

## What Bateson had in mind about ‘mind’?

### Abstract

G. Bateson believed that the scientific school of the future would be ‘ecology of mind’. The first aim of this paper is to understand what he meant by ‘mind’, and the other is to understand how this concept emerged in his thought, i.e., how its meaning would become more flexible throughout his life and work. Furthermore, we will approach the epistemological implications of ecology of mind for scientific education in the West.

Bateson’s concept of mind emerged when he became aware (in 1926) of his own way of thinking, i.e., of his immense abductive capacity. This led him to search for patterns of similarity and difference between organisms (like in homology). Later, he identified this thought process as being abstract and formal, relating not just facts but also ideas. Afterwards, Bateson developed criteria for us to consider a system as being mental, with special emphasis on living and cybernetic systems.

**Keywords:** mind; communication; learning; pattern; logical types.

### Introduction

The more one reads Bateson, the more impressed at the depth and breath of his insights one becomes. As his daughter Mary-Catherine observed (*foreword*, Bateson, 1972), for many readers Bateson’s thought gradually shifted throughout his life, constantly introducing new concepts into his theoretical work; to others, he would always address the same issues but in different manners. I find myself closer to the latter position, though he did indeed continually create new concepts throughout his multifaceted life in science. However, the novelty can be understood as emerging in an attempt to optimise the pattern of his own thinking, very much like the “stochastic process” that he identified in living beings’ learning (Bateson, 1979, chapter VI).

Still, reading Bateson in our digitalised and post-structuralist era presents a special challenge, as we look back to his thinking on the nature of structure that he was advancing in his first texts, dating around 1936, and in *Naven*. Clearly ahead of his time, yet much of what he was trying to get at remains difficult to grasp. The tentative character of theoretical work corresponds to his eagerness to effectively communicate and share his thoughts with a scientific community able to appreciate what he was endeavouring to do. As confessed by many of those with which he initially worked, he wasn’t generally successful in this (Lipset, 1980). To begin with, Bateson’s daring ideas on the structuring of mind were often difficult to coordinate with the boundaries of the scientific research being done by his colleagues. It is, with special (but not exclusive) focus given to his *Steps to an Ecology of Mind* and with these ideas in view, that I should like to turn my attention in this essay.

### 1 ‘Mind’ as a way of thinking

Bateson’s mode of thinking is founded on his understanding of the world, especially of the living world. From it he sought to derive abstract and formal relations rather than to focus on the content and meaning given to things/words. Bateson possessed an enormous capacity to establish formal inferences of the abductive kind. These, which do not possess the logic rigor of deductive inference (‘I think, thus I exist’), are richer in terms of creativity and evocation of new and previously unthought associations. For him, abduction allows to establish formal connections between contexts that – in the eye of other beholders – make no sense, since they are focused in the message of the content and not in the formal relation of its contexts, or of the contexts of the contexts: “[...] that my own mental processes had certain characteristics; that the sayings, actions, and organization of the Iamtul [indigeneous people of Papua New Guinea, studied by Bateson] had certain characteristics; and that the abstraction, “ethos”, performed some role – catalyst, perhaps – in easing the

55 relation between these two specificities, my mind and the data which I myself had collected" (Bateson, 1972,  
56 p. 108).

57 Another fundamental characteristic in Bateson's way of thinking is assuming that there are no articulated  
58 messages (written, oral, digital, mathematical, etc) – including of the scientist – that do not emerge from the  
59 observer, of his life experiences, beliefs and paradigmatic training. In effect, the last part of *Naven* (1936)  
60 practically constitutes an apology for not being able to study the Iamtul without him being himself one of  
61 them! The assumption of the scientist's intervention in his own research: there is always a mind that produces  
62 messages; they are neither neutral nor objective, even in the domain of scientific exploration.

63 In 1926, Gregory Bateson established an analogy between homology and homonymy and realised that he  
64 was thinking in a different key: "So far as I was concerned [...] the idea was new and I thought of it myself. I  
65 felt that I had discovered how to think" (Bateson, 1972, pp. 80-81). In effect, he perceived that an analogy can  
66 be recognised in the two modes of classification that, in themselves, were structured on the basis of analogy.

67 In other words, he multiplied two ideas, each of which had an implied multiplication<sup>1</sup>. Thus, homology  
68 establishes formal relations between parts of an organism (or between organisms) with different functions. On  
69 the other hand, homonymy relates to words that are written and pronounced in the same manner, but possess  
70 different meanings. Therefore, both homonymy and homology are analogies.

71 This manner of thinking allowed Bateson to establish formal connections between different entities.

72 In one of his latter works (Bateson, 1979), he further establishes a relationship between ontogenetic  
73 learning and filogenetic evolution, which may remind us of Piaget. However, whilst in Piaget the former was  
74 heavily conditioned by the latter, in Bateson both were immersed, and emerged from, the Mind, as we will  
75 see.

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## 78 2 'Mind' as a way of communicating – the living world

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80 In his first work, *Naven*, Bateson recognises the importance of the inspiration provided by some of his peers  
81 (and former professors) in regard to his research in Anthropology. In his later works, his intellectual affiliation  
82 encompasses Cybernetics (of the second order, as it was later nicknamed), theory of systems, theories of  
83 communication, and always accompanying him, Russell/Whitehead's *Principia Mathematica*, already  
84 explicitly acknowledged in *Naven*. All the scientific approaches in the several areas to which he contributed  
85 (e.g.: psychiatry, psychology and ethology), reflect the epistemological framework that grew from these  
86 influences and interests. In regard to this, Bateson says the following:

87 'Now I want to talk about the other significant historical event which has happened in my  
88 lifetime, approximately in 1946-47. This was the growing together of a number of ideas which  
89 had developed in different places during World War II. [...] All these separate developments in  
90 different intellectual centres dealt with communicational problems, especially with the problem  
91 of what sort of a thing is an organized system. [...] One of the roots of cybernetics goes back to  
92 Whitehead and Russel and what is called the Theory of Logical Types.' (Bateson 1972, pp. 482-  
93 483).

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<sup>1</sup> According to Bateson, the ideas result of a multiplication of ideas, or of the mental multiplication of empirical facts. Arithmetic only works when we wish to relate things that belong to the same class, but if we seek to obtain new knowledge, relating things of different classes (e.g.: time and kilometres), we have to multiply (which gives the measure of the taximeter) (Bateson, 1972, first metalogue).

Thus, relating the parts of an organism with different functions (e.g.: a hand with human eyes) demands a multiplication whose result could be 'symmetry'. In the same way, establishing connections amongst words with distinct meanings also implies a multiplication from which 'the same sound' or 'the same spelling' may result.

But Gregory's way of thinking goes beyond abstraction when it establishes links between classes of phenomena at a superior level: not just at a functional level, but at the level of logic classification: homology belongs to logical inferences within the realm of morphology and homonymy to the realm of human communication.

What he is going to argue throughout his life is that we can multiply two types of logic, as long as we understand that both are framed by a wider abstract and formal reality that envelops them. Thus, ideas cannot be quantified, since they are not the product of arithmetic sums.

94 The world that Bateson was most interested in was that of living beings of the *creaturas*, opposing the  
 95 *pleroma*, following Jung's thinking according to the Gnostics (Bateson, 1979, p. 7; Bateson 1972, p. 360)<sup>2</sup>.  
 96 What interested him was the “self-organising” character of living beings and how they communicated with  
 97 one another. One of the key features of *creaturas* is the capacity of producing ideas, that is, differences, in the  
 98 monotonous and achromatic world of *pleroma*. In regards to this question, Bateson appreciated Kant’s  
 99 thought, for whom *noumena*, although existing and the origin of the *a priori* categories of knowing and  
 100 understanding, was beyond the purview of scientific research (Bateson, 1972: 461). That which approximates  
 101 Bateson and Kant is, however, not really the aprioristic dimension of scientific knowledge, but the profoundly  
 102 subjective foundations of knowing by *any* living being. The comprehensive scope of Bateson’s notion of  
 103 “ecology of mind” is largely based on this assumption. For this reason, the domain of ideas does not belong  
 104 exclusively to science, but rather to the communicative aptitude of all living beings, to which - it must be  
 105 noted - science and scientists also belong. All messages between living beings are characterized by a set of  
 106 differences agreed upon (generally in an unconscious way) by the living beings that share them amongst  
 107 themselves. Thus, in Bateson, the mind can be defined as that which acquires the functionality of producing  
 108 differences, ideas.

