

Psycholinguistics of AI, Psycholinguistics versus Machine coded

Psicolinguística da IA, Psicolinguística versus código de máquina

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Abstract: I will examine the background of the language phylogeny in emerging *Homo Sapiens* as a fast, bipedal, long-distance runner in Black Africa, followed by language psychogenesis in children from their gestation twenty-fourth week onward. I will concentrate on the audio-visual machiness impact, Lacan's mirror stage, AV machines, the discontinuity between real and virtual realities, the remote control and AI machines as smart speakers and smart homes. In addition, I will discuss the following questions: Is the Machine beyond human intelligence? Is the human individual beyond *Homo Sapiens*? Is the human community beyond social contract? My working hypotheses on education within phylogenetic psycholinguistics are built on the following topics: Tomorrow's AI class (unit and room); guided self-learning and who is the guide; can transference and countertransference take place in AI-guided self-learning? Can a human subject develop such transference/countertransference with a machine? Can a machine "play the game"? In conclusion, I will debate "The utopian vision of an improved human being versus the dystopic vision of human beings and human communities totally enslaved to AI machines".

Keywords: AI; linguistic phylogeny; guided self-learning; (counter)-transference; enslaved-to-machines

Resumo: Examinarei os antecedentes da filogenia da linguagem no *Homo Sapiens* emergente como um bípede, corredor rápido e de longa distância na África Negra; seguido pela psicogênese da linguagem em crianças a partir da vigésima quarta semana de gestação. Vou me concentrar no impacto das máquinas audiovisuais, o palco do espelho de Lacan, as máquinas AV, a descontinuidade entre realidades reais e virtuais, o controle remoto e as máquinas de IA como falantes inteligentes e casas inteligentes. Além disso, discutirei as seguintes questões: A Máquina está além da inteligência humana? O indivíduo humano está além do *Homo Sapiens*? A comunidade humana está além do contrato social? Minhas hipóteses de trabalho sobre educação dentro da psicolinguística filogenética são construídas nos seguintes tópicos: Aula de IA de amanhã (unidade e sala); autoaprendizagem guiada e quem é o guia; a transferência e a contratransferência podem ocorrer na autoaprendizagem guiada por IA? Um sujeito humano pode desenvolver tal transferência/contratransferência com uma máquina? Uma máquina pode "jogar o jogo"? Para concluir, debatarei "A visão utópica de um ser humano melhorado versus a visão distópica de seres humanos e comunidades humanas totalmente escravizadas por máquinas de IA".

Palavras-chave: IA; filogenia linguística; autoaprendizagem orientada; (contra)-transferência; escravizados a máquinas

Introduction

The topic of this essay is based on a vast background of anterior research. I will be very rapid on this background that has been published as two books (Coulardeau, 2020, Coulardeau & Eve, 2017) and various conference papers, and I will begin with the basic assumption that humanity, starting with the very first human *homines*, is characterized as bipedal (restructuring of the foot) long-distance (for hunting in the savanna) fast (they had to compete with antelopes and other fast runners) runners (with a further restructuring of the foot). This is the closest definition of *Homo Sapiens* as opposed to all other or anterior *homines*. As for this, he has nothing to compare with Neanderthals, who were massively built, or probably Denisovans, though the latter escape any firm scientific vision of their physiology. What were the various mutations that had to be selected to achieve these characteristics (Coulardeau, 2018, 2020)?

In the theoretical framework, I will argue around the following basic ideas: The communicational situation is the only way an extremely dependent newborn survives and I will also insist on the child's psychogenesis from Lacan's (2001) psychoanalysis perspective. I develop, too, the idea of the raising procedure *Homo Sapiens* had within the old paleolithic division of labor, consequently, a fully three-articulation language at his disposal. Next, I explain McLuhan's ideas (1964) for understanding media: Definitely, the world of screen communication is the world of McLuhan.

Nevertheless, even if the grasp of the world is visually dominant, it generally calls upon all senses. I then proceed to discuss synesthesia, exposing Lanier's theory (2017) about haptic perception as the global human core that developed Virtual Reality.

Homo Sapiens' trajectory leads to a fundamental pedagogical method probably used since the very beginning of his emergence 300,000 years ago, Recapitulative Learning or "pedagogical back-summarizing" as called by De La Garanderie (2017).

Homo Sapiens reaches the 20th century: I try to refute Kurzweil's (2005) proposal of IA Machine beyond human intelligence. A philosophical question

emerges: Is the architect a human being or a digital super mind in some digitalized extra-cosmic multiverse, a reinvention of a digital human god? (Kaku, 2021).

Accompanying this evolution, we must define human intelligence in a ternary way (Haspelmath, 2020). In addition, the formal Shaumyan's (1961) proposal of a fourth articulation is explicitly presented. In section 2, I will present the applications of the theoretical frameworks examined to education and will close with the conclusions.

1. Theoretical framework

1.2 The starting point: the communicational situation

The phylogeny of language (Coulardeau, 2019b) happened in Black Africa from a starting point universal in all human languages, the continent a rather wide area from southern to north-eastern. Once a community left the nest to migrate out of Black Africa, when one development stage had been fully reached: migrating *Homo Sapiens'* languages continued within this particular phylogeny level. That is why the first migration out of Black Africa, only produced root languages based on the *langue* sole first articulation, all other elements being discursive. Communicational situation did not change with migrations, though each of them connected to one particular phylogenetic articulation, since any phylogenetic language development level is able to fully communicate: What is not integrated into *langue* is done into linguistic utterances as discursive means. What is the basic communicational situation?

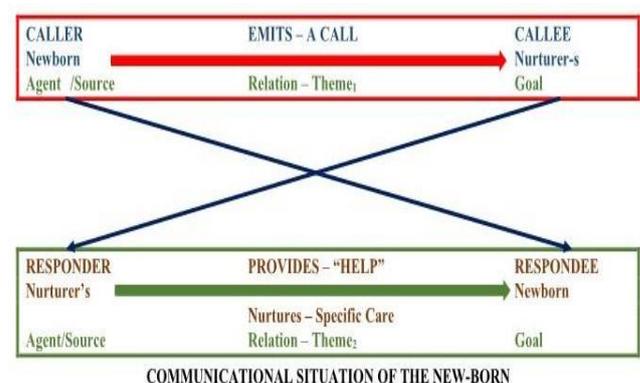


Chart 1. Communicational situation of the new-born. Source: author.

