

## Enculturation and the Degenerative Principle

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The model of enculturation I propose operates with a claim that individuals are intrinsically idiosyncratic. Support for individual idiosyncrasy begins at the level of neurons and goes on to encompass inter-individual phenomena. I draw on cognitive and social theory to support my position. In particular I consider the work of neurologist Gerald Edelman (2004) and his "theory of neuronal group selection" (TNGS) and Sahlins (2000) and his theory of culture. The model of culture presented here is designed to account for the phenomenon of individual idiosyncrasy. For this reason, culture is necessarily presented as a process -- and I am calling the process "enculturation." The cognitive phenomena that allow language and signs to be shared between people are, within each individual, constantly changing via idiosyncratic neuronal firing patterns and via the incorporation of new experience and altered memory. The concept of memory is discussed in relation the model of enculturation. The durkheimian position, that social scientists should focus on collective representations and avoid making social claims based on the operation of individual minds (Durkheim, 1915:15-16; 1952:213) is given consideration. Cognitive research is introduced to suggest links between experience and memory (such as Edelman's concept of the "remembered present") and to establish the function of "the degenerative principle". The work of Libet (2004) is utilized to suggest that conscious awarenesses are preceded by unconscious processes (i.e., processes outside reflective consciousness), and as such we are forced to conclude that unconscious processes initiate our conscious experiences. This raises questions of agency and free will. It is suggested that the process of cognitive association leads to novelty as a result of the instability of recurrent memory and the intrinsic idiosyncrasy of neurons. Enculturation then, can be seen as the activity of association as augmented by intrinsically idiosyncratic phenomena. Parallels are drawn between Bakhtin's dialogic principle and the enculturation model. The concluding section suggests avenues for the future.

**Key words:** enculturation, memory process, human brain, individual

## 1. Introduction: The Problem of Culture and the Individual

When social-cultural anthropologists are faced with theory that homogenizes human behavioural motives they may challenge the issue by pointing to the diversity of behavioural motives found in ethnographic studies. Mary Douglas calls this “the effects of Bongo-Bongoism.” She points out that “when a generalization is tentatively advanced, it is rejected out of court by any fieldworkers who can say “this is all very well, but it doesn’t apply to the Bongo-Bongo” (1970; cited from the 3rd edition, 1996:xxxvii). Whilst this immediately raises questions about how two different anthropologists interpret two different social environments, it also provides a potentially powerful check on claims of behavioural principles developed with limited sets of data. Harvey Whitehouse, with his on-going interest in cognition, has identified a trend, similar to Douglas, whereby ethnographers reject claims of universal dispositions or cognitions given the diversity and complexity they often encounter during fieldwork. As Whitehouse puts it:

*Such microscopic studies [he speaks here of ethnographic and qualitative research] of human sociality reveal the extreme complexity of the processes by which behaviour and meaning are generated and transmitted. To most ethnographers, it seems absurd to account for a particular religious belief in terms of universal cognitive dispositions or susceptibilities since it is obvious that the expression of a particular belief is caused much more directly and substantially by other prevalent beliefs, ideas, and cultural 'maps', by complex personal motives, emotions, and intentions (both conscious and unconscious), by political and economic forces and constraints, by discursive conventions and embodied habits, and by a host of other distinctive contextual factors...Thus the anthropological 'instinct' is to mistrust probabilistic notions of partial causality and to seek instead more encompassing, qualitative accounts of social/cultural phenomena, in which what appears to be general turns out to be particular (locally distinctive) after all (Whitehouse, 2001: 207).*

Given such dispositions toward particularism, anthropologists have developed theories of culture which support varying levels of individual idiosyncrasy. Sherry Ortner (1990) provides a rough typology of these theories. On one end of her typology we have the “soft/external posi-

tion” where cultural structures operate in social interaction and “exist as ‘models’ or ‘symbolic resources’ external to actors” and on which actors may draw during social activity. On the far end one finds the “hard/internal position,” al a Bourdieu (1979), “whereby actors acquire a kind of internal programming, which in turn generates their behaviour, or at least the parameters of their behaviour” (Ortner, 1990: 84). Between the extremes we encounter the middle position, the position supported by Ortner: “actors may internalise a schema under certain conditions and thus be constrained by its forms, but under other conditions may re-establish a distance between themselves and the schema” (1990: 84).

Likewise Claude Lévi-Strauss, who is most well known for his particular brand of structural anthropology (in which he asserts the universality of certain modes of human thought) paradoxically also concludes that all the members of the species *Homo sapiens* are so unique that they are logically comparable only as members of different animal or plant species. Social life, he writes:

*...effects a strange transformation in the system, for it encourages each biological individual to develop a personality; and this is a notion no longer recalling specimens within a variety but rather types of varieties or of species...and which could be termed “mono-individual”. What disappears with the death of a personality is a synthesis of ideas and modes of behaviour as exclusive and irreplaceable as the one a floral species develops out of the simple chemical substances common to all species (Lévi-Strauss, 1966: 214).*

Thus some questions come to the fore: can we speak of culture as a supra-individual phenomenon? If so, then how cognitively encompassing is culture? Likewise, what sort of control do individuals exert over their behaviour? I shall approach these questions by presenting a model I call the process of enculturation.