109 Beyond ideas, beyond differences there is redundancy, which is directly linked in his thinking to the  
 110 concepts ‘frame’, ‘context’ and ‘patterns’.

111 Taking the studies performed by Shannon<sup>3</sup> as a basis, redundancy to Bateson corresponds to that which is  
 112 not accounted for in human communication, but on which it is founded. If the difference, the idea, brings new  
 113 information, it is new because it stands out in a redundant scenario in which the difference emerges.  
 114 Redundancy constitutes the frame in which the message is inserted, the context without which the idea would  
 115 be meaningless.

116 The repetitive use of a given type of redundancy as a frame of messages of the same logic kind (e.g.:  
 117 communication in a professional environment) transforms this redundancy in a communicative pattern or even  
 118 in habit, that is, it transforms into an axiomatic premise of the behavioural kind in that context.

119 We can outline Bateson’s thinking that relates mind with communication in the following way: any  
 120 message (m1) fits within a frame, which then constitutes a metamessage (mm1) of the previous message (m1);  
 121 but the metamessage (mm1) can be a message (m2) framed by another metamessage (mm3), and so on.  
 122 Something that is worth emphasising is that this succession of levels affects the meanings of the messages, at  
 123 least on a top to bottom dimension. This means that a metamessage (mm3) of a message (m2) ends up  
 124 affecting the message (m1) (Bateson, 1972, p. 408).

125 He was particularly interested in 1) the eventual specificity of human communication in relation to that of  
 126 other animals; 2) the characterisation and relation of communicational human forms; 3) the communication of  
 127 non-human animals among the same species and between them and us; 4) the dysfunction in human  
 128 communication. His collaboration with psychologists and psychiatrists should be understood within his  
 129 interest in communication.

130 In short, we can say that, in regards to (1), Bateson detected that in all animal species there is  
 131 communication of the analogical kind (a concept that he then inherited from cybernetics), whereas in humans

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<sup>2</sup> "My opinion is that the world of *creatura*, the world of mental process, is both tautological and ecological" (Bateson 1979, p. 228). In page 106 of the same work, Bateson distinguishes the worlds of *pleroma* and *creatura*, as he had done in Bateson, 1972 (also later appearing in a book published by one of his daughters after his death: *Angels Fear*). I return to the quotes of these two works: "If I kick a stone, the movement of the stone is energized by the act, but if I kick a dog, the behaviour of the dog may indeed be partly conservative – he may travel along a Newtonian trajectory if kicked hard enough, but this is mere physics. What is important is that he may exhibit responses that are energized not by the kick but by his metabolism; he may turn and bite" (Bateson, 1972, p. 229); "What the receiver (e.g., a sensory end organ) responds to is a *difference* or a *change*. In Jung’s *pleroma* there are no differences, no distinctions. It is that non-mental realm of description where difference between two parts need never be evoked to explain the response to a third" (Bateson, 1979, p. 106).

<sup>3</sup> "According to Shannon, *information* is obtainable by the quantity with which a sign occurs within a message, implying determinate degrees of “noise” in the process of communication. He did not deny that the message had meaning, neither that that meaning could be measured by informative *bits* a lot less frequent in the message than those that occurred more often. However, Shannon want to measure quantitative information that would be obtainable in messages, ignoring its eventual meaning as a message" (Oliveira, 2009, p. 24 – my translation). For Bateson, information derives from redundancy and the idea from the difference. In my own words, knowledge implies identifying differences in a redundancy.

132 it is mostly identified by the kinaesthetic and paralinguistic component. The specific articulated languages of  
 133 human beings (verbal and written) were named as 'digital'. The first are very rich in information but are not  
 134 precise concerning the information given; the second are much more precise in regards to the message, but  
 135 less rich in terms of profusion of meanings.

136 Concerning (2), Bateson identified the messages of the analogical kind that are usually  
 137 metacommunicative contexts of the messages of the digital kind; thus, the verbal message 'I'm going to catch  
 138 you' has a completely different meaning according to the analogical metamessage in which it is enunciated.  
 139 Therefore, we frequently try to digitalise the analogical message, and one who is able to do so with relative  
 140 ease is considered dangerous by the human beings that participate with him in the same communicative  
 141 context.

142 Moreover, Bateson argued that the fact that this dimension of human communication was kept unconscious  
 143 could have been phylogenetically very important for the survival of the species. This is because it provided a  
 144 considerable organic economy to the species (Bateson, 1972, p. 274).

145 In his understanding, digital language does not directly derive from the analogical one, since with the  
 146 evolution that digital communication has had throughout the evolution of the species the other type of  
 147 communication (analogical) would have disappeared, as a rule of the phylogenetic world. This being the case,  
 148 it is very likely that, in regards to digital languages, rules of syntax (closer to analogical communication)  
 149 would have emerged first than rules of semantics (Bateson, 1972, pp. 291-292).

150 Now, what was found was that the languages of the analogical kind were also developed throughout  
 151 evolution; art, in Bateson's understanding, is an example of this occurrence.

152 One of the most important lessons that Bateson has given us was the explanation to the reason why  
 153 mammals possess such a developed analogical communication. It is not an objectal explanation (like we can  
 154 consider digital communication to be at a simplistic level), but it refers to the relationships between us. It is so  
 155 that we are able to feel distrust, for example, towards someone that verbally praises our behaviour in a given  
 156 context. That is, the analogical metamessage frames our relationship with that person. All human (and  
 157 mammal) analogical communication is then linked to emotions and feelings, be they of the kinaesthetic or  
 158 paralinguistic kind, or iconic or even dreams.

159 In human beings, the two types of communication interact amongst themselves *a simultaneo* and that  
 160 interaction typically ensures some communicative normality. That is, those intervening in a system of a  
 161 specific communicational level can understand *grosso modo* the messages that are exchanged between them,  
 162 articulating the emotional dimension (unconscious) with the verbalised message, tapering one with the other  
 163 (again, usually in an unconscious manner). Such an articulation could not happen in a pathologic situation.

164 Bateson also notes that in humans it is easier to find communicational understanding at an analogical level  
 165 than at the digital one, e.g., between people of very distinct cultures, indicating that at the phylogenetic level,  
 166 analogic communication identifies more the species than digital.

167 In regards to non-human animals –(3), as was mentioned, mammals possess analogic language and this is  
 168 how they communicate, not about phenomena but rather the communication in itself (eg: sound) is the  
 169 phenomena. This is emotional language. So, a dog that barks with a given intensity and sequence is not  
 170 communicating something digitalised like 'my owner arrived', but rather 'I am happy', which is identified  
 171 with that particular type of barking of that dog. Mammals can further associate objects and emotions, but  
 172 always at a level of relationships; for example: a rabbit that sees a weapon in the hands of a human being runs  
 173 because it associates that object to the negative emotions with other human beings holding the same object.

174 A very important statement was that in analogic communication there is not the possibility to produce a  
 175 message that is negative ('no'), even if there is a possibility to produce a message that something is forbidden  
 176 ('don't') by aggressive behavior. This occurrence brings up very curious implications in regards to play,  
 177 whether of animals of the same species (namely, small children that do not yet communicate verbally) or  
 178 between species. Being only in an analogical scope, these communications seem to have messages of  
 179 different/contradicting levels at the same time. For example, this can be seen in play fighting among animals  
 180 (message: 'this is playing' and 'this is fighting', since there is no negative messages of the analogical kind). In  
 181 verbal human humor, the same phenomenon seems to occur (Bateson, 1972, pp. 140-141).