Basic physiological communicational situation will become within a year or so vocal and linguistic. Becoming linguistic the communicational situation changes somewhat.

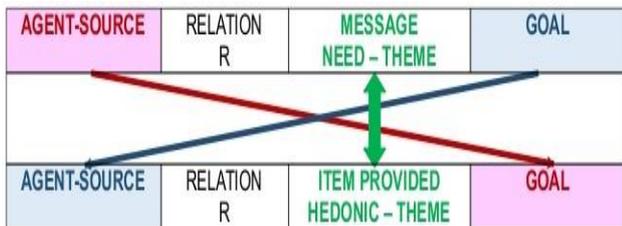


Chart 2. Communicational situation becoming vocal and linguistic. Source: author.

This situation is universal. Its real implementation varies a lot from one language to the next, but the Agent-Source will always remain as such, even in a non-agentive language like an ergative one (Comrie, 2011, ch. 98, 99; Dixon, 1994), which consistently in some one or more grammatical structure categories, word order or morphology or both, treats the intransitive sentence subject in the same way it treats the direct object, but treats the transitive sentence subject differently (basic function theme or direct object in Indo-European terms). The newborn's birth traumatic change must be understood as extremely impressive for the child and the nurturers' languages will be attached to all these traumatic events.

Communicational situation is the only way this extremely dependent newborn can survive and his/her only way is by crying, the most instinctive call form. It was true when *Homo Sapiens* emerged and probably true for his ancestors or other *Homines* like Neanderthals and Denisovans. It is just true today as it was then: Newborns will learn from the carers and nurturers the language or languages they speak. I insist on the child's psychogenesis, from Lacan's psychoanalysis perspective: He considers the child's personality melting pot, presented as a square.

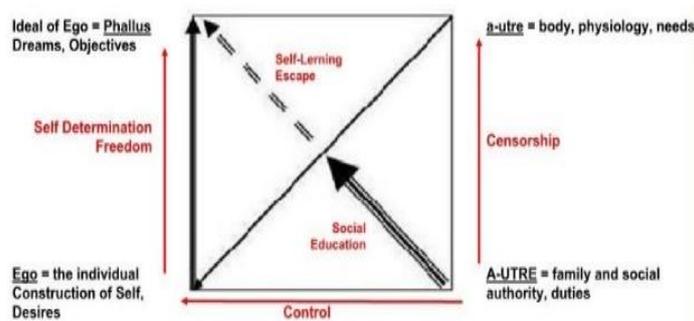


Chart 3. Lacan's child's personality melting pot. Source: author.

The four corners are identified by their active role and eventually by those who can carry it if coming from outside the child's own psychology. The "a-utre" can be the mother or the day-carer. It is not necessarily one person but it sure is one function. The role is both care and love and the very first training, hence authority.

The next corner belongs to "A-UTRE" authority: the child have to understand, accept and integrate all controls to become autonomous. Beyond weaning and cleanliness, the child will have to go through a lot of authority agents: father, mother, grandparents and daycare people plus teachers, women, most of them (creche, first; kindergarten at two years old, primary schools at six).

This A-UTRE imposes moralistic censorship with modesty, shame, privacy, or discretion and brings social education with the slow elaboration of the "Ego" from the basic impulses and the a-utre's physiological drives. The ego is entirely built from impulses and drives becoming desires, feelings, emotions, with social education giving it content and depth: it is under the control from the A-UTRE, eventually, society and police, authorities, political system, etc. The Ego is one actor within a ternary set of actors with a-utre and A-UTRE. Yet, the child develops an EGO visible to everyone, but, in his mind, a himself IDEAL called "Phallus" by Lacan, who used to say: "Even women have a phallus", where the EGO wants to go to, what he/she may or wants to be, or will try to become, the motivation and objectives heart, the freedom corner or pole for its self-determination, using self-learning to transcend social education that may become self-generated and self-controlled.

We must consider the moment when the child becomes aware of his/her “I” and can start building his/her EGO, seeing him/herself in a mirror and recognizes him/herself. He/she also differentiates this “I” or “me” or his/her name as being different from the carers’, nurturers’, or other children’s one, an indistinct “you” within the communicational situation. Another element appears then, all other people, who are not included in “YOU”, one rank farther out, hence the third person, all others, who are not within the nurturing and communicating circle of the child.

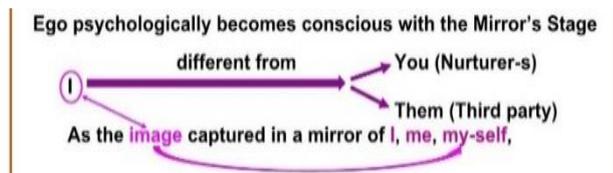


Chart 4. Ego becomes conscious with the mirror's stage. Source: author.

If we consider the raising procedure *Homo Sapiens* had within the old paleolithic labor division (Coulardeau, 2020), this approach is probably typical of *Homo Sapiens*' children, having a fully three-articulation language at his/her/their disposal. Now, we jump and reach our modern times with pocket telephones, tablets, portable computers, desktop computers, machines managed via material or virtual screens, and keyboards.

1.3 Audio-visual machines and screens

The world of screen communication is Marshall McLuhan's (1964) world. He did not see the world he was dreaming of in the 1980s. 4G screen-communication is everywhere, and 5G-screen-communication is on the workbench. Screens are dominant due to *Homo Sapiens*'s visual dominance, according to McLuhan.

MAN IS DOMINANT VISUAL & SYNESTHESIA

| | |
|----------------------------|---|
| a- Vision of real entities | The world as SEEN |
| b- Images | the world as REPRESENTED |
| c- Mental images | the world as MENTALLY SEEN, CONCEPTUALIZED, TOLD/DESCRIBED |
| d- Writing, Reading | The world as VISUALLY DESCRIBED: THE EYE IS CENTRAL |

Marshall McLuhan's All-Sensorial perception (television, screens):

What you **SEE** is what you **LIKE** with **ALL** your senses.

