The neuroscientists Antonio and Hanna Damasio have pointed out that the cerebral regions involved in moral judgments are also involved in decisions that do not imply moral norms:

> "These regions are also involved in the processing of the emotions, and in particular social emotions, in general decision-making, and in social decision-making. They overlap within the prefrontal cortex. We are suggesting, then, that the moral brain arises in systems made up of many other component sites, in the prefrontal cortex and elsewhere in the brain, which interlock in the prefrontal region" (Damasio, Antonio; Damasio, Hanna; 2014: 292).

From the point of view of the philosopher Mark Johnson:

> "The partial list of capacities that Hauser regards as requisite for moral judgment cannot be usefully localized to any unique, or even distinct, set of functional neural assemblies or regions of the brain. As any neuroscientist will confirm, the massively parallel processes of ordinary human cognition and feeling do not form anything like a distinct set of faculties or organs. The rule is not exclusively modularity, but rather interconnection and re-entrant circuits among multiple brain areas. What current neuroscience evidence argues for is a combination of modularity and widespread integration of neuronal assemblies." (Johnson, 2014: 149).

To summarize, we can consider the innate sense of justice to be non-substantiated in an organ regardless of whether the "organ" has a single location, or a series of location networks. An organ performs specific tasks through defined neuronal structures; has functional autonomy and self-sufficiency; it can be detached from the body in some cases; and at least theoretically it could live in an artificial cube. None of that is possible with the sense of justice, an intrinsic general characteristic of human perception and cognition.

6. The sense of justice as a general disposition and not a mental organ.

From the criticism I have made of the UMG program, we can infer two fundamental features of the human sense of justice.

A. The sense of justice is a general mental disposition.

For a "general mental disposition," I mean two things:

1. It is a fundamental power with a global and generic application; therefore, as I have suggested early on, the concept of *moral causation* requires the rationale of a domain-general capacity of mind (there is no detachment between moral intuition and the cognitive/emotional systems).

2. It is a perceptual and cognitive mechanism which holds, at least, two main formal conditions *at the same time*:

    2.1 It has a sensory and perceptual trajectory, it cannot be completely encapsulated, it is not locally specified and cannot be associated with a concrete and well-defined neuroanatomical loci, or domain specificity. The concept of "modularity" does not apply to it, actually it is inter-and-supra modular (See Casebeer & Churchland, 2003; Verplaetse et al, 2009; Pascual et al, 2013; James, 2014).

    2.2 It can be considered as a global ability or intelligence, where "global" means that it is a common foundation for the relationship between different cognitive abilities, as the correspondence between the inner sense of self, the concept of personal agency, the executive function, the will, among others (Gardner, 1999; Moran and Gardner, 2007; James, 2014). Probably it can perform tasks of a central system in which information from the different sensory systems is integrated and codified.

In his work "Intelligence Reframed," psychologist Howard Gardner has pointed out that "Might it not make more sense to speak of a general "philosophical intelligence," and not disaggregate it by trying to pinpoint the spiritual, the transcendental, the emotional, the moral, the cosmic, and the religious?"(Gardner, 1999: 76).

Howard Gardner seemed to conceptualize this "philosophical-existential" realm as some kind of product of the individual's sense of self, which in turn is based upon two computational systems,

the *interpersonal* and the *intrapersonal* intelligences. At the same time, Gardner suggested that this existential intelligence "transcends perception," which means that it may be some kind of cognitive meta-level, above the stratum of different sensory systems. Therefore, moral-existential intelligence could be something like a meta-intelligence, or a kind of second level intelligence. Following this line of reasoning it is possible to infer the implication of the pre-propositional set of moral patterns in three different levels of mental/cerebral mechanisms:

1. The sensory systems, and the triggering of moral emotions, moral intuitions, and moral evaluations in general,

2. A given set of intelligences (which could be understood as computational systems); and

3. A global meta-intelligence, very much like the sense of moral agency, character, personality, and the executive function.

B. The sense of justice has selective encapsulation for only some of its sensorial functions.

The moral sense or the "sense of justice" could be a distributed mental disposition with domain-general functions, exposed to some environmental factors, i.e., it can be inhibited -as Krishna proposed to Arjuna in the preamble of the "Bhagavad Gita"- but it cannot be removed or destroyed, and with some specific functions which might be "protected" from the external world, *without* total encapsulation. It cannot be separated from the cognitive system, brain damage and psychopathic cases considered apart.