## 2. The Process of Enculturation

The term enculturation has been defined as “the process where the culture that is currently established teaches an individual the accepted norms and values of the culture or society in which the individual lives...Enculturation helps mould a person into an acceptable member of society” (Kottak, 2007). Unlike prior definitions

of enculturation, including the definition above, I am defining the term as a process which modifies the significance of cognitive associations. In my definition of enculturation we are concerned with 1) describing the phenomena that value and signify categorical associations and 2) with understanding how such phenomena may produce different outcomes for every individual. Culture and enculturation are examined as the processes and practices of individuals. Likewise, it would not be appropriate to confuse my definition of enculturation with prior definitions of acculturation or inculcation -- many of which invoke a supra-individual phenomenon called "a culture."

The model of enculturation I propose operates with a claim that individuals are intrinsically idiosyncratic. Support for individual idiosyncrasy begins at the level of neurons and goes on to encompass inter-individual phenomena. I draw on cognitive and social theory to support my position. The work of neurologist Gerald Edelman, in particular his "theory of neuronal group selection" (TNGS), supports my claim of intrinsic idiosyncrasy.<sup>1</sup>

Edelman's theory is of interest to my definition of enculturation because it provides support for individual idiosyncrasy from the cellular level outward. For example, if one were to observe neurons in the brain of another human one would find that no two are exactly the same -- they are all morphologically different (Edelman and Gally, 2001). Comparison of "equivalent" neurons from two different individuals reveals that each has a somewhat different morphology. Even among genetically identical people we find differentiated morphology across so-called "equivalent" neurons (Edelman and Gally, 2001). According to Edelman, when these neurons are used, that is when they "fire" and electric impulses travel between them and jump across synapses, idiosyncrasy remains. For example, if a research subject is repeating the same action, or trying to recall the same memory, the patterns by which his or her neurons fire (to allow such repetition or recall) are never quite the same (Edelman, 2004). Nevertheless, we quite easily share

1 Unlike other cognitive theories which are perhaps more familiar to a social-science readership, such as the work of Jerry Fodor (1983) or Dan Sperber (2001), Edelman's TNGS does not rely on arguments of innateness nor does it make claims for "hardwired" modules. Rather Edelman provides a model of experiential development which can account for the apparent presence of module-like phenomena alongside individual idiosyncrasy. Thus Edelman's theory parallels important social-cultural theory, such as Sahlins (2000), whilst providing additional tools with which to conceptualise individual experience.

ideas, language, and communicate with one another despite the seemingly constant novelty of each and every brain state.

In neurological terms this ability to share is a result of the principle of degeneracy -- a concept which simply says that different structures can yield the same outcome (a core concept of the theory of neuronal group selection). People born without certain parts of their brain can go their entire lives without anyone -- including themselves -- the slightest bit aware that seemingly important structures are missing (Edelman and Gally, 2001). Such people can appear virtually a-symptomatic. Likewise, it is possible to suggest that if two different structures within one brain can arrive at the same outcome then the potential exists for different structures in different brains to produce similar outcomes -- accepting that two different individuals will have led different lives (Edelman, 2004). In social anthropology Marshall Sahlins (2000)<sup>2</sup> arrives at a similar conclusion when he distinguishes "culture-as-constituted" from "culture-as-lived" and parallels these formulations with "sign-in-structure" and "sign-in-action." Sahlins writes, "in structure the sign is fixed by differential relationships to other signs; in action it is variously combined with other signs in implicational relationships" (2000: 287). For Sahlins this divide constitutes what I am calling individual idiosyncrasy. Sahlins says "as every such context by which the sign is substantially defined is unique, so then is every individual's expression of the culture-as-constituted" (2000: 287). Accordingly, Sahlins states "the individual is a social being, but we must never forget that he is an individual social being, with a biography not the same as that of any one else" (2000: 284). In other words, we may very well learn or accept the dictionary definition of a particular word only to find that our brain, with every recall, reiteration, or utterance of the word is altering it or associating it with other signs, memories, and concepts in idiosyncratic ways -- this assertion is in fact the point of my drawing upon neurology.

Imagine a new religious convert -- a former atheist -- who now recalls vividly having felt the presence of the Holy Spirit even during his most steadfast atheist moments. In this case the recalled is also the re-worked and the re-associated. The concepts of degeneracy and intrinsic individual idiosyncrasy constitute my primary use of Edelman's work.

The model of culture presented here is

2 Originally published in Kruskal, W. (ed.) (1982): *The Social Sciences: Their Nature and Uses*. Chicago: University of Chicago Press.

designed to account for the phenomenon of individual idiosyncrasy. For this reason, culture is necessarily presented as a process -- and I am calling the process "enculturation." The degenerative phenomena that allow language and signs to be shared between people are, within each individual, constantly changing via idiosyncratic neuronal firing patterns and via the incorporation of new experience and altered memory. My model of enculturation posits a cognitive associative network within which Sahlins's "implicational relationships" are continuously transformed and thus ultimately influence our moment to moment valuations and significations. Memory, as the basis that will allow for the establishment of any implicational relationship, is thus also transformed with each recall.

### 3. Memory

Although I shall be developing a particular definition of memory as informed by neurology, I do so with reference to the historical and contemporary understanding of memory employed in the social sciences.