On a screen, **oral** language is **overruled** by **images** that may include **written** language, **Subtitles** erase what is being said.

Chart 5. *Homo Sapiens*'s visual dominance, according to McLuhan. Source: Author.

It has been proved and even measured: Humans are visually dominant, enabling mind to discriminate, but it can be extended to other sensory fields. The world grasps, generally calls upon all senses, what is called synesthesia, particularly true with what we see on screens. We like a TV show from the very first instant with all our senses, bringing up a fundamental Buddhist idea: we have six senses, and mind is the sixth one, able to intervene in the classifying items analysis coming from the five other senses, and it can deal with language, hence, conceptualized elements. Lanier (2017) speaks about haptic perception as the global human core that developed Virtual Reality.

Visual-dominated haptic perception commands human mental representations and human communication phylogeny. First, the five physical senses receive sensations, processed in the brain into perceptions, registered as such the first time by brain-machine-code. The brain can remember and recognize them. *Homines*' great force is having a great number of vocal elements at their disposal, which enables them giving a name to these brain-machine-coded elements. Then, *Homines* can start experimenting, via communication, leading to more speculation, since word and its referential meaning spreading turns possible the mind reaching lexical conceptualization. This processing behaves in two main stages, one purely animal without a linguistic dimension and the other purely human with lexical elements that lead to concepts.

The two-tiered double-ternary conception is the basic approach for all human activities: devising, performing and implementing weapons, tools and hunting techniques; gathering plants and fruits, improving their growing conditions, which will lead to agriculture and cooking procedures: Consequently, *Homo Sapiens* reached the Ice Age peak and he lived through it, leading to Magdalenian agriculture and herding.

This allowed a fundamental pedagogical method probably used since the very *Homo Sapiens*'

emergence beginning, 300,000 years ago: Recapitulative Learning or “pedagogical back-summarizing” as the Catholic pedagogue, De La Garanderie (2017), called it. Below, the summarized suggested learning procedure:

1- All learning goes through representation: written, drawn, physical, mental representation: “dance your learning”;

2- Assimilation is restructuring what is already known, by action, kinesthetic experience, mental experience, conceptualization: ALWAYS, REPRESENTATION in some coherent “EXPRESSION”;

3- After each stage of learning, learners must SUMMARIZE in some communicational code what they have learned, have not understood and have to learn.

4- Assimilating comes after this necessary BACK-RECAPTURE.

The conclusion is of another dimension. De La Garanderie is a Catholic, transferring his faith into his pedagogical theory, synthesized as: REMEMBER, RECOVER, REDEEM, KICKING START. Observe the prefix RE- ternary use in the fundamental Catholic Native American’s statement concerning expressed as: “1992: A Time for Remembering, Reconciling, and Recommitting Ourselves as a People” (United States Catholic Conference, 1992). Its pedagogical objective is integrating new knowledge to give the learner a new motivation.

Learning procedure is always a ternary experience, when out of the master’s authoritarian obsolete vision transmitting some knowledge to the pupil, who has to repeat it over and over again till reciting it by heart. There is no real articulation between the two double elements: TEACHER + KNOWLEDGE → KNOWLEDGE + LEARNER. My approach is fundamentally ternary.

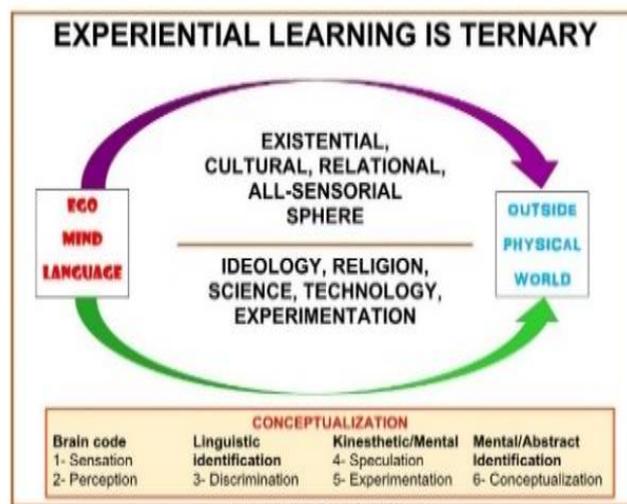


Chart 6. Experiential learning is ternary. Source: Author.

Real-life implies flexibility, so, a learning machine could, first, consider a dog definition and sort out pictures, which is machine learning; on the other hand, the machine sorts out pictures and speculates on them identifying some distinctive common traits, leading it to identify animals’ class under a name, “XXX”, a deep learning. Then the machine can look in a dictionary, hence identifying pictures as dogs. Now we come across AI, Deep Learning, and 5G firing power. But, keep in mind: a child is able of Deeper Learning, from existential experience to the capture, analysis and integration of new knowledge into old knowledge. AI machines do not have a child’s existential experience. All in the machine is mechanical.

1.4 Synesthesia in hypermedia

In 5G managed by AI, one is expected to react synesthetically, with immediate global acceptance from all senses dominated by eyesight, implying the inclusion of the sixth sense, the mind, according to Lanier’s haptics:

Broadly, ‘haptics’ means sensations that come from either sensor cells in the skin or in muscles or tendons – generally meaning sensations reported through the spinal cord instead of a dedicated nerve bundle between a sense organ and the brain. [...] Haptics includes touch and feel, and how the body senses its own shape, and motion, and the resistance of obstacles. [...] It’s funny how Moore’s Law (Jan. 1998) forced

us to build useful equipment for each of the sensory modalities in a sequence instead of all at once; haptics first, then hearing, then vision, with olfaction, taste, and a debatable catalog of other senses still to come. (Lanier, 2017, 123-125).

This is exactly what McLuhan called synesthesia. Lanier (2010) is speaking for a subject investing him/herself into an avatar evolving and acting within a Virtual Reality world, living a different life in a world completely different from his/her/their usual world. We reject what we are biased against, a global, synesthesiacal reaction dominated by our eyesight that might imply some mental work.