Partial encapsulation without modularity means that certain basic sensorial operations possess some delimited functions which are impervious to external information, but always within a general, non-encapsulated, and distributed way of functioning. It is a *selective* encapsulation of delimited basic operations inside a general capacity which cannot be encapsulated. This implies that there are certain aspects of moral perception which culture cannot alter or modify; a crucial point with which I completely agree, although without agreeing with the hypothesis of the moral sense's autonomy from deliberative reasoning and emotion.

Then we have at least two core characteristics of what the sense of justice could be from a structural and functional perspective:

1. It could have a *relative*, *partial*, *selective*, and *non-absolute* encapsulation of certain

contents from some external pressures or demands, in order to ensure *veridicality* of basic sensory judgments, rather than perceiving what is wished or what has been imposed.

2. It has a non-modular character, or a *horizontal* cognitive organization, exactly like higher-order tasks as thinking. It is a *distributed* and *extended* mental mechanism, interfacing between both vertical faculties (modules), and higher cognitive capacities (systems of symbolic representations, thought, problem-solving, and cultural beliefs).

7. The moral sense behind conscious moral reasoning.

The moral sense unfolds as a continuum of meaning through two concatenated phases:

1. *Unconscious moral knowledge*: This is the source of *intuitive* moral reasoning, which is reasoning from unconscious premises that has conscious conclusions, following the classic Johnson-Laird's (2006) idea.

2. *Implicit moral knowledge*: Implicit patterns and assumptions behind the processes of conscious moral reasoning (which is reasoning from conscious premises that leads to conscious conclusions).

The *implicit moral knowledge* includes elements of moral intuition within the logical structure of conscious moral reasoning. It is the moral sense translated into the format of a propositional code. Its function is to transmit implicit presumptions within deliberative argumentation. For instance, it serves to convey cognitive mechanisms like:

1) *Contextual implications*. These expose values directly deducted from a specific context. These values are moral meanings that tacitly apply within a context where not everything can be put into words.

2) *Moral assumptions*. These are implicit assertions within the statements that remain unchanged in all cases. For example, we know that certain heinous actions, such as torture, are immoral in all cases, regardless of whether some people try to "justify" their use in very extreme cases. Nonetheless, argumentative deliberation and conscious/propositional reasoning *cannot* change one iota of the immoral character of torture.

3) *Presuppositions*. These refer to non-linguistic and unconscious presumptions shared by people even in cases of complete and explicit awareness.

4) *Entailments*. These refer to the relationship of logical consequence between two different values necessarily related to each other.

The concept of implicit-tacit knowledge has been well described by anthropologist Dan Sperber. According to Sperber:

"The most interesting cultural knowledge is tacit knowledge - that is to say, that which is not made explicit. When those who have this knowledge are able to make it explicit, I shall speak of implicit knowledge. When they are incapable of this, I shall speak of unconscious knowledge. For the study of tacit knowledge the basic data are intuitions, they are the judgments that the members of a cultural group systematically express without elaborating on the underlying argument. For example, the members of a society agree that a given phrase is insulting in a given situation, but they are incapable of defining entirely the criteria on which their judgment rests. Explicit cultural knowledge makes sense only in as much as it is the object of an underlying tacit knowledge." (Sperber, 1975: X).

It is not correct to assume that moral intuition is an area that can be separated from the processing of conscious moral reasoning. The idea of separateness is equally incoherent when applied to moral emotions. Moral sensibility, intuitions and deontic evaluations are not based on independent systems operating in parallel. On the contrary, they are the same continuous moral system using different operational strategies. Pigeonholes exist in language and words, but not in the continuous flow of cognition.

8. Final Comment: **The cognitive system is a normative/moral system.**

"It makes good sense to talk about a moral brain even if the brain has no moral centers as such but rather systems whose concerted operations yield moral behaviors"

Antonio and Hanna Damasio, 2014: 288.