Jennifer Cole (2005), whose work I shall draw from liberally, suggests that some social scientists (namely sociologists and anthropologists) have historically followed Durkheim's suggestion when it comes to the study of memory. In particular, Durkheim suggested that social scientists should focus on collective representations and avoid making social claims based on the operation of individual minds (Durkheim, 1915: 15-16; 1952: 213). Maurice Halbwach's 1950 publication *The Collective Memory* (Halbwach, 1980 [1950]) takes up Durkheim's position and argues that memories only exist as long as the groups that sustain them exist (see Cole, 2005: 106). In the 1980's, according to Cole, Halbwach's work was "rediscovered" and social scientists began to write of "popular" memory that challenged official and state narrative. Milan Kundera (1980: 1; cited in Cole, 2005: 106) for instance, observed that "the battle of man against power is the battle of memory against forgetting." This trend of research suggests that national memory, socially and historically, constituted, could leave certain memories silenced or excluded -- perhaps a core perspective for the study of identity politics that was developing in parallel. Thus as anthropologists recognized the "hidden circuits of movement" (Stoler and Strassler, 2000: 8) in which some memories were silenced, it became, as Cole (2005: 106) suggests, the task of the

analyst to ask "by whom, in what context, and for or against whom" is memory invoked. Thus the social sciences have developed tools to examine memory (or resurrect silenced memory) among smaller and more discreetly defined social groups. Psychology too has met this challenge, but proceeded from the individual outward -- from Freud to social psychology.

As such tools have developed, Cole (2005: 109) reminds us that there has been a constant interplay between the role of the social and the role of the individual. Kerwin Klein (2000: 136) points out that when "freed of the constraints of individual psychic states, memory becomes a subject in its own right, free to range back and forth across time, even the most rigorous scholar can speak of the memory of events that happened hundreds of years distant, or to speak of the memory of an ethnic, religious, or racial group." Yet, once the individual is back in, so to speak, we should not ignore the historical work of the social sciences that suggests various ways in which memory is constantly contextualized.<sup>3</sup> We could in fact suggest that biological models of memory ought to be able to sustain the findings present in anthropology and psychology. Drawing on the work of Webb Keane in anthropology and Gerald Edelman in neurology, it is possible to establish such a model.

To begin, I suggest that in so far as our neurology may be said to potentially transform memory (perhaps not always radically) it is possible for my model to parallel Keane's use of Wittgenstein.<sup>4</sup> Keane (2001) draws on Wittgenstein's concept of private language to ask how we might be able to tell that "the next time I have an experience that it's the same as before?" (2001: 603). Keane goes on to suggest that similitude can occur as long as persistent form is present: "something must be identifiable as 'the same' about it, and that something must have a form" (2001: 603). For example, he points out, "any re-

3 Salvatore Cucchiari (1988) for example has observed changing memorial narratives as religious converts re-establish/re-tell their pre-conversion pasts with religious reference and memory. Likewise, the classic anthropological controversy between Margaret Mead and Derek Freeman can be seen to hinge on the recontextualization of memory: Mead's claims about female sexuality in Samoa were later challenged by Freeman (1983) who returned to Samoa and interviewed Mead's original informants (who were then several decades older), many had converted to Christianity and some claimed that they had lied to Mead about their sexual activity. Cucchiari's work however, suggests that a convert's retrospective narrative about their own life may constantly change and take on, for example, more Christian elements/observations.

4 I am quoting Keane as he briefly responds in a scholarly journal to a theoretical article.



ligion that can be shared or persist over even a momentary interlude requires concrete forms, such as texts, clothing, architectural styles, offerings, gestures, credos, and pedagogic strategies" (Keane, 2001: 603). Edelman might point out, in contrast to Keane, that even having an experience -- at least a subjective experience (by which I mean an experience present in reflective consciousness), is already a phenomenon of memory. It is what Edelman (2004) terms the "remembered present," and suggests that any scene constructed in primary consciousness is a process of memory -- not only because there will be a delay in subjective reaction to the world (a phenomenon Benjamin Libet (2004) calls subjective antedating back in time), but also because according to Edelman each individual's past experience is engaged in forming their integrated awareness of every single moment (Edelman, 2004: 8). Thus concrete forms, in so far as they are remembered forms, may not be all that concrete. In fact it may be possible to argue that the appearance of concreteness, in terms of its memorial invocation, is necessarily a function of neurological degeneracy -- the subjective experience of "sameness" (even when supported by concrete forms) must also be mutable to the extent that we can account for, say, instances of religious conversion. Intrinsic idiosyncrasy, present even behind seemingly degenerate occurrences as a function of our neurology, allows for the persistent illusion of concreteness as established by the remembered present.

Certainly, as Keane suggests, "signs must be identifiable when repeated -- a truly unique event, whether stellar explosion or birth of a saviour, remains opaque without some form that allows it even to be recognizable in the first place" (2001: 603). Of course, we should also keep in mind that the identifiability of signs is not stable. Rather, identifiability is subject to change with each reiteration -- a phenomenon that parallels Sahlins's model, in which the mutability of structure is possible with each new event. Keane also allows for this potential by pointing out that there is "no guarantee...that [signs] will remain bound to a certain experience or frame" (2001: 603). Nevertheless, Keane proposes the concepts of "local ideologies" and "representational economies" as super-individual phenomena. To my mind, raising either as an analytical concept ought to be accompanied by questions of stability, for local ideologies may be best seen as the summation of the moment to moment reiterations of the ideologies of individuals -- and each reiteration is without guarantee of boundedness.

Likewise, any inter-individual representation will occur by virtue of the principle of degeneracy. In these cases the sameness question put forth by Wittgenstein remains one of individual memorial experience -- a phenomenon in which sameness is not stable but, at best, degenerate.

The potential for idiosyncratic and novel developments in memory raises the question of belief, as an analytical concept. Keane suggests that "belief ontologically follows on practice" (2008: 117) and in most cases the development of beliefs "depend on the prior existence of the practices" -- though this is not to say that beliefs are determined by practices. I can agree with this premise once I subject the concept of belief, as an analytical concept, to a closer examination. Belief entails memory (or at the very least some evidence of a relation to practice), yet different kinds of memory may arise in different contexts and thus influence the stability of belief.