182 In the last years of his life, Bateson committed himself to the study of communication in the *cetacea*, with  
 183 special emphasis in dolphins. He concluded that communication among the *cetacea* probably is based in  
 184 differentiated languages from the human analogical and digital kind and from other hand mammals'  
 185 languages. We also do not know how we learn to articulate the two dimensions of human communication. Nor  
 186 do we know how we learn to communicate analogically, despite some works that were published in this

187 direction, as a consequence of Bateson's studies on these matters (AAVV 1981; Fast, 1970). But we know  
188 that they are articulated at levels that guarantee intelligibility to the messages we exchange in a given context.

189 In human digital messages, it is important that we talk/write about issues of the same logical type, of the  
190 same communicational level, either in the semantic or syntactic terms. Thus, even if we are talking about  
191 'mind' in this text, I cannot write it in Portuguese given the metacommunicative context in which the text is  
192 inserted. However, if I was describing let's say, dentures, in English, , I would hardly be communicating with  
193 the reader, since I would not be respecting the metacommunicative rule: 'this text is about "mind"'.  
194

195 'Mind', in Bateson, not being a living being, is indeed a communicative instance, and it is exercised in the  
196 act of detecting increasingly abstract levels of communication, as was previous mentioned.

197 This is rooted in one of the two basic principles of the Theory of Logical Types of Whitehead and Russell:  
198 if the members of the inferior logical type belong to a superior logical level (all the propositions of this piece  
199 fit in the superior logical level 'text about "Mind"'), the reverse cannot occur, that is, 'this text is about  
200 "Mind"' is not a member of the propositions of the book; more simply put, a text cannot be a member of its  
201 sentences.

202 Still in reference to a mental activity such as communication, based on the theory of logical types, Bateson  
203 mentions that whilst a more abstract communicative change dramatically influences all communicational  
204 levels below it. As previously mentioned, the possibility of a bottom-up change in the communicational  
205 hierarchy, whilst possible, does not possess the same capacity of change and it can only be observed at the  
206 populational level of the species on a grand scale. Furthermore, it takes time to occur, even if when it happens  
207 it spreads to all communicational levels of a system.

208 Phylogenetic changes of both types of communication can lead either to self-regulation of the entire  
209 system (through *feedback*), with added complexity, or can lead to a *runaway* situation, in which the changes  
210 are of a nature that do not permit that the system self-regulates and self-organises, leading to a somewhat slow  
211 destruction of the entire mental-communicational system. This is the great danger in which we find ourselves  
212 by having deregulated the human world-environment mental system.

213 In regards to 4) – dysfunction in human communication, Bateson detected two basic types of dysfunction:  
214 the one of people who are unable to identify the metacommunicative framework of the exchanged messages in  
215 the systems in which they are communicating and, in contrast, the one where people are not minimally  
216 focused in the messages that are being exchanged because they are obsessed with metacommunicational levels  
217 of any verbal proposition that is enunciated in a communicative system ('what does this person mean by what  
218 he's saying?', is the question that is continuously made when listening to others' speeches) (Bateson, 1972, p.  
219 199).

220 Related to these two types of dysfunctions, Bateson created the expression *double bind* (DB), making an  
221 immense furthering in the understanding of the psychological and psychiatric pathologies.

222 DB is a disruptive mental process that can lead to ontogenetic *runaway* if it is not corrected. It is  
223 characterised by: a) not identifying (consciously or unconsciously) metacommunicative levels of messages,  
224 thus refusing to contextualising them in the communicative level of the other participants in the system; b) not  
225 understanding the meaning of a message, due to the fact that it is in contradiction with the meaning of the  
226 metamessage; for example, we have a person that is analogically despised by a relative, for example, a father,  
227 that continuously tells her 'I love you'. The person that does not understand that she is caught between two  
228 different levels of communication tries to act in a way that the two messages, lived by the person at the same  
229 level, are accomplished. Since this is not possible, the person is continuously punished, since her acts will  
230 always be penalised by one of the levels of communication.

231 However, the person can be aware that she is dealing with different communicative levels, pretending to  
232 change the metacommunicative frame by the communicative. In this case, wanting to change to proposition 'I  
233 love you' in the communicative frame of that human relationship. Since this is impossible, the person is also  
234 going to be continuously punished by analogical acts that contradict her (pathological) comprehension of the  
235 metamessage. Her tendency will be not to change their comprehension of the metamessage, reinforcing it  
236 digitally ('he loves me, but does not know how to express his love', for example), which will lead to organic  
237 *runaway*, where the psychological dimension is included.

238 Is it possible to leave a DB through feedback and self-regulate it in meta-communicative terms?  
239

### 240 3 'Mind' as a way of learning

241

242 According to Bateson, there are several levels of learning distinguished by their increasing levels of  
 243 abstraction. These levels are based on the theory of logical types, mentioned above. The principles of this  
 244 theory are three:

245 1 – There is a logic discontinuity between a class and its members, as was explained previously;

246 2 – Following from 1, a class cannot be a member of itself, nor one of its members can be the class of  
 247 which it belongs (also previously mentioned). This is especially important in reasoning in which one takes a  
 248 part for the whole. This logical procedure has serious epistemological connotations when applied to living  
 249 beings.

250 3 – There is an *ego function*; humans usually distinguish tones of communication inside themselves, e.g.,  
 251 as in inner conversations, or in thoughts, as well as messages that they exchange with other people (and even  
 252 with non-human animals). Deficiencies in the *ego function* entail psychological or psychiatric problems.

253 Taking into account these epistemological premises of his thought, Bateson established the lowest level,  
 254 i.e., that with the least abstraction of learning, *level zero* (0). It is characterised by the same, or perhaps with  
 255 minor levels of variation, response of an animal to external sensory stimuli. Some examples include: situations  
 256 in which the response to the stimulus is highly determined by genetic factors, like walking, and situations in  
 257 which learning in response to a disturbing stimulus leads to the response being ‘automated’.

258 It is from the inside out<sup>4</sup>. It is possible to obtain a high level of complexity in learning, but the variety of  
 259 responses to the stimuli-messages ("[...] 'learning' is a communicational phenomenon"; Bateson, 1972, p. 279)  
 260 is always finite.

261 In *level 1* of learning, animals give varied response-messages in different moments, even if the range of  
 262 alternatives is the same in time 1, time 2 and time 3. What happens then is that the animal learns that there is  
 263 more than one type of possible response-messages, which cannot happen at the level zero of learning. The  
 264 most famous case is 'the dog of Pavlov' that learns to salivate in response to a stimulus to which he did not  
 265 salivate before learning it. Beyond keeping the unconditioned reflex of salivating as a response to food (T1),  
 266 he learned to salivate in response to a neutral conditioning stimulus ( a buzzer - T3) after he went through an  
 267 intermediary stage in which he was simultaneously exposed (T2) to a unconditioned (food) and conditioned  
 268 (buzzer) stimulus to which he responded in an unconditioned manner by salivating. The context of his  
 269 learning was changed, enlarged: "we may regard 'context' as a collective term for all those events which tell  
 270 the organism among what *set* of alternative he must make his next choice" (Bateson, 1972, p. 289). What  
 271 happens in level 1 learning is that we abductively transfer it to other contexts, that is, when facing different  
 272 contexts (for an observer), we are going to evaluate the messages-stimuli as being of the same logical level  
 273 and transpose our set of alternatives to that other context, adapting them to this other context<sup>5</sup>.

274 Usually, this transfer in learning occurs due to context markers, the buzzer in the case of Pavlov's dog;  
 275 another very typical example is etiquette.

276 It is worth noting that many human context markers are of nonverbal nature, like in nonhuman animals.  
 277 Experimental psychology is still dedicated to study the phenomena of human learning that occurs only at this  
 278 level (level 1). One of the challenges is to change/induce context markers in their clients, so as to cure them of  
 279 psychopathies, such like phobias. We usually do not detect our context markers, and even if we do, we can  
 280 hardly tell why they have this function in our rote learning, which is the basis of abductive inferences<sup>6</sup>.  
 281 However, we can without a doubt detect context markers in our behaviour and in others' even though we do  
 282 not know why, nor how, these markers act. This detection occurs by the identification of (self-) observed  
 283 behavioural changes.