The term "sense of justice" is an abstract concept which is intended to describe a psychological capacity for generating a moral picture of reality, probably based on unconscious patterns under the premises of necessity, duty, impartiality, and universality. It is a *non-modular* and *non-grammatical mental disposition* for instinctively perceiving and interpreting experience in moral terms, with a domain-general structure that overlap with different possible neural networks.

The sense of justice is succinctly the cognitive basis of the human *moral capacity*. It is not programming code; it cannot be encoded or decoded; it is not a grammar or a meta-grammar; it is not a chip; and it is not a mental organ. It can neither be a digital device exhibiting syntactical rules and symbolic notations, nor a completely encapsulated perceptive and cognitive system. The moral sense is not shaped by discrete representational entities, but probably by continuous internal models of action, whose rules are generated regardless of linguistic conventions.

It is highly probable that beyond a very few inferred traits (such as semi-encapsulation of sensory processes, non-modularity, domain-generality, continuity, pre-grammaticality, persistence and constancy of form, analog states and functions, pre-propositional knowledge, unconscious and implicit assumptions, nonverbal concepts, global causality), we can never have an overall and detailed picture of the human capacity of morality.

There are important aspects of the universal moral grammar that Hauser and Mikhail seem to have overlooked. If the sense of justice is really a universal grammar, then it is a digital code employing a notational system, informed by *discontinuous* changes. Therefore, it cannot be the mental basis for attaining *moral continuity*. A digital code is essentially a mechanism of *on* versus *off*, directed by the famous Rule of All-or-None (a discrete property). It would be something disastrous if the neuronal basis of any moral analysis were really a mental mechanism based on discrete gaps which are devoid of content.

As Noam Chomsky himself has noted, the language faculty is based upon a digital device which is a language-like mechanism, or a system of *discrete* infinity also called *Merge* (Chomsky, 2005: 11-12). A generative grammar is a discrete combinatorial system, in which: “a finite number of discrete elements (in this case, words) are sampled, combined, and permuted to create larger structures (in this case, sentences) with properties that are quite distinct from those of their elements” (Pinker; 1994: 84).

The *discrete* combinatorial system called “grammar” is *digital* because their infinity “is achieved by rearranging discrete elements in particular orders and combinations, not by varying some signal along a continuum like the mercury in a thermometer” (Pinker; 1994: 334). In the same vein, Marc Hauser, Noam Chomsky and W. Tecumseh Fitch have pointed out that: “The core property of discrete infinity is intuitively familiar to every language user. Sentences are built up of discrete units: There are 6-word sentences and 7-word sentences, but no 6.5-word sentences.” (Hauser, Chomsky, & Fitch; 2002: 1571).

I think that at this point there is a serious problem if the same logic is applied to the moral sense. It is true that there cannot be 6.5-word sentences. However, there are moral actions which are neither completely "good" (bit 6) or absolutely "bad" (bit 7), but almost good, or almost correct or incorrect (6.3 or 6.5, 6.8.1, etc.). The unconscious normative principles have varying and diverse degrees, nuances, and tones. A *discrete* semiotic system is unable to describe the subtleties of the moral sense. As Freeman Dyson stated: "The human personality may very well not be expressible in terms of anything digital" (Dyson, Video in Edge.org; 2001).

Imagine for a moment that the innate sense of morality is a genuinely discrete (digital) system based on discontinuous changes as it is conceived by the proponents of universal moral grammar. In other words, just suppose that the moral system can be completely absent in the interim between two given signs or symbols. It could be very worrying in social, ethical, and legal terms.

For instance: What happens when the *discrete* system is *off*? Does the moral sense leave? Does moral responsibility also disappear? Moral agency sometimes exists, but does it sometimes vanish completely? And what happens when moral agency fades and disappears? Any association of an intuitive morality with a *discrete notational code* could yield very dangerous and disturbing consequences. Could you imagine a scenario whereby a criminal tries to justify his behavior using the following fallacious argument: "I have committed the crime because at that time my moral grammar was in its *disconnected* mode"?

I think we are stepping into a land where even angels fear to tread.