Turning to a religious context, for a moment, we can review the work of Whitehouse (2001) and Edelman (1997, 2004), and point out that memory may make a difference to future occurrence of a belief. For example, the so-called flashbulb formation of an episodic memory (say following a traumatic and one-off initiation ritual) may behave differently from a neurological point of view than would so-called procedural memory (an Orthodox priest performing the divine service for the 2167<sup>th</sup> time may recall the procedure with ease but probably could not recall the 539<sup>th</sup> time any more easily than he could the 1323<sup>rd</sup>). The extent to which these two forms of memory will influence future decisions may differ and so too may the stability of the associated beliefs.

#### 4. Idiosyncrasy in Relation to Human Freedom and the Process of Enculturation

In so far as enculturation is a process which modifies the significance of cognitive associations and makes some of these modifications outside of the individual's reflective consciousness, we have to address the problem of human freedom. By human freedom I mean the nature and extent of an agent's agency.

Benjamin Libet's experimentation (2004) suggests that the brain begins to initiate and prepare for a voluntary act about 400 milliseconds before the person becomes consciously aware of his or her intention or wish to act (2004). To the extent that it can be suggested that conscious awarenesses are preceded by unconscious processes (i.e., processes outside reflective

consciousness), we are forced to conclude that unconscious processes initiate our conscious experiences. "Freely voluntary acts are found to be initiated unconsciously before an awareness of wanting to act..." In other words, "conscious free will does not initiate the volitional process; the brain initiates the process unconsciously" (Libet, 2004: 197). Libet suggests that there is a mechanism within reflective consciousness that can act like a "veto" on the progress of an unconscious decision (though he suggests that such a veto may only be available in those instances in which a person feels as though they have made a conscious decision). This is not to say that humans are not free to veto the unconscious activities of the brain, but rather, as Libet claims, this veto power is posterior to the decision, and may itself, to a degree, be the feeling of deciding that we occasionally experience on a small percentage of decisions taken.

This paper will not solve the problem of human freedom (which is the question of how humans come to make decisions -- whether by free choice or other phenomena). It will however provide examples in which the process of enculturation influences decision making. In so far as it is claimed that the enculturation process is a universal phenomenon this paper would support the Kantian argument that in nature nothing is the cause of itself (i.e., every causation of a cause follows on from a prior cause<sup>5</sup>).

However, where Kant then goes on to explore the notion of transcendental freedom, we can only respond to the evidence at hand in this paper. Namely, we have to consider the idea that any brain state will be based upon prior states. The question is to what extent this limits, say, imagination (or as Kant might put it, absolute spontaneity). We seemingly can combine our experiential memories and concepts to have original thought -- but how intrinsically free is this thought for any individual? To be fair, Kant suggests in *The Critique of Pure Reason* that as long as he maintains casual determinism in regards to the natural world he accepts that he will not be able to establish theoretically, with any evidence, a position of transcendental freedom. Rather, he suggests that it is our conception of being free that can entail such a sense. In this way, freedom -- in Kant's transcendental definition as meaning absolute spontaneity -- if limited to an experiential concept (the feeling of absolute spontaneity) is supportable by my process of enculturation model in so far as the model al-

5 This is Heidegger's formulation of Kant's position (Heidegger, 2002).

lows for the process of decisions made outside of reflective consciousness. In other words, regardless of the cause (which we may in fact not have conscious awareness of) we may indeed possess a feeling of absolute spontaneity in our own behavioural and linguistic decisions. I can certainly ask you to do something spontaneous and you can shout (or enact) the first thing that comes to mind -- though crucially it may not "come to mind" in the sense that you will have had conscious awareness of it before executing the behaviour. This is a process similar to most of the conversations you will have had during your life. Chances are good that you did not stop and consciously choose each word before it was uttered (to consciously choose is of course a doable task, but one that results in halting and hesitant speech<sup>6</sup>).

In this light, whereby the use of language is also dependant on the process of enculturation, we can develop Sahlins's position. The distinction between "culture-as-constituted" and "culture-as-lived," can be read to parallel the concepts of "sign-in-structure" and "sign-in-action" -- where the former is fixed by differential relationships the latter consists of implicational relationships. Heidegger (2002) considers a similar discrepancy when he suggests that "in understanding the being of beings, we always already understand being as divided" (2002: 30). Yet, as he points out, we are not aware of such an understanding; or, more accurately, we have forgotten about it:

*...at every moment we comport ourselves to the kind of beings which we as humans are, as well as to the kind of beings which we are not. We constantly hold ourselves in such an understanding of being. Our comportment is carried and governed by this understanding of being. Yet the fact does not occur to us as such. We do not attend to it at all, so that we must first be reminded of this self-evidency. We have forgotten it to such an extent that we have never actually thought about it. We begin our existence with this forgetfulness of our understanding of being, and the more we open ourselves up to*

6 In flowing speech, according to Libet, the process and content have both been prepared outside of reflective consciousness beforehand (Libet, 2004:108). To consciously realize each word and decide to speak it before it was spoken would result in hesitant and halting speech. Most speech is flowing, and even the speaker learns of the outcome after he or she has spoken, "when a spoken word is something different from what the speaker would consciously like to have said, he usually corrects that after hearing himself speak" (Libet, 2004:108).

*beings, the deeper becomes our forgetting of this one thing, that in all openness to beings we understand being* (Heidegger, 2002: 30).