284 People that are able to identify this marker in other people can be excellent managers and psychologists for  
 285 instance, but can also be manipulative and dangerous-

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<sup>4</sup> "[...] Genetic components might determine skill in learning to be transcontextual or (more abstractly) the potentialities for acquiring this skill. Or, conversely, the genome might determine skills in resisting transcontextual pathways, or the potentiality for acquiring this latter skill. (Geneticists have paid *very* little attention to the necessity of defining the logical typing of messages carried by DNA)" (Bateson, 1972, p. 273).

<sup>5</sup> "Whatever the system, adaptive change depends upon *feedback loops*, be it those provided by natural selection or those of individual reinforcement. In all cases, then, there must be a process of *trial and error* and a mechanism of *comparison*. [...] In other words, we (organisms) *learn to learn*, or in the more technical phrase we *deutero-learn*" (Bateson, 1972, p. 288).

<sup>6</sup> "There is the phenomenon of rote learning, in which an item in the behavior of the organism becomes a stimulus for another item of behavior" (Bateson, 1972, p. 288).

286 Before proceeding to other hierarchical levels of learning, we should note these two points: 1- the  
 287 processes of learning do not occur only when we are children, nor only when we are inserted in formal  
 288 learning systems (e.g.: school); these occur throughout our lives, independently of our chronological age and  
 289 even of our stage of organic debility; 2 – The continual use of the same type of context marker leads to the  
 290 point where that way of punctuating reality becomes a non-conscious habit of metacommunicative type, that  
 291 is: we begin to construct reality and make our choices within the frame of this metacommunicative context  
 292 which has turned into an unconscious premise, a mental habit.

293 "The contexts have communicational reality only insofar as they are effective as messages, i.e.,  
 294 insofar as they are represented or reflected (correctly or with distortion) in *multiple* parts of the  
 295 communicational system which we are studying; and this system is not the physical individual  
 296 but a wide network of pathways of messages. Some of these pathways *happen* to be located  
 297 outside the physical individual, others inside; but the characteristics of the *system* are in no way  
 298 dependent upon any boundary lines which we may superpose upon the communicational map. It  
 299 is not communicationally meaningful to ask whether the blind man's stick or the scientist's  
 300 microscope are "parts" of the man who uses them" (Bateson, 1972, p. 251).

301 Learning 2 occurs when an animal reviews the set of alternatives that until then he considered possible to  
 302 choose in given contexts. Even though this happens more frequently in human beings, it can also be verified  
 303 in other mammals. By broadening the set of possible alternatives, we act in a manner different than usual  
 304 when facing the same context; this mainly happens in reversal learning; for example: when we want to train a  
 305 puppy to not urinate in the house, we use a punitive context marker, usually a newspaper. Thus, when a dog  
 306 urinates inside the house it is punished with the sound of a folded newspaper close to his ears as a way of  
 307 threatening him (or even by beating his body with the newspaper). We say 'no' in an assertive manner so to  
 308 habituate the animal from refraining acting thus within the confines of the house, while reinforcing the context  
 309 marker newspaper-sound of disapproval. After, we take the animal outside the house to where he can do so  
 310 with impunity. We take the dog from a unconditioned reflex to a conditioned one, associating urine with going  
 311 outside without being punished. It is henceforth hoped that the dog will show signs of wishing to go outside  
 312 when he wants to urinate.

313 Now, the animal can change its set of alternatives and by doing so he changes ours as well in this context:  
 314 a *Schnauzer* I had a few years ago learned to reverse his learning: every time he wanted to go for a walk he  
 315 urinated so that I had to make the threat (which he understood to be nothing more than a threat) and we  
 316 proceeded to walk; he urinated the rest and I was happy. I only understood that he was training me when his  
 317 strategy was repetitive throughout the day and I saw his expression of happiness when I reprimanded him with  
 318 the newspaper! He had changed his choices, and I had to change mine in that communicative context in which  
 319 we were inserted! The change thus occurred at level 2, since we had to establish new metacommunicative  
 320 rules about that context.

321 Based on his collaboration with psychiatrists and psychologists, Bateson suggested that 'the traces of  
 322 personality' fit with learning 2 (as well as the phenomena of 'transference'), largely the result of people's  
 323 communication with something/someone in given types of contexts. " No man is 'resourceful' or 'dependent' or  
 324 'fatalistic' in a vacuum. His characteristic, whatever it be, is not his but is rather a characteristic of what goes  
 325 on between him and something (or somebody) else" (Bateson, 1972, p. 298).

326 In regards to learning 3, following the Theory of Logical Types, there is a corrective change in the set of  
 327 alternative of choice-action against a given context. In fact, this level is that which psychotherapists and  
 328 psychiatrists wish their clients to reach, since it would imply a change in 'personality traits', that is: the person  
 329 would start to punctuate reality in a different manner than the one it had non-consciously acquired. According  
 330 to Bateson, this is very hard to achieve in human beings but he considers that there are situations in which  
 331 however they effectively can occur:

332 1- Replacing, through mainly digitalised indications, the premises of learning II, after its identification.  
 333 Bateson considers that this is what usually happens in psychotherapeutic levels. Premises' identification and  
 334 steps' orientation for behavioural changes when facing given contexts are determined by the psychotherapist.  
 335 But is this a real passage of a level of learning, or merely obedience to someone in whom we trust as  
 336 exemplifying what is best for us? If behavioural change occurs in this scope, the identity of the person could  
 337 be in jeopardy, his perception of himself could be confronted with what he wants to be, and what he continues  
 338 to be. Then, this can lead to a profound *double bind* situation and so, to pathogenesis.

339 2 – There are situations in which this change of patternized axioms of behaviour occurs due to internal  
 340 working of the person within herself and there we find a genuine learning 3 level. In it, people change their

341 fundamental beliefs, their way of punctuation of reality, but – because of this – if the process is abrupt, one  
 342 can enter a process of madness, of loss of identity. At a psychotherapeutic level, is it not possible for this to  
 343 occur? Well, I believe that it is, if the role of the therapist is more of a learning facilitator than of a paternalist  
 344 schoolmaster. "It is claimed that something of the sort does from time to time occur in psychotherapy,  
 345 religious conversation, an in other sequences in which there is profound reorganisation of character. Zen  
 346 Buddhists, Occidental mystics, and some psychiatrists assert that these matters are totally beyond the reach of  
 347 language" (Bateson, 1972, pp. 301-302).

348 Learning 3 is said to be beyond digitalised language because it is verifiable at an organic and corporal  
 349 level, in all facets of the person, and that is why it is hard to talk about them; they are easier to be shown than  
 350 to be talked about. The tradition inherent in the training of Buddhist monks is based on the premise that  
 351 learning, the more transformative it is, the more unspeakable it becomes.

352 Thus, it happens in a non-conscious manner and it is usually verified only after it has occurred, by change  
 353 of action.

354 Before proceeding, let us remind ourselves of two points previously highlighted:

355 1- The existence of rote learning: this means that an organism's given behaviour contaminates other  
 356 behaviours of the same organism. Therefore, if a behavioural change of the organism occurs due to a different  
 357 classification/punctuation of reality (than the patterned one), this implies changes in the organism as a whole,  
 358 in the phenomena of the same communicative level.

359 2- Changes in the highest levels of communicative abstractions determine all the levels of learning that  
 360 underpin them (Bateson, 1972, p. 247).

361 This way, when a person reaches a mental level corresponding to learning 3, the premises of this level will  
 362 spread, changing the whole of the organism's perspective. Following Bateson's reasoning, this includes level  
 363 zero (to which he points as limits, to that kind of changes, genetic factors, mainly of the phylogenetic kind<sup>7</sup>).

364 Now, if we multiply these two factors in the life of an organism, it is easily understood that its capacity to  
 365 self-regulate is hard, especially if the higher mental level was quickly reached (like in abrupt religious  
 366 conversion, temporally speaking).