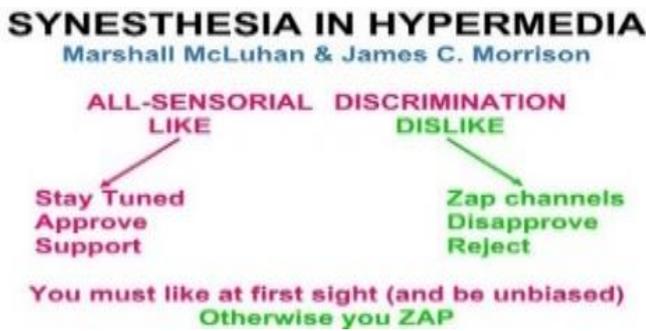


Chart 7. Synesthesia in hypermedia (Morrison, 2006). Source: Author.

The AI of 5G has collected all sorts of data about us, our likes and dislikes, and will sort out everything coming into our all-sensorial vision through the formatted filter AI has built from precedent data. It can escape scrutiny in two ways. First, AI was designed by someone, and its software integrates criteria we are not conscious of, virtual explicit biases made implicit by AI's data library. Second, AI works for a particular entity that can at any time send self instructions to select and sort out incoming or outgoing messages, excluding some never reaching you or reaching their targets, due to a bias you don't even know it exists. The AI's manager can impose his/her own vision of what he/she wants you to be, to become, and to do.

This is essential for raising and educating a child, who will be confronted with a triad called a ternary SUPER-A-UTRE: Authority in general, cultural consensus about what a child or adult must do or not; Authority in society, rules, laws, institutions with clear instructions about what members can, may, should, eventually must do; Authority in the family, which is the

first melting pot of a child, though not the only one. A child's complex personality is submitted to and developed by this ternary SUPER-A-UTRE:

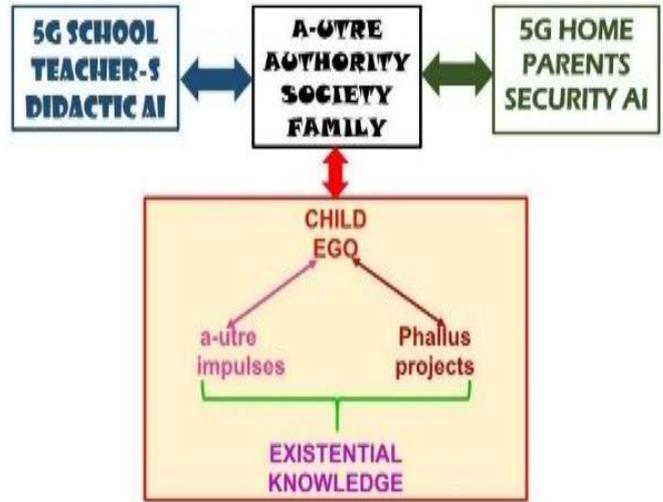


Chart 8. Child's ternary SUPER-A-UTRE. Source: Author.

A child has no chance to grow on his/her own, under no control or management. Some rules or requirements are even coming from inside the child, from his impulses and needs, purely physiological. Most of these impulses and needs have heavily been shaped by some authority imposed onto the child. This complicated structure pervades the child's life, and then the adult's one, also pervading his/her communication tool, i.e., language, being this situation universal. The language the child is learning from his/her surrounding environment will find its perfect compost needed to develop at all levels, particularly at the structuring and functional morphology and syntax levels. The child always belongs to a ternary situation, never to a binary one. There are many such triads and they all intercross. From birth to two years of age, we have the following structure:

| BEFORE SCHOOL (from BIRTH to 2 YEARS OLD) | | |
|---|--------------------------|------------------------|
| CHILD | MOTHER | FATHER |
| ① | ② | ③ |
| CHILD | CLOSE CARER/NURTURER | DISTANT CARER/NURTURER |
| ① | ② | ③ |
| CHILD | DAILY SOCIAL ENVIRONMENT | BEYOND |
| ① | ② | ③ |

Chart 9. Triads from birth to two years old. Source: Author.

Then from 2 to 18, we have the following structure:

| AT SCHOOL (from 2 to 18) | | |
|--------------------------|-----------------------------------|-----------------|
| CHILD ① | FAMILY ② | SCHOOL ③ |
| CHILD ① | PARENTS ② | TEACHERS ③ |
| CHILD ① | TEACHERS ② | CLASSMATES ③ |
| CHILD ① | IMMEDIATE SOCIAL ENVIRONMENT ② | BEYOND ③ |

Chart 10. Triads from 2 to 18 years old. Source: Author.

Finally, after 18 years old we have the following structure:

| ADULT AGE (from 19 onward) | | |
|----------------------------|-----------------------------------|-----------------|
| YOUNG ADULT ① | PROFESSORS ② | STUDENTS ③ |
| YOUNG ADULT ① | COACHES ② | TEAMMATES ③ |
| YOUNG ADULT ① | GIRLFRIENDS ② | BOYFRIENDS ③ |
| MARRIED ADULT ① | SPOUSE ② | CHILD ③ |
| WORKER ① | BOSS ② | WORKMATES ③ |
| ADULT ① | IMMEDIATE SOCIAL ENVIRONMENT ② | BEYOND ③ |

Chart 11. Triads after 18 years old. Source: Author.

People in everyday life experience an immediate ternary environment. Why do so often they reduce any choice to two elements? Why do so many structures in any language seem to be binary? Why have computer scientists and engineers devised informatic language as binary: two bits, 0 and 1, then binary bytes? To digitalize “Peter and Paul” you have two steps: first, (Peter, and), and second, [(Peter, and), Paul] which is erroneous since “Peter and Paul” is equivalent to “Paul and Peter.” That’s the basic characteristic of terms (but not clauses) coordination.

But this tendency reducing the world to binary choices or phenomena can be considered a mental bias, producing strange results, with theories and

people only thinking in binary terms, like Kurzweil (2005) and his Singularity Theory. For him, humans will not improve intellectually, but machines will be more intelligent than men around 2050. He proposes only one solution: integrating these intelligent machines in us as implants or nanobots, which is a binary thinking. For Kurzweil, *Homo Sapiens* is limited, without phylogeny, since he is not able of any development except by entrusting it to machines. There are only two possibilities: acceptance or refusal. If you accept, you get mechanized, an android in human garb. If you refuse, you are dead.