To link this to Sahlins I would suggest that it is in the *analysis* of our use of language, or what Heidegger would call a reminder of self-evidency, that we establish the principle of division, i.e. the differential relationships that constitute sign-in-structure. In our *use of* language, when considered from the vantage point of Libet's work on unconscious processes, we may indeed have forgotten about differentiation. The degenerative phenomena responsible for transforming our divergent brain states into a sense of unified consciousness could be considered associative instances: As I start thinking of green grass fields in spring time I begin to think of the smells of sweet pollens and the bleating of young sheep. It may be possible to suggest that the associative content of, in this case, imagination, is due to experiential influence on memory and thus an outcome of enculturation (I happen to live in a village with many green fields and a fair number of sheep). To answer Kant, and provide for transcendental freedom, I suspect I would have to consider my ability to spontaneously imagine a completely new being -- never before conceived -- in the centre of the field. In this sense we are approaching an absolute differentiation. However, in practice (and this, one could argue, is why Kant establishes his concept of practical freedom to replace the problem of transcendental freedom) my entirely-new-being is an associative being: I immediately imagined a dragon and then became alarmed that that was hardly original. In subsequent reiterations the beast received body parts from a plethora of other animals, finally ending up as a cloud of light blue gas hovering a few feet above the field. It may simply be that we approach freedom by a process of association. The suggestion here is that association leads to novelty as a result of the instability of recurrent memory and the intrinsic idiosyncrasy of neurons. In other words, it is a process that allows for (as Sahlins might say) every individual's unique expression of the culture-as-constituted. Enculturation then, can be seen as the activity of association as augmented by intrinsically idiosyncratic phenomena.

My position raises questions related to causation and creativity. The model I present would tend to suggest that causation (i.e., the relationship between the cause of an action and its effect) is a product of both prior experience and idiosyncratic process, and thus neither experi-

ence nor idiosyncrasy can be independently divested from the process of caused brain-states. Creativity, as such, may operate in the same manner.

## 5. Functional Properties of the Intrinsically Idiosyncratic Process of Enculturation

A model akin to Edelman's Theory of Neuronal Group Selection is what informs, from a biological point of view, my model of enculturation. According to Edelman (2004) the TNGS has three tenets. The first is "developmental selection." It is concerned with epigenetic variations in the patterns of connections among growing neurons that create "millions of variant circuits of neuronal groups" (2004: 39). Edelman suggests that variations at the synaptic level occur as a result of the fact that "neurons that fire together wire together" as early as the embryonic and foetal stage of development. He points out that, in the earliest development stages, families of genes control organization, but this soon gives way to organization on the basis of patterns of neural activity which leads to "highly individualized networks in each animal" (2004: 29). The second tenet is known as "experiential selection." According to Edelman, during and after developmental selection "large variations in synaptic strengths, positive and negative, result from variations in environmental input during behaviour" and these modifications are "subject to the constraints of value systems" (2004: 39). The third tenet, "re-entry," is a result of a process during development in which various reciprocal connections are established locally and between distant areas -- thus allowing for signalling between areas (2004: 39-40). Taken together, Edelman claims that the three tenets form a selectional system, and so, in a similar fashion as other selectional systems (such as evolution or the immune system), the first principle/tenet is seen as a way to generate diversity among a population, the second is a way for extensive encounters to occur between elements of the population, and the third is a means to differentially amplify the "number, survival, or influence of those elements in the diverse repertoire that happen to meet selective criteria" (2004: 42). For neuronal groups the third principle -- which works to enhance the synapses of selected groups - is a response to a given group, or pattern's, engagement with the value system, where the value system is defined as "the constraining elements in a selectional system consisting in the



brain of diffuse ascending systems such as the dopaminergic system, the cholinergic system, and the noradrenergic system..." (2004: 180) and leading to the formation of categories in so far as it influences synaptic strength (a process Edelman calls "value-category memory"). According to Edelman, this experience of the world works quickly -- over the course of milliseconds -- and has been working even from the days of the individual as foetus, to establish modifiable neuronal groups. This model potentially dispenses with the need for innate or hardwired modules, although certainly module-like phenomena (successful neuronal groups and the maps and patterns that form these groups) will be present from birth -- but present as a result of selection rather than innate.<sup>7</sup>

In Edelman's selectional model, and the principle of degeneracy, we encounter scope for Lévi-Strauss's proposed mono-individual, who, whilst reflective of the world around and hypothesized within some anthropological models of the person to be part of a supra-individual phenomenon (see Linger, 2007, for a description of variation across models of the person within anthropology), has the potential to remain idio-centric.<sup>8</sup> Degeneracy can be identified in inter-individual communication where equivalent but non-identical structures convey meaning, such as in metaphor, anaphor, and polysemy (Edelman and Gally, 2001) -- requiring, I would suggest, maintenance and adaptation of something like an associative network. Ultimately, as Edelman and Gally (2001) suggest, and as will necessarily affect the behaviour of an individual and the probability of a particular decision occurring inside or outside of reflective consciousness:

*...the functional properties of the nervous system of an animal depend largely on the patterns of structural and functional connectivity among the neurons in the system. But, with the possible exception of animals having exceptionally simple body plans, the exact pattern of connectivity is not genetically pre-specified with great precision. Instead, the pattern arises dur-*