367 The possibility of the organisms not be able to self-organise is very high, potentially originating a *runaway*  
 368 process, which can cause the annulment of the perception of the 'self'. Thus, the pathogenic danger of this  
 369 learning level.

370 "[...] Level III can be dangerous, and some fall by the wayside. These are often labeled by  
 371 psychiatry as psychotic, and many of them find themselves inhibited from using the first person  
 372 pronoun. For others, more successful, the resolution of the contraries may be a collapsing of  
 373 much that was learned at level II, revealing a simplicity in which hunger leads directly to eating,  
 374 and the identified self is no longer in charge of organizing the behavior. These are the  
 375 incorruptible innocents of the world" (Bateson, 1972, pp. 305-306).

376 As was previously pointed out, not everyone arrives to the third level of learning, and there seems to exist  
 377 a *sine qua non* condition: the existence of *double bind* at level 2: it implies intense suffering at the second  
 378 level. Without suffering, this possibility is not brought up<sup>8</sup>. "[...] The creature is driven to level III by  
 379 'contraries' generated at level II, then we may expect that it is the resolving of these contraries that will  
 380 constitute positive reinforcement at level III" (Bateson, 1972, p. 305).

381 Bateson considered the possibility of existence of a more abstract and formal level, this would be learning  
 382 4: "*Learning IV* would be *change in Learning III*, but probably does not occur in any adult living organism on  
 383 this earth. Evolutionary process has, however, created organisms whose ontogeny brings them to Level III.  
 384 The combination of phylogenesis with ontogenesis, in fact, achieves Level IV" (Bateson, 1972, p. 293).

385 In Bateson's texts to which I have had access, he indicates that maybe this level is related to art, but falls  
 386 away from the scope of mental hierarchy based on the theory of the logical type; the reader will find in this  
 387 article a reflection about the importance of art, of the mystic and of the sacred in the thought of this author.

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<sup>7</sup> "There is needed not only that first-order change which suits the immediate environmental (or physiological) demand but also second-order changes which will reduce the amount of trial and error needed to achieve the first-order change. And so on. By superposing and interconnecting many feedback loops, we (and all other biological systems) not only solve particular problems but also form *habits* which we apply to the solution of *classes* of problems" (Bateson, 1972, p. 274)

<sup>8</sup> However, we can't infer that everyone in *double bind* at level 2 reaches level 3.



388 However, in other texts he points towards ‘mentation’ (Harries-Jones, 1995), which would be a type of  
 389 biological organizer of evolution, namely of our species. I am doubtful whether this is what he meant by level  
 390 4. I recommend reading Appendix B of the work by Harries-Jones (1995) about this specificity of Bateson’s  
 391 thought<sup>9</sup>.

392 To finalize this point concerning mind and learning, I have to briefly refer to Bateson’s strong criticism of  
 393 formal learning in a school setting, from kindergarten to universities. The main points approached critically by  
 394 Bateson are the following: the generalized non-understanding that signs do not bear meanings without  
 395 communicative contexts, in which a set of signs refer to each other; the total absence of learning about the  
 396 mental connection among all living beings; the lack of attention given to kinesthetic and paralinguistic  
 397 communication in teaching languages; and the encouragement of academic institutions’ administrators to  
 398 adopt quantitative criteria in evaluating students as well as teachers. (Bateson, 1979, introduction and chapter  
 399 1; Bateson, 1972, metalogues 2 and 5).

400

401

#### 402 **4 Ontological criteria<sup>10</sup> of a mind**

403

404 As stated above, it is clear that the mind is not a thing<sup>11</sup>, but rather of procedural nature, allowing living beings  
 405 to reach the highest levels of metacommunicative abstraction within onto, phylo and genetic limits. Mind acts  
 406 at the intraorganic level (for instance, establishing connections between several organs). This makes it  
 407 possible to speak of an organic cognition by contrasting it with the classic concept of cognition in psychology  
 408 which generally encompasses only the one obtained by quantifiable tests of deductive capacity (and  
 409 eventually inductive), expressing resolutions to mathematical and linguistic’s problems. For this thinker, the  
 410 characterisation of living beings should not be done through quantifiable variables, but by shapes, forms and  
 411 relations (Bateson, 1979, pp. 146-149).

412 In this section we will approach some important questions, namely: a) do mental processes only occur in  
 413 individual living systems (and do they even exist, as *individuals*)?; b) Are there mental systems in non-living  
 414 beings? If so, what characteristics do they possess? What distinguishes them from mental living systems?; c)  
 415 Is there a dimension of mental performance that is related to the articulation between ontogeny (learning) and  
 416 phylogeny (evolution)? How can it be verified? What characteristics does it possess?

417 We will answer to these questions in an integrated manner.

418 A mental process possesses some characteristics, all of them necessary; its natural basis is connection and  
 419 its performance is purely relational. These characteristics are:

420 1. The mind is immanent in the universe, and not something that is transcendent in relation to it. Bateson  
 421 believes that the mind does not possess a personal statute. It is neither constituted as a person, nor human, nor  
 422 divine. He considers the conjecture of Occam’s Law to be the best argument in favour of this. It affirms,  
 423 *grosso modo*, that when facing more than one hypotheses to explain the same phenomenon, and there not  
 424 being conclusive demonstration about any of them, the simplest should be accepted. "The network is not  
 425 bounded by the skin but includes all external pathways along which information can travel. It also includes  
 426 those effective differences which are immanent in the “objects” of such information. It includes the pathways

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<sup>9</sup> " The model discussed in this paper assumes, tacitly, that the logical types can be ordered in the form of a simple, unbranching ladder. I believe that it was wise to deal first with the problems raised by such a simple model. But the world of action, experience, organization, and learning cannot be completely mapped onto a model which excludes propositions about the relation *between* classes of different logical type. If  $C_1$  is a class of propositions, and  $C_2$  is a class of propositions about the members of  $C_1$ ;  $C_3$  then being a class of propositions about the members of  $C_2$ ; how then shall we classify propositions about the relation *between* these classes? [...] It follows that a next task will be to look for examples of learning which cannot be classified in terms of my hierarchy of learning but which fall to the side of this hierarchy as learning about the relation between steps of the hierarchy" (Bateson, 1972, pp. 307-308). The reader should compare this extract with Bateson’s mental activity, describe in point 1 of this paper.

<sup>10</sup> "Philosophers have recognised and separated two sorts of problems. There are first the problems of how things are, what is a person, and what world is this. These are the problems of ontology" (Bateson, 1972, p. 313).

<sup>11</sup> The Introduction of *Mind and Nature* (1979) is one the best condensed examples of mind’s relational dimension. The reader should note that in this work the concept of ‘mind’ is gradually replaced by ‘pattern which connects’. According to Bateson, the most important scientific advance of the 20<sup>th</sup> century regarded the understanding of mind, even if he considered it to be yet very incomplete: Bateson, 1972, p. 487.

427 of sound and light along which travel transforms of differences originally immanent in things and other people  
428 —and especially *in our own actions*" (Bateson, 1972, p. 319).

429 2. Despite being immanent it is not materialisable in its substance, even if it may become embodied in its  
430 already mentioned intra-organic aspect;

431 3. Mind acts through differentiation, or differentiation of differentiation, according to the level of  
432 abstraction we are dealing with, against redundancies. Ideas are some of these differentiating mechanisms;  
433 they act contextually and thus are immanent. Articulation of ideas among themselves produce patterns and  
434 metapatterns.

435 4. Minds are self-regulating, self-correcting systems in search of an equilibrium between differentiating  
436 and redundant processes within a system, and systems to each other. In regards to living systems, this self-  
437 regulating capacity is called homeostasis, or self-organizing<sup>12</sup>.