Confronted to these machines that are becoming more and more performative in intellectual work, I can see three possible outcomes:

1. Submission to machines that take over the humanity control and management – Who/what is the architect? Who/what is responsible for what happens then? Can we rebel against machines?

2. Integrating machines in us (Kurzweil’s advocated solution), becoming hybrids – Who/what does control these machines in us and their own intercommunication within each one of us and among all humans? Can we control them? Can we individually control the machines that are in each one of us, or can we collectively control all of them? Who does control them all on the human side?

3. Integrating ourselves into the machines as part of them, becomomg androids – Who/what does control the machines in these androids? We are no longer human at all.

Kurzweil’s dystopia is a reduced binary version of the video trilogy *The Matrix* (Blu-ray, 2008), proposing a world ternary matrix: a) Machines on their own somewhere in the cosmos are fighting to take full universe control; b) Remaining free humans fighting against machines to stay human, sacrificing one of theirs in exchange for a ceasefire with machines to be able to deal with the third entity; c) An architect creating robotized and digitalized human-looking, entirely artificial virtual machines to eliminate humanity: Is the architect a human being or a digital super mind in some digitalized extra-cosmic multiverse, a digital human god reinvention? (Kaku, 2021).

All three solutions are dystopic and based on a debatable axiom: machines could/would/will be more intelligent than men who produced them. But Kurzweil does not consider these three outcomes of his own binary hypotheses.

Humanity in their collective phylogeny would have a wider, meaning at least ternary, choice, requiring us to use our scientific knowledge to envisage the future in the most realistic way possible “Beyond *Homo Sapiens*”.

The basic assumption is: *Homo Sapiens* developed his intelligence, constructing his mind and language simultaneously and reciprocally in a ternary composite mental competence: INTELLIGENCE – CONCEPTUALIZATION – LINGUISTICALITY (ICL) (Haspelmath, 2020), an essential triad in the way cosmos produced humanity on Earth (I do not consider a mastermind behind it all, but I do not mind if some do and call it God). At every step in this evolution, we can define human intelligence as the ability to: a) receive sensations and process them; b) discriminate patterns in what the senses capture; c) identify these patterns first in brain-machine-code; d) develop a mind using body flexibility to articulate language, combining vowels and consonants; e) identify the brain-machine-code units in lexical terms; f) develop conceptualization from this linguistic competence with the successive challenges brought by knowledge accumulation, implementing new scientific and technological competencies and later writing that revolutionized knowledge conservation and transmission, and humans’ education. Language has always been knowledge conservation and transmission tool, with its three articulations. Science challenged it since it required no ambiguity or homonymy and synonymy, excluding them. Science evolution brought engineers, scientists, intelligent machines, developing a mechanical language basically and exclusively binary, excluding any human linguistic competence or intelligence development, definitely not binary. Can *Homo Sapiens* develop a fourth articulation that would multiply human intelligence, developing his ICL to dominate/control AI-5G? Can *Homo Sapiens* develop his language beyond the third articulation?

1.5 Language fourth articulation

Language would reach a fourth articulation and, machines should develop a ternary mechanized language to follow human evolution, based on three bits ternary architecture (0, 1, 2), research abandoned in the early 1970s in USSR, where, simultaneously, Shaumyan developed a structural generative linguistic theory and, later on (1987), as an Armenian-American theoretical linguist and an outspoken structuralist analyst, based on the American mathematician and logician H. B. Curry’s algebra (Seldin & Hindley, 1980), best known for his work in combinatory logic. The basic operation proposed is called an application, a ternary operation to connect two elements:

From elementary semions are derived objects called semions.

The rule [(5), my addendum] for deriving semions is formulated thus:

(a) elementary semions represent the episemions written to the left of them.

(b) If the semion X represents the episemion Δpq and the semion Y represents the episemion p , $|XY$ is the semion representing the episemion q .

If we denote any semions by the symbols X and Y , as in section (b) of Rule (5), then in the general case we can denote the representation of episemions by writing the symbols denoting episemions to the left of the symbols denoting semions. Section (b) of Rule (5) can be represented by the following formula: $\Delta pqX \quad q|XY$

We shall call it the basic formula for deriving semions, the Δ -formula, for short.

From now on we shall call function X the operator X , its argument Y the operand Y , and its value $|XY$ the image of the operand Y . (Shaumyan (1961, 157).

We always have a first and a second semions, categorized by episemions that made them connectable by application, resulting in a combined hierarchically superior entity on the lower line. We must specify the various applications, semions and episemions. Being ternary, it solves some difficult cases like terms (not clauses) coordination, two semions of one identical episemion, an operation that is reversible:

$$\Delta pqX$$

$$q|XY$$

To avoid the double image of the operand Y we just need a convention to specify a reversible application with a double vertical bar $||$:

$$\Delta pX \ pY$$

$p||XY$, an elegant formula, since it accounts for reversibility, agreeing with the concerned linguistic reality and providing a metalanguage for any concerned language, a tool that goes beyond the third articulation, characterized by many ambiguities and overcoming synonymy, homonymy, antonymy, and other semantic problems. Syntactic ambiguities could be solved by connecting syntax, co-text, and context.

Can there be a fourth articulation? What could it be? That's where the rub is. Considering only linguistic articulations, in my conception, first, vowels and consonants within their rotation with roots; second, their spatial and temporal categorization into stems within a temporal and spatial categorization ternary hierarchy; third, higher syntactic units, including a hierarchical inner functional architecture commanded by temporal elements, producing fronds from stems, assembled into third articulation utterances that may have multiple meanings, ambiguities, and even contradictory values. Machines require absolutely one-meaning utterances: they hate ambiguity.