*ing development in part by a process involving excess neuron production, exuberant extension of neuronal processes that compete for targets in an activity-dependent fashion, variant cell migration, and massive cell death. Despite the very large number of neurons within any vertebrate nervous system, it is almost certain that no two neural cells within an animal are identical in overall shape. Similarly, no two "equivalent" neurons taken from two different vertebrate individuals have exactly the same morphology, even if the animals are genetically identical. Typically, neurons in the brain receive synaptic input from many thousands of other neurons so that in humans, for example, there are approximately one billion synapses in each cubic millimetre of brain gray matter. The pattern of connectivity created by so many synapses within such a tiny volume of tissue in one animal could not be genetically pre-specified and, thus, must be unique to each individual.*

Thus, the hypothesized associative network shall require further investigation. One investigative avenue that may prove fruitful is the study of language. As with my distinction of our use of language from our analysis of language, it is possible to contrast my argument to that of the deconstructionists. According to Sewell (2005) deconstructionists argue that most definitions of culture are unable account for the instability of linguistic meaning. For Sewell, deconstructionists "locate this instability in the signifying mechanism of language itself -- claiming that because the meaning of a linguistic sign always depends on a contrast with what the sign is opposed to or different from, language is inevitably haunted by the traces of the very terms it excludes. Consequently, the meaning of a text or an utterance can never be fixed; attempts to secure meaning can only defer, never exclude, a plethora of alternative or opposed interpretations" (2005: 167). However, there is also the possibility that whilst opposites (or other forms of difference) can certainly be used to define symbols -- and often are, within, for example, deconstructivist analyses or the structuralism of Lévi-Strauss, i.e., cases in which the symbol is pondered for a time within reflective consciousness -- the cognitive processing of symbols during the decision formulations that occur outside of reflective consciousness may be concerned with the linkage of similarity via the refinement of cognitive associative networks. The search for the potential answers that the brain requires to direct functions of mind, like what words to place next in a stream of speech

7 Thus the idea that an infant has some sort of "innate physics" (Baillargeon, Spelke, and Wasserman, 1985; Baillargeon, 1987; Spelke, 1991) might be better expressed under the TNGS as experiential physics.

8 The principle of degeneracy, if applied to the individual level thus accounts for observation of not only cultural change across individuals and group, but also the potential for religious conversion, intragroup memory, and any other occasions in which a self-defined member of a group dissents from other member's characterizations of the group.



may be influenced by the speed at which neuronal networks operate. There may be an upper limit to the speed at which neuronal networks can operate and, when they have to work quickly, the potential inclusion of opposites may not be something that the brain concerns itself over when engaged in certain functions that, nevertheless, affect the individual's use of symbol. Thus it is possible to argue, in a slightly different tone than that which is normally attributed to the project of deconstructionism, that it is because of association that meaning is "not fixed" rather than because of difference/opposition. Also, note that evidence for the presence of response plasticity in the brain may mean that "a particular region in isolation may not act as a reliable index for a particular cognitive function. Instead, the neural context in which an area is active may define the cognitive function" (McIntosh, 2000: 861). Unlimited plasticity would destabilize a neural network (Nitsche et al, 2007) and to this end it is necessary to hypothesize a function/mechanism that limits plasticity (suggestions might include: signal strength in particular neurons, such as the originating cluster, which would potentially limit the length of the associative path; function of time to response, that is to say, how quickly an answer is required; the presence of symbolic opposites which allow the network to define the range of potential meaning). In any case, the constraining of such a process, when momentarily happens, is thus potentially what allows for the arrival of meaning and semantics in the course of thought. According to the models of cognitive scientists (cited in Lang, Davies, Ohman, 2000), an individual's associative network of information comprises knowledge structures that subsist in memory and "may be activated by input that contracts representational units within the structure" (Lang, Davies, Ohman, 2000: 137). The words or image, for example, of Jesus Christ, may prompt, within the individual, memory retrieval of a series of declarative associations such as bearded male, worship, love, and other history dependant associations, including images, and episodic memories. These associations may limit or impinge upon the decision making process that, for one example, governs the flow of speech – a phenomenon that generally happens too rapidly to be a function of free-will (Libet, 2004), that is to say, too rapidly to be a function present within reflective consciousness, and whose content may thus be limited by the existent of such associative networks. This is not to say that humans are not free to veto the unconscious cultural activities of the brain, but rather, as Libet has suggested, this

veto power is posterior to the decision, and may itself, to a degree, be the feeling of deciding that we occasionally experience during a small percentage of decisions taken.

## 6. Parallels with other Studies: Dialogue, Re-entry and the Degenerate

Consider Bakhtin's dialogical principle. Bakhtin describes what he sees as a principle of difference between the human and natural sciences:

*Mathematical and natural sciences do not acknowledge discourse as an object of inquiry. ...The entire methodological apparatus of the mathematical and natural sciences is directed toward mastery over reified objects that do not reveal themselves in discourse and communicate nothing of themselves. In their practice, knowledge is not bound to the reception and interpretation of discourses of signs coming from the very object to be known.*

*In the human sciences, as distinct from the natural and mathematical sciences, there arise the specific problems of establishing, transmitting, and interpreting the discourse of others (for example, the problem of sources in the methodology of the historical disciplines). And, of course in the philological disciplines, the speaker and his or her discourses are the fundamental objects of inquiry (cited in Todorov, 1984: 15).*

Whilst I will raise the point momentarily of the extent to which a degenerate process could be considered a reified object as would be required to sustain Bakhtin's position, it is just as important to give credit to the more general purpose of his argument, for on the issue of discourse he observes that:

*In poetics, history of literature (and in the history of ideology in general), or to a considerable extent even in the philosophy of language, no other approach is in fact possible; even the most arid and earthbound positivism cannot treat discourse neutrally as if it were a thing but is forced to engage in talk not only about discourse but with discourse in order to penetrate its ideological meaning, which is attainable only by a form of dialogical understanding that includes evaluation and response (cited in Todorov, 1984: 16).*