438 "That is because people are self-corrective systems. They are self-corrective against disturbance,  
439 and if the obvious is not of a kind that they can easily assimilate without internal disturbance,  
440 their self-corrective mechanisms work to sidetrack it, to hide it, even to the extent of shutting the  
441 eyes if necessary, or shutting off various parts of the process of perception. Disturbing  
442 information can be framed like a pearl so that it doesn't make a nuisance of itself; and this will be  
443 done, according to the understanding of the system itself of what would be a nuisance. This too—  
444 the premise regarding what would cause disturbance—is something which is learned and then  
445 becomes perpetuated or conserved" (Bateson, 1972, p. 435).

446 5. Mental self-regulation works by *feedback loops*<sup>13</sup> (conservative variable) that regulate random factors  
447 (creative variable) of a system. This is the basic functioning of what is called 'stochastic processes' in  
448 epistemology, and all the mental activity connects itself in this manner. Mental systems without feedback  
449 loops would not be systems, i.e., would not have an interconnected and hierarchised organisation, at least  
450 horizontally. But systems without random interaction do not evolve, so they cannot be living systems. They  
451 are systems in perfect thermodynamic equilibrium<sup>14</sup>. "It is a general assumption of this book that both genetic  
452 change and the process called learning (including the somatic changes induced by habit and environment) are  
453 stochastic processes" (Bateson, 1979, p. 163).

454 This should be highlighted: Bateson holds that there are no 'pure' information entries, no inputs in virgin  
455 organisms. The conservative branch of the system (its communicative pattern, depending on the level of  
456 learning that it is) selects disturbances and from them an idea immediately emerges, a difference<sup>15</sup>, an organic  
457 perception. It is with these ideas that the organism enters in a homeostatic, self-correcting process. "[...]  
458 When the differences enter my body by triggering an end organ, this type of travel is replaced by travel which  
459 is energized at every step by the metabolic energy latent in the protoplasm which *receives* the difference,  
460 recreates or transforms it, and passes it on" (Bateson, 1972, p. 459).

461 If it can't do this, the system becomes unregulated and may become ill (if it is a living one) and even in  
462 *runaway*, dissolving itself as a system<sup>16</sup>.

<sup>12</sup> Homeostasis and self-organisation are not exactly synonyms, but this should not deter the reader from the question at hand.

<sup>13</sup> "The system shall consist of closed loops or networks of pathways along which differences and transforms of differences shall be transmitted. (What is transmitted on a neuron is not an impulse, it is news of a difference)" (Bateson, 1972, p. 490).

<sup>14</sup> What is opposed to equilibrium (potentially thermodynamic petrified) is epigenesis, in living beings. Conrad Waddington created this concept, which helped to clarify Bateson's thinking.

<sup>15</sup> "What gets onto the map, in fact, is *difference*, be it a difference in altitude, a difference in vegetation, a difference in population structure, difference in surface, or what-ever. Differences are the things that get onto a map. But what is a difference? A difference is a very peculiar and obscure concept. It is certainly not a thing or an event. [...] A difference, then, is an abstract matter" (Bateson, 1972, pp. 457-458)

<sup>16</sup> "Each system contains subsystems which are potentially regenerative, i.e., which would go into exponential 'runaway' if uncorrected. (Examples of such regenerative components are Malthusian characteristics of population, schismogenic changes of personal interaction, armaments races, etc.) The regenerative potentialities of such subsystems are typically kept in check by various sorts of governing loops to achieve "steady state." Such systems are 'conservative' in the sense that they tend to conserve the truth of propositions about the values of their component variables—especially they conserve the values of those variables which otherwise would show exponential change. Such systems are homeostatic, i.e., the effects of small changes of input will be negated and the steady state maintained by *reversible* adjustment" (Bateson, 1972, p. 447).

463 Mental processes address a difference to other, and the more enlarged, and simultaneously rigorous, this  
 464 interconnection's understanding is, the more truthful it is. "The mental world – the mind – the world of  
 465 information processing – is not limited to the skin" (Bateson, 1972, p. 46).

466 In Bateson's thought, the part is in the whole, and the whole is in the parts; however, the whole is never  
 467 equal to the sum of the parts.<sup>17</sup>

468 6. Mind works through trial and error, seeking the maintenance of its homeostasis: "The unit which shows  
 469 the characteristic of trial and error will be legitimately called a mental system" (Bateson, 1972, p. 465).

470 7. All minds incorporate in themselves their ontogeny's punctuation, as well as their species' histories (at  
 471 least).

472 This is the reason why transference (technical term used in psychiatry and psychotherapy) happens in any  
 473 mental living form. Transference functions by attributing meaning that we attributed to relationships with  
 474 other mental systems; we abductively carry this pattern to our relationships with mental systems that we  
 475 consider to possess the same logical type of relationship as the previous ones. "[...] After all, the shape of  
 476 what happened between you and me yesterday carries over to shape how we respond to each other today. And  
 477 that shaping is, in principle a transference" (Bateson, 1979, pp. 15-16).

478 8. Bateson considers that that which modern science called the laws of nature is mental determinism. He is  
 479 very skeptical in regards to their detection in the living world, mainly for two reasons: 1 - in it, mental activity  
 480 is very complex, with various states of interaction between organism-medium; 2 – the organisms live in  
 481 continual mental construction among themselves (Bateson, 1972, p. 472).

482 Given the characteristics identified to guarantee a mental existence, can we state that a computer is a  
 483 mental system? Yes and no! In fact, in a computer we can identify the previous characteristics, but it cannot  
 484 execute them by itself, autonomously; it executed them because someone programmed it do so; thus it is a  
 485 mental system as a composite unit of computer-human; the computer's internal mental connections are of a  
 486 lower level of abstraction than the ones that constituted the co-connection computer-human.

## 489 5 In reverse: 'Mind' as host

490 We mainly approached Mind from an *inductive* point of view,<sup>18</sup> as Bateson would say. What is meant by  
 491 this is that Mind was considered beginning from a subsystem and proceeding to broader systems. It was also  
 492 important to understand that mental functioning can take place in intra-organisms. This kind of cognition is  
 493 actually primary and potentially integrative of rational cognition, producing logical inferences of inductive  
 494 and deductive types. These two types of mental activity (organical and rational) imply connections with living  
 495 systems, constituting composite units, even if they are considered as separated in the eyes of an observer.

496 But we could consider mental activity in a bottom-up universe, that is, of the enlarged systems to the  
 497 systems of less mental activity. The problem is knowing what we place on top and at the end of this chain.  
 498 Throughout his several works, Bateson calls our attention to the inversion of the the chain of being carried  
 499 forth by Lamarck, whom he considered to have created a paradigmatic revolution in science. In effect, if until  
 500 Lamarck, Mind was on top of the chain of being and at the end were the more elementary living beings, with  
 501 Lamarck (first evolutionist theory's author) the chain was inverted (Bateson, 1972, p. 433). However, I would  
 502 say that Bateson introduces a third vision of the chain of being in which both hierarchies exist simultaneously.

503 If, as individual systems (or rather, as composite units), we can reach enlarged mental levels, it is  
 504 because Mind was already performing at these larger levels; on the other hand, Mind exists and sustains itself  
 505 exactly by the existence of lesser levels that underlie it (if we look at the chain of being from the bottom-up).

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<sup>17</sup> "Thus, in no system which shows mental characteristics can any part have unilateral control over the whole. In other words, the mental characteristics of the system are immanent, not in some part, but in the system as a whole" (Bateson, 1972, p. 317)

<sup>18</sup> "It should also be noted that the structure of this essay is *inductive* in the sense that the hierarchy of orders of learning is presented to the reader from the bottom upward, from level zero to level III. But it is not intended that the explanations of the phenomenal world which the model affords shall be unidirectional. In explaining the model to the reader, a unidirectional approach was necessary, but within the model it is assumed that higher levels are explanatory of lower levels and vice versa. It is also assumed that a similar reflexive relation—both inductive and deductive—obtains among ideas and items of learning as these exist in the lives of the creatures which we study" (Bateson, 1972, p. 308).

506 Throughout time, Mind (of the top of hierarchy of being) has been defined as supreme, usually in  
 507 transcendent manner to the universe, many times as being God ( and, in some cultures, gods without/with a  
 508 superior God).