Can there be a fourth phylogenetic articulation in language, enabling direct communication with intelligent AI machines that refuse ambiguities? Or can we develop intelligent machines that can deal with ambiguities? Curry's applicational algebra may provide this fourth articulation based on pure semantico-syntactic logic. To avoid the mistaken translation below, the meaning has to be formalized but from the language itself: "*on doit tenir le bébé sur ses genoux tourné à gauche ou à droite en alternance.*" Deep translation: "**we** have to hold **the baby** on **his** knees turned on the left or on the right in alternation." The normal link (though not exclusive) between "on" and "ses" is lost in the translation using "we" that should imply "our." Intonation is the oral means to differentiate the two meanings, according to the two possible links. But how can it be clear in writing? How can the machine receive a clearly single-meaning sentence with one or the other meanings chosen? It has to come from the

third articulation of the language itself, from the actual discursive utterances.

There are two possible approaches: First, a machine learning approach, in which machines are provided with all the elements they need to interpret the utterance meaning(s), allowing each utterance being clearly analyzed along with the applicational model; the analysis is fed to the machine that, then, can deal with the meaning, the possible way to improve translating machines, but it requires the building up of the metalinguistic utterances fourth articulation transcription before using the translating machine. Then the machine would look for a similar structure in the target language. This second part is more of the machine work deep learning type.

Second, a deep learning approach. The machine is provided with an utterance without any fourth articulation analysis, supposedly able to do the fourth articulation analysis to translate the utterance, since, it has been provided with the concerned language or languages metalanguage and it can only work on big data, having access to numerous utterances and fourth articulation metalinguistic transcriptions, able to new utterance into functional semantically pertinent values analyzing. The machine would be of a totally different nature than today's standard translating machines only having non-analyzed data, comparing direct context when they can identify the latter.

The challenge says the fourth articulation has to do with the utterance final meaning, requiring machines going beyond their traditional probabilistic approaches: the utterance's structure has the probabilistically dominant syntactic value, allowing machine databases access. We cannot even be sure our present machines connect these two elements, dictionary semantic meaning and syntactic structural pertinence, not to mention simple logic (like the baby on his knees).

To conclude, what would you do with the following sentence (thanks to Michel Perrin, Université de Bordeaux II): "Drilling machines are boring in the daytime"? Are we dealing with a machine definitely noisy, disquieting when drilling tunnels under our

houses, and definitely not entertaining at all? Or are we dealing with machines that like naked mole-rats? And I am sure some humorist might bring the two meanings together like with: “My mother-in-law, you know this dark-looming falcon, maybe a bald eagle, hovering over me, is the most boring and un-humorous person I know that is constantly boring boring [Word tells me to erase the repeated word!] innuendo under my skin for the simple pleasure of boring me to death and admiring me when bored.”

1.6 New social contract and education challenge versus AI

An enormous field of thinking that has been haunting humanity probably from the very start deserves attention: If I am right, labor division occurred during paleolithic human communities, definitely, as soon as *Homo Sapiens* emerged as a long-distance fast bipedal runner due to the young shifted humanity raising from simple animal management to a very complex one (Coulardeau, 2020).

What does the concept of social contract mean within the context of AI and 5G Deep Learning machines? We have to wonder about human communities beyond social contract. First, it has a compromise-building procedure among different community groups. If AI and Deep Learning are dominant, the community can only be hierarchical: data they are dealing with, hence community, must be differentiated, it cannot be seen as a continuous homogenous mass of totally autonomous isolated equal individuals and, according to the criteria used, one individual can be dominant in one group, dominated in another one; various groups can be organized in a functional hierarchy, with implicit biases as for sex, gender, race, nationality, religion, etc. That's nothing new. Elites have always existed. What is the elite in our AI time? The elite has to be composed by three specific groups: a) AI developers and their choices imposed to all, through machines (You can only do what the machine has been designed for you to do); b) AI managers during everyday reality and their ideology imposed to all through the machines, so, some “logical” choices are dictated by some implicit

biases making these machines and these managers implicitly complicit with all types of minorities selective exclusion; c) Politicians who control the community, elected, appointed, or even self-appointed, and their objectives imposed to all, leading us to a very delicate question.

In some countries, all social investigation, classification, or whatever other administrative procedures ban racial and religious categories, and even sex, gender, and sexual orientation. Many administrations like hospitals, schools, and others, actually register such differences in the concerned administrators' memory, or even with some secret symbols in writ in some registers, not to speak of the assumption that a child named Mohamed has to be a Muslim, originary from a Maghreban or Muslim country.

One extra element has to be examined: The elite cannot be homogeneous and cannot survive nor exist without (or because of?) inner conflicts, the only human dimension that counts within a social contract approach to AI, enabling everyone to have some freedom. If the elite were unified and homogeneous, we would go back to a scientific and technological feudalism vision, hence the question is: What would a social contract mean in an AI-society, would it be able to get beyond feudalism?

Another extra element deals with human communities and AI business. If we discuss the social contract idea within our developed economy societies based on a free, yet regulated, market, the questions of who dominates whom and what power can each element of this triadic society again have over the others arise.



Chart 12. A triadic society. Source: Author.

A direct example of how difficult it is having a social contract in conflictual situations can be found at the time I write this page in Derek Chauvin's trial for

George Floyd's death. We come then to a new question: How much can (1), (2), or (1+2) control (3)? The situation is enormously important because individual or collective creativity depends on how much freedom individuals or communities have to search for and access information and data. But we come to an even more important question: Can any entity live without being creative, without breaking norms, without imagining and experimenting with new forms of life, and particularly mental life?

Asking the question is answering it: one cannot live without freedom, although it might be dangerous for those who do not realize how precarious some relationships between people can be. Is it more important to prevent freedom excess or to guarantee freedom for all? Such freedom for all does not exist, since some objective limits prevent universal freedom in any field, particularly social contracts and social relationships: We are all biased in what we think, a no easy conclusion. Even the most objective and true Science(s) and Technology(ies) develop along their own phylogeny. Should we go against it, banning something from laboratories? It will get into a laboratory sooner or later: Knowledge calls for creative knowledge that goes against rules.