According to Hauser and his colleagues, the moral sense, being an autonomous organ of computation, is remarkably isolated from emotions and from any process of deliberative and conscious reasoning (Hauser et al; 2008: 271), and it is even independent of the factors that guide our moral behavior. Apparently, psychopaths preserved their moral knowledge although emotion and behavior has been compromised. Therefore, the distinctively moral organ "operates independently of the deliberative and emotional mechanisms that play a central role in much of our more reflective and evaluative lives" (Banerjee, Huebner, & Hauser; 2010: 9).

But if psychopaths really have disconnected the emotional and reflective processes from their moral knowledge, from this hypothetical issue does not automatically follow that our innate moral sense is detached from moral agency and from moral emotionality. If this theory of the "independence of the moral grammar from the cognitive and emotional systems" were effectively true, we would have to accept the strange idea that there is a sort of "moral self," separated from a "cognitive self," and

from an “emotional self.” This notion is completely misguided.

The hypothesis of the *autonomy* of the moral sense from the cognitive system implies the acquittal of the "cognitive self" of all its moral and legal responsibility since in this case cognition and morality do not necessarily presuppose each other. It implies that if the cognitive self is separated from the moral “organ” then it would be feasible to have zombies instead of people. Even more nonsensical, this would mean that a person could be a real moral agent without simultaneously being rational and emotionally capable.

What Hauser and Mikhail perhaps do not acknowledge is that the moral sense could be a global competence that simultaneously involves the intuitive self, the emotional self, and the rational self. The three dimensions – moral intuition, ought-feelings, and conscious moral reasoning – are inseparable and indivisible to the extent that the innate sense of justice is *always, continuously, and permanently present* as a mental foundation for these correlated processes.

My position can be summarized in one line: *the moral sense is not autonomous from cognition*, as language capacity (universal grammar) seems to be, in accordance with the famous “autonomy of syntax” principle (Chomsky, 1977; Pinker, 1994; Newmeyer, 1998; Curtiss, 2013).

In fact, there is a “double dissociation between language on the one hand and non-linguistic communication and spatial cognition on the other” (Curtiss; 2013: 75). Vygotsky has expressed the same idea in another way:

“Progress in thought and progress in speech are not parallel. Their two growth curves cross and recross. They may straighten out and run side by side, even merge for a time, but they always diverge again. This applies to both phylogeny and ontogeny. The cases of pathological dissolution and involution of functions, as we shall try to prove later, also indicate that the relation between thought and speech is not an unchangeable one” (Vygotsky, 1986: 68)

Unlike the double dissociation between language and cognition/non-verbal communication, my suggestion is that *the moral sense is inseparable from the cognitive system considered as a whole.* Paraphrasing Max Wertheimer, there are wholes, the behavior of which is not determined by that of their individual elements, but where the part-processes are themselves determined by the intrinsic nature of the whole.

The opposite perspective, specifically, the idea that the moral sense is separable from cognition and emotion, which is the theoretical basis of the universal moral grammar, could immediately imply

the dismantling of the concepts of moral agency, moral responsibility and free will. The category of "morality" rests on the powerful idea of the complete unity between the cognitive system and the sense of justice, or between the cognitive agent and the moral agent.

The linguistic analogy between moral rules and language principles can be a useful tool for explaining moral cognition just in the opposite sense in which it has been used until now.

Contrary to the language faculty, which is strictly grammatical, in the case of the moral faculty the only thing that could be rendered as “grammatical” is the set of all elements which are *not the moral faculty*, i.e., the variables that cannot be innate and genetically prepared.

All the socio-cultural variables of the moral faculty are possibly guided by certain kind of grammatical rules. Instead, all the innate and instinctive variables of the moral faculty are pre-grammatical or analog patterns for regulating moral judgments. Therefore, I am suggesting that the correct way to interpret the Chomsky/Rawls analogy between language and morality is exactly the opposite of the hypothesis of an innate moral “organ” informed by a “universal moral grammar” because the sense of justice is informed by non verbalized operational concepts for which there is no separation between emotion, intuition and conscious inference.

As a conclusion, I contend that the sense of justice is never offline. Its main features are moral *permanence* and moral *continuity*. The innate moral sense is a *general system of continuity* or a system in which one variable is always continuous on the other subsequent. The moral sense can neither be a digital module obeying language-like rules, nor a discontinuous grammatical device. For logical and practical necessity, the sense of justice should be a mental *continuum* of states, models, patterns, premises, functions and meanings.