509 Now, in my understanding, in Bateson's work, Mind becomes close to that associate with Buddhism. The  
 510 fact that he died in a Zen monestary cannot be without significance (however, I am not aware of texts by  
 511 Bateson that indicate towards a belief in re-incarnation<sup>19</sup>).

512 If previously we approached the ontological characteristics of the mind in lesser levels, we now point  
 513 toward what the author indicated to be the characteristics of Mind seen in reverse. It is worth noting that  
 514 Bateson thought it possible there to be learning levels beyond level 3 in the universe. In these superior levels  
 515 we would have more precise access to this question, that here we can only touch upon.

516 Understood in this light, Mind is a no-thing, immanent like water infiltrates every inch of each and all  
 517 living beings, and is quite beyond of the physical limits (skin) of living beings (Bateson, 1972, p. 318). They  
 518 continuously dwell in it.

519 We are talking of some (no)thing processual, not static, immanent, and that is not apprehended by human  
 520 mental states (Bateson, 1979: chapters VII and VIII, especially). This is due to the almost inevitable dualist  
 521 form in which we perceive the universe, even when we hold to integrated, systemic and holistic (we refer to  
 522 epistemological holism: cfr. Quine, 1969 and Rorty, 1979, among others) theories. This difficulty also means  
 523 that we have to communicate about something in which we are immersed, and that constitutes, *per se*, an  
 524 ontological problem of the mind (cfr. Bateson, 1972, p. 512). "I cannot know whether it is ultimately a  
 525 tautology neither how many levels it has. I am inside it and therefore cannot know its outer limits - if it has  
 526 any" (Bateson, 1979, pp. 228-229).

527 The transcendent status of Aquinas', or Aristotle's, Supreme Mind (Bateson, 1972, p. 493) positioned it in a  
 528 platform of such superiority that what happened to what it created and coordinated did not affect it in any  
 529 way. Now, Mind, in Bateson, can be contaminated by the errors of the lower levels, even if this may take  
 530 longer. Thus the importance of this author as a pioneer to ecological movement.

531 In many of his texts, Bateson accepts (even though he does not totally agree) that Mind can be taken as  
 532 God; for him, belief in a higher power is, as a basis, an open door to the understanding of the power of Mind.

533 The immersion of Mind beyond level 3 in human beings sometimes occurs in incidents of great suffering,  
 534 when our inner disolution reaches such a point where our perception of ourselves, our notion of self  
 535 vanishes<sup>20</sup>. An enormous humility can come about in these moments and this allows us to give away our inner  
 536 confusion, our mental desegregation (at the level we are) to a wider mental level. This giving away, this trust  
 537 in a superior Mind (like it happens in Alcoholics Anonymous: Bateson, 1972, pp. 328-329) usually carries  
 538 with it a joy and profound inner peace as we feel submerged in something superior. It gives purpose to life,  
 539 some may call it Love, that supports/nourishes in the most terrible moments of people's lives those who give  
 540 themselves to something beyond the comprehension of human rationality. Giving away our 'self' becomes  
 541 less important than feeling the immense dignity of being welcomed in this Mind. "[...] Anonymity is also a  
 542 profound statement of the systemic relation, part-to-whole" (Bateson, 1972, p. 334).

543 As the passage of level 2 to level 3 in human beings can only be possible through DB (thus, suffering) at  
 544 level 2, also an immersion in mental states that welcome us (top-bottom movement in the chain of being), can  
 545 only be possible to occur (and does not always occur) in a situation of great suffering and humility. "If we  
 546 deeply and even unconsciously believe that our relation to the largest system which concerns us—the 'Power  
 547 greater than self'—is symmetrical and emulative, then we are in error" (Bateson, 1972, p. 336).

548 At this level it would perhaps be more accurate to speak of wisdom instead of knowledge and Bateson  
 549 emphasises that the lack of this systemic wisdom is certainly punitive in all mental level that underly it,  
 550 including human beings.

551  
 552

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<sup>19</sup> He believed in the evolution and permanence of ideas in the universe: 'The ideas which seemed to be me can also be immanent in you. May they survive if true' (Bateson, 1972, p. 471).

<sup>20</sup> "Suffering is a state of severe distress associated with events that threaten the integrity (intactness) of a person. [...] Suffering requires consciousness of the self, involves the emotions, has effects on the persons social relationships, and has an impact on the body" (Cassell, 2004, pp. 32 and 224).

553 **6 Art, mysticism and aesthetics<sup>21</sup>**  
 554

555 Bateson considered that his explanatory model of learning levels had limitations: one of them regarded the  
 556 fact that it omits the possibility of interaction between levels of learning in a discontinued fashion, for  
 557 example: from level 1 to level 3.

558 Another limitation that he found in his hierachised system of learning, i.e., communication, refers to the  
 559 types of mental communication, i.e., learning, that some human activities provide, such as those provided by  
 560 art, mysticism and love.

561 Even though Bateson distinguished between art and poetry, we will consider these two communicational  
 562 types as one, thus considering that poetry is a form of art.

563 According to Bateson, the artist is someone who, in principle, has to go out from his self and communicate  
 564 mainly analogically and emotionally with other systems. Artistic language is of a different communication  
 565 level than that of science since it captures mental interactions of another level (cfr. Bateson, 1972, metalogue  
 566 6).

567 The nature of art is profoundly subjective, even though it establishes broaden mental connections of  
 568 cybernetic kind. The artist has to feel as if he were part of a network, to which he belongs as a member; but it  
 569 also envelopes him and inside it he is simultaneously differentiated from other members of the network..

570 This happens because it is a network, self-correcting itself (given the entire network) in each (and all)  
 571 level(s) of communication of the envolved organisms.

572 Therefore, artistic manifestations, being so profoundly enlarging and connecting, from a mental  
 573 perspective, are also extraordinarily subjective, impossible to quantify since being fluid, continual, recursive  
 574 and self-correcting (in each member, and inside of the system), not allowing itself to be caught in the dualist  
 575 thinking that creates sections. "Cybernetically speaking, 'my' relation to any larger system around me and  
 576 including other things and persons will be different from 'your' relation to some similar system around you.  
 577 The relation 'part of' must necessarily and logically always be complementary but the meaning of the phrase  
 578 "part of" will be different for every person. This difference will 'power' must necessarily appear different from  
 579 where each person sits" (Bateson, 1972, p. 332). The mental capacity of the artist is typically abductive,  
 580 creating ideas, differences of differences (ideas), mixing that which at the logical-intellectual level cannot be  
 581 mixed, like in the case of poetry, which is usually metaphoric, that is, literally carrying<sup>22</sup>, in this case, the  
 582 meaning from a context to another.

583 However, Bateson warns that he should not be interpreted as someone who favours a type of  
 584 individual/collective emotional development, against logical-intellectual cognition. This is typical of who  
 585 behaves in a dualistic logic, something that he is not at all (Bateson, 1972, p. 468).

586 Furthermore, love, by itself, is stated by Bateson as a priveledged communicational path with Mind, since  
 587 implying a decentralisation of the self, and the focus on others, that is, it is systemic at its core. Love is  
 588 characterised also by vinculating our identity to the existence of others, in a recursive interconnectivity of a  
 589 deep level. "Finally, it is appropriate to mention some of the factors which may act as correctives—areas of  
 590 human action which are not limited by the narrow distortions of coupling through conscious purpose and  
 591 where wisdom can obtain. (a) Of these, undoubtedly the most important is love" (Bateson, 1972, p. 452).

592 The intimate relationship between humans and other animals (like domestic ones) or with other  
 593 beings/energies in nature can be included in love, which allows for an expanded wisdom far beyond individual  
 594 corporal dimensions.

595 The more intimate the intersystemic mental connections people reach (or in which they let themselves  
 596 submerge) the bigger the aesthetic sensibility, that is, their ability to detect patterns and metapatterns which  
 597 connect. An example is provided by Bateson himself founding a metapattern between homonymy and  
 598 homology, or between species, or even between all living beings (Harries-Jones, 1995).