2. Theoretical frameworks applications

2.1 How does AI machine work?

Experiential learning brings together three elements in the learning subject: the ego, the mind, and the language of the learner, developing from the confrontation to the real world. The three have phylogenies, one each, but they grow simultaneously, reciprocally, and in parallel directions. What can an AI machine bring to the three elements?

a) AI can capture and format the existential sphere (in accordance with its algorithms), since it can work at a tremendous speed, beyond human reach: Machines just do what they are told to do though and they are most accurate when dealing with linguistic requests, not pictures, faces, images in general. No AI machine is able to translate very accurately from one language to another, if we ask for information on "TV

towers in the world", but it will work in a multitude of languages. Are we sure it has the proper term in, let's say, 200 languages? Google's search actually makes "TV tower" compete with "antenna," "radio mast," "transmission tower," not to mention the reduction to "TV" or "Tower." Why do we get the World Trade 'Twin' Towers?

b) An AI machine cannot change the real material world, but it can capture it through languages, or images understanding requests in a way that may bias results. Search engines are Boolean machines, following requests words order: Although not changing the material world, they can give an absolutely material world false image.

c) AI does not target minds or human intelligence construction, nor language development, since it is quite mimetic as compared to the human mind functioning, but it is only mimetic in the results, not in the procedures. An AI machine will be able to accumulate always more data and constantly look for the patterns we ask it to look for. Coming across a pattern that has not been identified by any human mind, can it decide this pattern is essential or just accidental and, further on. Can it decide it is accidental, although having some interesting value, or accidental and having no value? Can an AI machine that identified a pattern being up to then unknown, decide to go on after it as if it had a value of any sort? A human decision is needed to accept a pattern as valuable or valueless. AI might be wrong and neglect an essential element or be misguided and follow a useless track. That clearly shows the machine will save a lot of human work, but human intervention is needed to certify results regularly for the machine not to err.

d) AI collects and processes personal-individual and social-collective data, dealing with data security and privacy, and the persons concerned. Torturing a database is a lot easier and more effective than torturing an unwilling informer.

e) AI collects and processes facial, voice, and other individuals' physical identifications and recognition. AI machines are becoming all-intrusive in the public and private spheres, officially with no

connection between the two, but hacking, again, is an easy way to enter such archives.

At the present moment, any CCTV system can identify with some accuracy many people they see in our cities' streets, used by the criminal activities field. But these technologies can be constructive, particularly with education. Any student who turns his pedagogical computer on can be followed in his/her work, helped with advice from the computer's AI, even referred to a real human teacher for some more advice about collected data results and analyses. The same can be done with patients with chronic or long diseases that require constant care (check the chatbot Vik of Wefight, https://wefight.co/ca_en). The machine can discuss the situation with patients, keep track of the drugs and drug-taking by the patient, his/her appointments with doctors, sending alerts to the proper human medical services if necessary. Some streaming services are already working along those lines, and it may become real incarceration in a very narrow cultural cell.

f) AI tries to impose "correct" behavior or thinking, normalcy in conformity with its collected & processed data and algorithms, besides its programmed norms. If this AI machine is endowed with Deep Learning, it becomes normative, a cultural or behavioral straight jacket. How can we guarantee it does not become a constraining machine? How can we guarantee it will not become the promoter of any criminal or extreme positions and behavior that may endanger the society normal functioning? The parting line between tyrannical social control and beneficent inspiring social stimulation is difficult to trace out, as Montaigne (1993) would say. AI machines can be made absolutely blind to some areas of investigation.

g) Can we speak of AI-behaviorism? Was it the dream of Skinner's (1957) absolute behaviorism?

All the seven questions enable us to see how important the stakes of the implementation of AI, Deep Learning, and other techniques of the sort implemented in not only massive Data Bases, but gigantic Data Bases are. To conclude, at this point of our confrontation, we can ask the following question: Can we stand against it? The answer/s is/are simple but in the form of more questions: a) Can we speak against a

machine that "works" in machine code, let alone within giant data? The machine will always have the last word: it will have the massive data it collects itself and works with on its side; b) Can our intelligence-mind-language (ICL) keep control of the existential sphere in an ever-changing physical/material world? c) Would the ICL develop if it wanted to become autonomous?

To imagine AI machines may want to do something on their own is tentative and provocative. Can a machine want to do anything that is not in its program? That's what the masters of deep-learning AI machines want us to believe. Can a self-driving car break one rule, based on a situation clear analysis of the risk it represents? Can a self-driving car be programmed to do it without any miscalculation danger? Is it innocuous, inoffensive, and insignificant to decide to unplug an AI, let alone a network of AIs?

Imagine unplugging a hospital AI machines or an airport control tower, or the fast trains control center. And yet, how can we be protected against any excessive use of such machines, particularly "AI-DL-machines' self-use"?

2.2 AI-Education and human rule-less-ness

We are trying to bring into education the two AI monsters, on one hand, and the education absolute negation, Rule-less-ness, on the other. These two monsters are not fictional or mythical, but absolutely mystical: Advocates for both defend them as if they were all-mighty gods. They are, in fact, wild animals. How can they be tamed? Answering the following questions:

a) What is an exploded AI-Class? It is an open classroom to the world, for students and teachers. Students have chosen to follow it with personal commitment. Most of the work is done outside the classroom, and the class convenes on a regular but loose basis to confront what they have found and their own cogitations on the general class topic. Total open access to all web resources at the classroom, the library or all study halls, or outside the school is guaranteed. The class is divided into small working groups of 2 or 3 students, who have their own topic within the class general one;

b) What is the teacher's role? He sets the syllabus general topic for this class, guiding it within guided self-learning. The general topic specifications are abstracting a resources list and a questions and sub-topics set that students can choose to endorse. The most important part is guidance. The teacher must be "online" both all the time and at specific times on specific days, through emails or messages and the teacher answers the questions or requests with some advice, privately or on a general blog open to all students. The teacher can also be reached directly on some days and at some times for students to discuss their problems in person. Students should register for a short public conversation using video-conference software or direct telephone or skype connections at a precise time. Such short calls could lead to longer private calls for more in-depth guidance. It ends with class regular convening with the teacher in an open classroom.

c) How does such an open classroom work? Students decide their workgroups composition, controlling their own learning process within the class syllabus and learners' work has to be collaborative with teacher's checking.

Experience shows that in a group of three there is often one member who does little, so the regular classroom sessions should require all groups' members to actually take part in the work presentation.