Respectfully yours,

Ariel James

Madrid, March 10, 2015.

REFERENCES

Anderson, S.W., Bechara, A., Damasio, H., Tranel, D., Damasio, A.R. (1999). Impairment of social and moral behavior related to early damage in the human prefrontal cortex. *Nature Neurosci*. 2 (11), 1032–1037.

Atran, S.; Axelrod, R.; Davis, R. (2007). Sacred Barriers to Conflict Resolution. *Science* 317:1039-1040.

Banerjee, K.; Huebner, B.; Hauser, M. (2010). Intuitive moral judgments are robust across variation in gender, education, politics, and religion: A large-scale web-based study. *Journal of Cognition and Culture 10*, 253-281.

Baron-Cohen S., Wheelwright S., Hill J., Raste Y., Plumb I. (2001). The "Reading the Mind in the Eyes" test revised version: a study with normal adults, and adults with Asperger syndrome or high-functioning autism. *J. Child Psychol. Psychiatry* 42:241–51.

Bechara, A.; Damasio, A. R. (2005). The somatic marker hypothesis: A neural theory of economic decision. *Games and Economic Behavior* 52, 336–372.

Blair, J.; Fowler, K. (2008). Moral emotions and moral reasoning from the perspective of Affective Cognitive Neuroscience: A selective review. *European Journal of Developmental Science* [EJDS].Vol. 2, No. 3, 303–323.

Casebeer, W. D.; Churchland, P. S. (2003). The Neural Mechanisms of Moral Cognition: A Multiple-Aspect Approach to Moral Judgment and Decision-Making. Biology and Philosophy, 18: 169-194.

Chomsky, N. (1977). *Essays on Form and Interpretation*. New York: Elsevier North-Holland.

Chomsky, N. (1980). *Rules and Representations*. New York: Columbia University Press.

Chomsky, N. (1983). Some conceptual shifts in the study of language. In Leigh S. Cauman, Isaac Levi, Charles D. Parsons and Robert Schwartz (eds.) *How many questions? Essays in honor of Sidney Morgenbesser*, 154-169. Indianapolis, Indiana: Hackett Publishing.

Chomsky, N. (1986). *Knowledge of Language: Its Nature, Origin, and Use*. New York: Praeger Publishers.

Chomsky, N. (1995). *The Minimalist Program*. Cambridge: The MIT Press.

Chomsky, N. (2004). *The Generative Enterprise Revisited: Discussions with Riny Huybregts, Henk van Riemsdijk, Naoki Fukui, and Mihoko Zushi*. The Hague: Mouton de Gruyter.

Chomsky, N. (2005). Three factors in language design. *Linguistic Inquiry* 36 (1): 1-22.

Chomsky, N. (2007a). Language and Responsibility. *On Language: Chomsky's Classic Works*. New York: The New Press.

Chomsky, N. (2007b). Reflections on Language. *On Language: Chomsky's Classic Works.* New York: The New Press.

Curtiss, S. (2013). Revisiting modularity: Using language as a window to the mind. In M. Piatelli-Palmarini and R.C. Berwick (Eds.) *Rich Languages from Poor Inputs*. Oxford: Oxford University Press, 68-90.

Damasio, A. (2005). *Descartes' Error: Emotion, Reason, and the Human Brain*. New York: Penguin.

Damasio, A. (2011). *Self comes to Mind: Constructing the Conscious Brain*. New York: Pantheon Books.

Damasio, A.; Damasio, H. (2014). Is there a moral brain?. In M. L. Kornhaber and E. Winner (Eds.), *Mind, Work, and Life: A Festchrift on the occasion of Howard Gardner's 70 th Birthday* (Vol. 1). Cambridge, MA: The Offices of Howard Gardner.

Dupoux, E.; Jacob, P. (2007). Universal moral grammar: a critical appraisal. *Trends in Cognitive Sciences*. Vol. 11. N. 9.

Dyson, F. (2001). Is Life Analog or Digital?. *Edge*, Conversation: Technology. http://edge.org/conversation/is-life-analog-or-digital

Eco, U. (1997). *The search for the Perfect Language (The Making of Europe)*. New Jersey: Wiley-Blackwell.