In my definition of culture I have suggested mechanisms of assessment and valuation in the generation of significance. Bakhtin provides for the presence of such mechanisms in so far as dialogue is the product, at least in part, of evaluation and response. By recourse to a set of evidence on the phenomenon of decision making outside of reflective consciousness, however, we can also raise the question of whether ideological meaning, and the penetration of which is considered by Bakhtin only possible with the production of further discourse, may actually remain unique to the so-called "human sciences." In other words, it is possible to argue that the penetration of ideological meaning is a process that can take place outside of reflective consciousness and thus might become a "reified object" of study in so far as, for example, the selectional process proposed by the TNGS can be considered reified. I will of course, suggest that this is not the case, for the closer we come, in an observable sense to reification, the more we see a probabilistic and degenerate phenomenon with re-entrant pathways at its core. Yet, this does not appear to me a reason to support an argument of difference in object between natural and human science (in the TNGS at least, intentionality and will are both dependant on local contexts in the environment, the body, and the brain, and "arise selectively only through such interactions" (Edelman, 2004: 111)). For Bakhtin:

*...man in his human specificity, is always expressing himself (speaking) this is, always creating a text (though it may remain in potentia). Where human being is studied outside of the text and independently of it, we are no longer dealing with the human sciences (but with human anatomy, or physiology, etc. ...)*" (cited in Todorov, 1984: 17).

Surely the disconnection, if it actually can be said to exist, is not so straightforward. By the unfortunate occurrence of cerebral infarctions in some members of our population and our subsequent observation of these members as well as by direct tests, we can establish some claims regarding human anatomy as the limiter and supporter of so-called text creation. There is no point, as far as investigation has suggested, where text creation would be free of physiology. Rather, the case, at least when utilizing a model akin to the TNGS, is that the natural sciences can define functions of anatomy that have infinitesimally small chances of repeating themselves

and can thus support text creation, say as a process of thought, that has virtually unlimited uniqueness. For Bakhtin, uniqueness, like truth, is the whole that does not repeat itself anywhere. To this end Bakhtin (or his current supporters) ought to consider the scope for his definition of truth as supported by the TNGS and its rendering of the individual as "necessarily idiosyncratic."

In so far as individual idiosyncrasy can be supported, and this is the basis for my process of enculturation model, the reification, or perhaps thingification of the subject, remains illusive and to this end Bakhtin's claim that "there is no knowledge of the subject but *dialogical*" is supportable both with natural science and human science models. Thus the limitation of my study is the phenomena of dialogical context. I cannot anticipate accurately how an ethnographic informant, for example, will think, speak, or represent themselves, consciously or otherwise, in the absence of a dialogical process. I can suggest however, that their own process of enculturation will influence the significance or meaning of any dialogue in so far as their associative network is an ongoing process of valuation and assessment. Crucially, it is a process that I am unable to observe at all points (though the suggestion is that it might proceed along lines similar to those supported by the TNGS and my model of individual enculturation). In this fashion, accuracy is limited, for as Bakhtin says, "in the human sciences, accuracy consists in overcoming the other's strangeness without assimilating it wholly to oneself" (cited in Todorov, 1984: 24).

We can expand on Bakhtin's idea of limited accuracy by reviewing his critique of Freud<sup>9</sup> and suggesting an examination of the phenomena that make dialogue possible. Bakhtin points out that Freud should be re-assessed given the dialogical principle, for despite Freud's penchant to place human life on a biological basis and to highlight individual motivation as part of this evidence, it is more appropriate, according to Bakhtin, to look to the interaction of the analytical situation between patient and psycho-analyst as the producer of Freud's evidence. As Bakhtin puts it, "what is reflected in these verbal utterances is not the dynamics of the individual soul, but the *social dynamics* of the interrelations of doctor and patients (cited in Todorov, 1984). Todorov (1984: 32) suggests that Bakhtin, by the

9 Emerson (1986: 26) points out that Bakhtin's reading of Freud is "very selective." "Nowhere does he engage Freud's most provocative works, the great socio-psychological essays of the war years and the 1920s. In those works Bakhtin would have found a more complex opponent and, at times, an uncomfortable ally."

same reasoning, might declare that memories are interpreted in the light of the structure of the present situation. Bakhtin, in discussing doctor and patient, writes: "would it not be more correct to say that the physician and the patient, having joined forces, are doing nothing but projecting into the unconscious complex (paternal or maternal) their present relations, inherent to the treatment (more precisely, some aspects of them, or their general schema, since these relations are very complex)" (Todorov, 1984: 32). I would argue that if we opt for the first clause of his more precise reformulation ("some aspect of them") then we can reject the first statement that the patient and doctor are doing "nothing more but projecting into the unconscious complex (paternal or maternal) their present relations, inherent to the treatment." The closest we might come to producing evidence for Bakhtin's initial claim is by suggesting that where something akin to neuronal group selection may be said to operate in the brain, we can plausibly submit that the patient and doctor are constant assessors of their present relations only by virtue of prior assessment of other contexts that now weight upon their current relationship.<sup>10</sup> The patient and doctor can be said to be doing much more than "projecting their present relations." Each, having undergone a unique process of enculturation, arrives in their relationship with recourse to the meaning provided by their own idiosyncratic histories, any meaning shared is only to the extent that inter-individual signification might be called degenerate. This is to say, the unique neuronal firing patterns of doctor and patient, may (or may not) produce significations that are mutually understood; a phenomenon perhaps guided by the