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<sup>21</sup> Studying these themes and their relation with Bateson's thinking in depth would demand a close examination of *Angels Fear* which will not be done here.

<sup>22</sup> In Greek, metaphor means *to carry*.

599 In this sense, an ecology of mind corresponds to an aesthetical understanding of the universe<sup>23</sup>; thus it can  
 600 be understood that, even though Bateson found interest in some environmental ecological liengages, he did not  
 601 totally identify himself with them (Harries-Jones, 1995, p. 171).

602

603

## 604 7 Epistemology and ecology of mind

605

606 During a period of his life, Bateson considered that all areas that investigate the living world should belong to  
 607 the science of communication. Later, he named this unifying science 'ecology of mind' which he thought  
 608 could be identified with epistemology<sup>24</sup>: "Perhaps 'epistemology' is only another word for the study of the  
 609 ecology of mind" (Bateson, 1972, p. 401). One of the functions of philosophical epistemology being the  
 610 formal interrelation between the various sciences, we can easily see the identification stated by Bateson.

611 The deep link between epistemology and ecology of mind is also related with the fact that this science  
 612 constitutes, in essence, a new paradigm 1- in its procedures to explain communicative phenomena; 2- in  
 613 reflecting on its own explanatory principles and adopted methodology.

614 The main characteristics of an ecology of mind are of an epistemological nature; we will briefly present  
 615 them, contrasting them with the mechanistic newtonian paradigm.

616 1. Starting with the conceptual influences, ecology of mind is founded mainly in cybernetics, in theory of  
 617 systems, in theory of information, in von Neumann's games' theory, assuming as well some interest in  
 618 Freudian and Jungian psychoanalysis. Newtonian paradigm is rooted in the Greek dualist tradition. It is worth  
 619 noting that Bateson was aware that, in the future, the theories that had once influenced him could take less  
 620 interesting paths and could even in turn become dangerous (Bateson, 1972, p. 456; p. 484).

621 2. Ecology of mind assumes the observer's position as a subject involved in the scientific practice  
 622 (Bateson, 1972, pp. 462-463). The observer does not exist *tout court* in the Newtonian-Cartesian paradigm.

623 3. The subjective dimension (in the sense that was previously mentioned) of the studied phenomena, in  
 624 each of its levels, invalidates an ecology of mind of quantitative nature. Such could makes us believe less in  
 625 the scientificity of the results, but only to those who seek to study the living world (including human) fixed to  
 626 the Newtonian physics paradigm (itself outdated, in theory, in practice and methodology – for example, the  
 627 probabilistics of contemporary Physics). This attraction for the modern mechanism sometimes places  
 628 scientists of the living (e.g.: biologists, doctors and social scientists) in communication conflict with what is  
 629 their study object: living beings, including humans.

630 The scientific methodology of the Ecology of Mind is based on patterns, in abductive regularities (Bateson,  
 631 1972, p. 413) of the digital and analogic kind, as well as in the inductive and deductive inferences, as  
 632 previously stated.

633 4. The linear causality of the Newtonian paradigm is opposed to conceptions of multiple, circular and self-  
 634 correcting 'causalities' of optimising type (that is, with minimum and maximum limits). Like Hoffmeyer  
 635 (AAVV, 2008, pp. 44-45), I believe that Bateson's thought refers to a final causality, removed from *episteme*  
 636 (except in philosophy) since the emergence of Newtonian *scientia*.

637 5. The differences between Ecology of Mind and the paradigm of modernity are based in the non-objective  
 638 vision of reality that is in Bateson's proposal (1972, p. 271); yet, he does not share a soliptist idealism. What  
 639 he proposes is that the living world is co-constructed in several networked and hierarchical levels. Therefore  
 640 the ecology of mind is decentralised from the subject-self, moving away from theories focused on the power  
 641 of the individual mind and of the strength of the isolated subject (Bateson, 1972, p. 470).

642 6. On the other hand, Bateson considers that, only when humans assumed to be powerless (Bateson, 1972,  
 643 p. 331), can they effectively communicate not only with other humans, but mainly with other living beings, in  
 644 the sever level and plans (whether vertical or horizontal). Thus his approval of religious positions, even  
 645 though he was agnostic (Lipset, 1980). Understanding that we are not the only authors in our lives implies a

<sup>23</sup> "[...] The whole base of aesthetics will need to be re-examined. It seems that we link feelings not only to the computations of the heart but also to computations in the external pathways of the mind. It is when we recognize the operations of creatura in the external world that we are aware of 'beauty' or 'ugliness'" (Bateson, 1972, pp. 470-471).

<sup>24</sup> "[...] There are the problems of how we know anything, or more specifically, how we know what sort of a world it is and what sort of creatures we are that can know something (or perhaps nothing) of this matter. These are the problems of epistemology" (Bateson, 1972, p. 313).

646 great responsibility. In a mechanistic epistemology, based on the duality me-other (human-nature, etc)  
647 common responsibility is difficult to assume.

648 7. Some distrust that he may demonstrate towards ecological movements of his time draw from, I think,  
649 two factors: a) the construction of ecological theories still based on duality, where ‘mother’ nature exists as  
650 something differentiated and hypostasised of the human being (Harries-Jones 1995, p. 120), and b) its power  
651 to annihilate us if we do not submit to it. There is also a *naïveté* in some ecological discourses that  
652 decentralise us from the danger of mental disruption (*runaway*); not all that exists is love and kindness, and not  
653 even the mechanisms of self-regulation can always resist (Bateson, 1972, pp. 491-492).

654 8. The existence of a unified science of the living world, named *Ecology of Mind*, demands a lot more than  
655 the requisites here enunciated since it requires that we think, and most importantly act, in a different manner  
656 on a daily basis. Despite knowing what epistemological premises we should change, we have to incorporate  
657 them in order to be able to communicate immersed in them (Bateson, 1972, p. 469).

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659

## 660 Conclusion

661

662 For Bateson, the concept of mind has several meanings, all of them interconnected. One purpose of this article  
663 was to analyze each of the senses of this polysemic word, be it in science or philosophy. The contemporary  
664 advances in areas such as neurology have not been able to clarify a lot of the “fog” (to use an expression of  
665 our author Bateson, 1972, p. 15) involving this concept.

666 The article is also intended to underline how ideas are often reinvented and used in varying contexts.  
667 Sciences are largely constructed in this way. As Kuhn demonstrated, scientific minorities frequently renew  
668 ideas in the process of developing new paradigmatic axioms. Tracing the genealogy of these conceptual and  
669 historical concepts and putting them into the context in which they operate constitute a scientific  
670 responsibility. They also have ethical implications and say something being a good member of a community.  
671 (“Every schoolboy knows”....: Bateson, 1979).

672 Bateson took this task seriously and, in every step of his multifaceted work, he contributed to it with  
673 extraordinary wisdom, seeking to connect and integrate his findings within the widest of contexts, the  
674 universe. His research into ontogenetic learning is a noteworthy example of this, guiding us to the awareness  
675 of the community dimension even within the biological dimension of human beings by demonstrating the  
676 direct connection with communicative phenomena, both verbal and nonverbal.

677 The more a person advances in ontogenetic learning more he distances himself from the idea of an  
678 individual self as *axis mundi*, so characteristic of modern epistemology; in so doing he discovers that learning  
679 and communicating define the Mind, but it does not exhaust its meaning at the community level. In the de-  
680 centering of the self, the person finds Mind as that which hosts, integrates, links and simultaneously  
681 differentiates into numerous composite sub-unities, comprising an all round highly complex. Hence his  
682 ecstatic aesthetical stance, by which he sees us as immersed in something beautiful and magnificent. But this  
683 wisdom requires a deliverance from self, a risky dilution of oneself that few are willing to accept.

684 How to articulate these various ways of acting and understanding the Mind? Bateson gave important  
685 impetus to this trans-disciplinary project and has subsequently left us with the arduous work of continuing it  
686 for the good of all, not just scientists.

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