Ekman, P. (1992). An Argument for Basic Emotions. *Cognition and Emotion*, 6 (3/4), 169-200.

Fodor, J. (1983). *The modularity of mind*. Cambridge, MA: MIT Press.

Fodor, J. (1985). Précis of The Modularity of Mind. *The Behavioral and Brain Sciences*, 8, 1-42.

Forbes, Ch. E.; Grafman, J. (2010). The role of the human prefrontal cortex in social cognition and moral judgement. *Annual Review of Neuroscience*, 33:299–324.

Gardner, H. (1999). *Intelligence Reframed: Multiple Intelligences for the 21st Century*. New York: Basic Books.

Greene, J. D. (2005). Cognitive Neuroscience and the structure of the Moral Mind. In *The Innate Mind: Structure and Contents*, S. Laurence, P. Carruthers,. and S. Stich. (Eds.), New York: Oxford University Press.

Hall, E. T. (1974). *Handbook for Proxemic Research*. Washington: Society for the Anthropology of Visual Communication.

Hauser, M. (2006). *Moral Minds. How nature designed our universal sense of right and wrong*. New York: Harper Collins Publishers.

Hauser, M.; Chomsky, N.; Fitch, W. T. (2002). The Faculty of Language: What is it, Who has it, and How did it evolve?. *Science*, Vol. 298, 1569-1579.

Hauser, M.; Young, L.; Cushman, F. (2008). Reviving Rawls' Linguistic Analogy: Operative Principles and the Causal Structure of Moral Actions. In Walter Sinnott-Armstrong (Ed.): *Moral Psychology*, Vol. 2, Cambridge: MIT Press, 247-326.

Hauser, M.; Tonnaer, F.; Cima, M. (2009). When Moral Intuitions are Immune to the Law: A Case Study of Euthanasia and the Act-Omission Distinction in the Netherlands. *Journal of Cognition and Culture 9*, 149-169.

Havenel, J. (2008). Peirce's Clarifications of Continuity. *Transactions of the Charles S. Peirce Society: A Quarterly Journal in American Philosophy*. Vol. 44, N. 1, 86-133.

James, A. (2014). The meaning of Moral Faculty: Why we cannot have a moral module. *I Seminar of IMEDES*. Madrid: Autonomous University of Madrid.

Johnson, M. (2014). *Morality for humans: Ethical understanding from the perspective of Cognitive Science*. Chicago: Chicago University Press.

Johnson-Laird, P. (2006). *How we reason*. New York: Oxford University Press.

Katz, J. J.; Postal, P. M. (1991). Realism vs. conceptualism in linguistics. *Linguistics and Philosophy* 14: 515-554.

Kohlberg, L. (1981). *Essays on Moral Development, Vol. I: The Philosophy of Moral Development*. San Francisco, CA: Harper & Row.

Langendoen, D. T.; Postal, P. M. (1984). *The vastness of natural languages.* Oxford, England: Basil Blackwell.

Lenin, V. I. (1947). *Materialism and Empirio-Criticism: Critical comments on a reactionary philosophy*. Moscow: Foreign Languages Publishing House.

Lenneberg, E. H. (1969). On explaining language. *Science*, Vol. 164, No. 3880, 635-643.

Leontiev, A. N. (1967). O nekotorykh perspektivnykh problemakh sovetskoy psikhologii [On some perspective problems in Soviet psychology]. *Voprosy psikhologii* [Issues in Psychology], N. 6, 7–22.

Lotman, Y. (2005). On the semiosphere. *Sign Systems Studies*, 33(1): 205–229.

Lotman, Y. (2009). *Culture and Explosion: Semiotics, Communication and Cognition 1*. New York: DE Gruyter Mouton.

Mehrabian, A. (1981). *Silent Messages: Implicit Communication of Emotions and Attitudes* (2nd ed.). Belmont, CA: Wadsworth.

Mercier, H.; Sperber, D. (2009). Intuitive and reflective inferences. In Evans, J. St. B. T. and Frankish, K. (Ed.) *In two minds: Dual processes and beyond*. Oxford University Press.