10 Libet (2004) has suggested that 1) conscious awarenesses are preceded by unconscious processes, that 2) unconscious processes initiate our conscious experiences, that 3) "freely voluntary acts" are initiated unconsciously "before an awareness of wanting to act..." and 4) that conscious free will does not initiate the volitional process; the brain initiates the process unconsciously. These claims can add to Bakhtin's notion of the unconscious. Emerson (1986: 27) summarizes Bakhtin's position as follows: "the 'unconscious,' this is, the part of ourselves that is outside our control and awareness, is best comprehended as merely that portion of the conscious not yet articulate -- an 'unofficial conscious,' if you will, or perhaps a struggle among various motives and voices within the conscious." Libet might argue that the unconscious is the absence of so called struggle, whilst Edelman may point to the process of re-entry as constructive of neuronal patterns that, once consciously learned (for example, the process Vygotsky describes when finding that a child talks to itself more when learning to overcome obstacles (1934)), arise again only through interaction between the environment, the body, and the brain -- a form, perhaps, of the dialogical principle.

difference between their associative networks. Thus the so called "present relations" of the doctor and patient are dialogical once we account for each individual's entrance into the relation in terms of the ongoing process of individual enculturation. Neither, as Bakhtin says, will wholly overcome the strangeness (individual idiosyncrasy and uniqueness) of the other; nor will a social scientist when representing his or her informants. Far be it to consider Bakhtin's observation a limitation, for it is perhaps in learning that we are all un-acquirable others that we strive even more so to discover or share that which bridges the realm of intrinsic strangeness.

## 7. Considerations for the Future

The theoretical model developed in this paper might benefit from exposure to a breadth of interdisciplinary approaches. Where I have argued, following Libet, for the influence of unconscious processes on behaviour -- including language, and thus as part of the enculturation process, one may wish to explore the relationship between the so called unconscious and what I have termed reflective consciousness. Are we speaking, for example, of some sort of threshold of scale in terms of neuronal firings, or are we speaking, as Glimcher (2003) has suggested, of conscious thought as that which occurs when the modes of inference (whether Bayesian or otherwise) require valuations not currently provided by our associative networks? Where I have suggested, following, Edelman (2004), that modules -- as defined by Fodor (1983) and discussed by Sperber (2001) -- are not necessarily innate, one may need to gather evidence much earlier during the process of development and be able to test for, or isolate, those phenomena considered innate. Where I have claimed that individual idiosyncrasy limits meaning and thus disturbs claims of supra-individual phenomenon, save for degenerate occurrences, it is necessary to examine the production and sharing of knowledge between individuals -- if indeed knowledge can be said to be shared given the process of enculturation or given something akin to Bakhtin's dialogical principal. The social researcher, to this end, might engage in self-reflexivity when investigating the individual's enculturation in regards to new knowledge and experience; not only by the process of researcher entering into dialogue with the informant, but also by consideration of the researcher's enculturation.



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## Enkulturacion i degenerativni princip

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### Sažetak

Model enkulturacije koji predlažem operira s tezom kako su pojedinci intrinzično idiosinkrazijski. Potpora idiosinkraziji pojedinaca počinje na razini neurona te na kraju zahvaća i interindividualne fenomene. Kako bih potkrijepio svoj stav, oslanjam se na kognitivnu i društvenu teoriju, pogotovo rad neurologa Geralda Edelmana (2004.) i njegovu „teoriju selekcije neuronskih grupa” (TNGS) te Sahlinsa (2000.) i njegove teorije kulture. Ovdje predstavljeni model kulture predviđen je za prikazivanje fenomena individualne idiosinkrazije. Stoga se kulturu nužno predstavlja kao proces koji nazivam „enkulturacija”. Kognitivni fenomeni koji omogućuju jezik i znakove koje ljudi razmjenjuju stalno se mijenjaju unutar svakoga pojedinca putem idiosinkrazijskih neuronskih obrazaca paljenja te putem inkorporacije novog iskustva i promijenjenog pamćenja. O konceptu pamćenja raspravlja se u odnosu spram modela enkulturacije. Pridaje se pozornost dirkemovskom stavu kako bi se društveni znanstvenici trebali usredotočiti na kolektivna predstavljanja te izbjegavati izvođenje stavova o društvu na temelju djelovanja umova pojedinaca (Durkheim, 1915:15-16; 1952:213). Uključena su i kognitivna istraživanja kako bi se ukazalo na poveznice između iskustva i pamćenja (poput Edelmanovog koncepta „zapamćene sadašnjosti”) te kako bi se uspostavilo funkciju „degenerativnog principa”. Libetov (2004.) rad se koristi kako bi se ukazalo na to da svijesnoj percepciji prethode nesvijesni procesi (tj. procesi onkraj reflektivne svijesti) te smo stoga prisiljeni zaključiti kako nesvijesni procesi iniciraju naša svijesna iskustva. To budi pitanja o djelovanju i slobodnoj volji. Pokazuje se kako proces kognitivnih asocijacija vodi prema novinama kao posljedica nestabilnosti povratnog pamćenja i intrinzične idiosinkrazije neurona. Stoga se enkulturaciju može smatrati aktivnošću asocijacija pojačanom intrinzično idiosinkrazijskim fenomenima. Povučene su paralele između Bakhtinovog dijaloškog principa i modela enkulturacije. Završni dio donosi prijedloge za budućnost.

**Ključne riječi:** enkulturacija, proces pamćenja, ljudski mozak, pojedinac