Mikhail, J. M. (2000). Rawls' linguistic analogy: A study of the 'generative grammar' model of moral theory described by John Rawls in 'A Theory of Justice.' Doctoral Dissertation, Department of Philosophy, Cornell University.

Mikhail, J. M. (2002). Law, science, and morality: a review of Richard Posner´s "The problematic of Moral and Legal Theory". *Stanford Law Review*. N. 54. Pp. 1.057-1.127.

Mikhail, J M. (2009). Moral Grammar and Intuitive Jurisprudence: A Formal Model of Unconscious Moral and Legal Knowledge. *Psychology of Learning and Motivation*, Volume 50, 27-100.

Mikhail, J. M. (2011). *Elements of Moral Cognition: Rawls' Linguistic Analogy and the Cognitive Science of Moral and Legal Judgment*. New York: Cambridge University Press.

Moll, J.; de Oliveira Souza, R. (2007). Moral judgments, emotions and the utilitarian brain. *Trends in Cognitive Sciences*, Vol. 11, N. 8.

Moll, J. (2005). Opinion: The neural basis of human moral cognition. *Nat. Rev. Neurosci.* 6, 799–809.

Moran, S.; Gardner, H. (2007). Hill, Skill, and Will: Executive Function from a Multiple-Intelligences Perspective. *Executive Function in Education: From Theory to Practice*, edited by Lynn Meltzer, New York: The Guilford Press, 19-38.

Newmeyer, F. J. (1998). *Language form and language function*. Cambridge, MA: MIT Press.

Nucci, L.; Turiel, E.. (2009). Capturing the complexity of moral development and education. In *Mind, Brain and Education*, V.3, N.3.

Ockham, W. (1974). *Summa Logicae*, translated and introduced by Michael J. Loux, Notre Dame: University of Notre Dame Press.

Paivio, A. (2013). *Mind and Its Evolution: A Dual Coding Theoretical Approach*. New York: Psychology Press.

Pascual, L.; Rodrigues, P.; Gallardo-Pujol, D. (2013). How does morality work in the Brain?: A functional and structural perspective of moral behavior. *Frontiers in Integrative Neuroscience*. 7: 65.

Pinker, S. (1994). *The Language Instinct: The New Science of Language and Mind*. New York: Penguin Books.

Pinker, S. (1997). *How the mind works*. New York: Penguin Books.

Postal, P. M. (2009). The incoherence of Chomsky's biolinguistic ontology. *Biolinguistics* 3: 104-123.

Postal, P. M. (2012). Chomsky's Foundational Admission. http://ling.auf.net/lingbuzz/001569

Rosenberg, R.; Kosslyn, S. (2011). *Abnormal Psychology*. New York: Worth Publishers.

Russell, B. (1938). *The Principles of Mathematics*. New York: W. W. Norton & Company.

Sperber, D. (1975). *Rethinking Symbolism*. Cambridge: Cambridge University Press.

Tikhomirov, O. K. (1983). Informal Heuristic Principles of Motivation and Emotion in Human Problem Solving. *Methods of Heuristics*, edited by R. Groner, M. Groner and W. Bischof, New Jersey: Lawrence Erlbaum Publishers, 153-170.

Tikhomirov, O. K. (1988). *The Psychology of Thinking*. Moscow: Progress.

Turiel, E. (1983). *The Development of Social Knowledge: Morality and Convention*. Cambridge University Press.

Turiel, E. (2008). The development of children's orientations towards moral, social, and personal orders: More than a sequence in development. *Human Development*, 51, 21-39.

Van Heijenoort, J. (1967). *From Frege to Gödel: A Source Book in Mathematical Logic, 1879-1931*. Cambridge, Massachusetts: Harvard University Press.

Verplaetse, J.; De Schrijver, J.; Vanneste, S.; Braeckman, J (Eds). (2009). *The Moral Brain: Essays on the Evolutionary and Neuroscientific Aspects of Morality*. New York: Springer.

Vygotsky, L. S. (1986) [1934]. *Thought and language*. Cambridge, Massachusetts: The MIT Press.

Wilson, D; Sperber, D.(2004). Relevance Theory. In Horn, L.R. & Ward, G. (eds.): *The Handbook of Pragmatics*. Oxford: Blackwell, 607-632.