There must be confrontation/compilation/integration of each learner's work within their groups, and each group within their class, also projecting the same within the school or within connected classes from different schools, even countries. Confrontation and debating are the basic methods, and students like them: Present two or three different view points on the same common topic and debate the pros and cons of each view point. One or two students summarize what the session has brought them, but all students may write such session summary: Originality is the basic objective.

2.3 The role of AI Machines: Must we trust the machines?

Yes, but with caution. Machines will always be good to provide data, at times loosely, at times tightly, impregnated with biases or interpretation, most of the time not contrastive. The teacher's main role is to request contrastive discussion, debate, presentation and interpretation. Deep Learning can intervene with the AI machine programmed to look for new possible classes, patterns, Gestalten leading to analyzing data new ways, or even collecting more data in some newly opened vistas emerging from the machine's "brain"-work. Can an AI machine endowed with Deep Learning have a brain? And if it has one, can it be considered similar to a human brain? Can such a machine take wise and ethical decisions on any subject it has been asked to consider? Can an AI machine be ethical? Can we define ethics first, and first of all for humans in an ethics program for AI machines? A machine could only be better by minimizing the human cost. The French small robots that intervened inside the nuclear power station in Fukushima Daiichi in 2011 definitely minimized the human cost, but they did not do it with any ethical motivations: Trusting machines is quite disquieting.

2.4 Must we keep at least some human rule-less-ness?

Rule-Less-Ness concept is fundamental in any pedagogical or didactic process. Students must always be requested to develop the antagonistic view point of any topic, not necessarily as normal and true, but as real. Learners must always deconstruct what seems to be normal, true, banal, consensual, following Derrida's (1993) concept of "deconstruction". To deconstruct is to recognize the construction that is being deconstructed and the reconstruction of its own.

Derrida's systemic antagonistic approach is in perfect phase with this world, where technology has the potential to take over life itself, but in which human beings have the potential and the phylogenic "mission" to resist it and to look for alternatives. The science fiction Butlerian Revolution (Herbert & Anderson, 2010) is not a solution. The rule-less-ness concept probably irritates some of the people in power positions, since

they intend to stay with no authorized challenge, as in dangerous Peter's Principle (Peter & Hull, 1969).

We have to set the learners in a deconstructing learning situation. The request to always deconstruct and reconstruct topics and view points, to debate research and its data by the small group members in a contradictory debating perspective, with even taking into consideration extreme positions, not advocated, but as part of the contradictory life reality picture. All education and communication is supposed to build this life reality in the class, in the self-learners' groups, and in each self-learner if possible, covered by the "rule-less-ness" concept, what other beyond-all-limits point of view one can imagine and build. Ultimately, one is to think and live in solitude but our self-learners, ultimately, have to learn in "rule-less-ness."

1- ONE-ON-ONE direct, material, physical, linguistic communication, both oral and written

a- in and out of the classroom.

b- in and out of the class-group.

2- ONE-ON-ONE and COLLECTIVE communication with the "teacher" and other concerned non-members of the class-group.

3- Role of "teacher"

a- GUIDE choice of topics within the syllabus of the class.

b- GUIDE the personal work of individuals and groups.

c- MONITOR exchanges and confrontations in each group and in the class-group.

d- the "teacher" possesses at most the know-how of research-work within self-learning, but he DOES NOT POSSESS ALL THE KNOWLEDGE to be found and mobilized by all the members of the class-group.

4- Who is the guide or "teacher"?

5- How does he communicate with the students on a DAY-TO-DAY basis?

Chart 13. What is Guided Self-Learning. Source: Author.

No direct answers because the questions are existential to be answered from within an existential situation that states two always specific individual elements: first, the situation itself, and second, the learners in this situation, without forgetting the third element, the teacher. All participants, learners and teacher have to bring in their "rule-less-ness" (Coulardeu, 2019a).

2.5 Toward resolution of the didactic contradiction

Class communication is simple because its communication center is the teacher him/herself in a traditional class, not being changed by AI: the relationship might be changed but the teacher remains its center. The basic connection is some transference and countertransference between teacher and students. The last transfer onto the teacher some pattern that comes from their personal phylogeny when they had to deal with the a-utere fundamental authority and the love relationship with the nurturers.

The transference phenomenon is not in any way abnormal, it is even healthy. A child's transference can be positive, loving the authority, but negative if the transferring love relationship toward authority has been experienced as negative. The child may transfer and compensate at the same time. From experienced excessive love, the transfer will be the expectation of the same excessive love from the teacher, or it may compensate for the excessive love and expect a moderate level. It may become negative, and the expectation is no love at all, and even hatred if the teacher shows any misplaced empathy. Any friendly attitude rejection from the teacher may reveal a child who has been mishandled by his parents, or within the family circle by a brother or sister.

If transference is extremely common, probably universal, can a child experience such a transference onto a teddy bear or a doll, a simple toy, a machine? An AI communication machine, a pocket telephone, a portable iPad, or a smartphone?

Let us see, first, the teacher's side. A teacher experiences countertransference towards all his students, with variable intensity or nature. Some teachers try to block any transference of any sort. They may have been trained to keep their distance. But there is transference, at times, noticeable. That is banal. The transference though can be negative, causing a troublesome hostility to a student, especially if the last plays the "game" and transfers a negative relationship of his/her own. As long as the transference and countertransference are from and to human beings,

that can be solved or managed. Some implicit racial or religious elements can be invested in this transference and countertransference, although negotiating a solution may be difficult.

What about smartphones, or other AI machines? An AI machine cannot experience any countertransference to respond to a child's transference, but the machine is programmed to attract the user's (student) attention: This attraction can go very far, and you can find quite many children so attached to their machines that they become dependent on them, which is definitely the manufacturer's intention, including the various applications you can find on smartphones, particularly games. The AI machine becomes an alienating machine that reduces the user's freedom, particularly his/her/their freedom of choice. The students use their smartphones as providers of fetishized activities in the addictive pair TRANSFERENCE-DEPENDENCE. The solution is to integrate these machines in the normal activities of the students and teachers so that the transference will be open to several people, and the relationship will be some healthy dependence: the students must trust the machine for research and communication.

Thus, students and teachers must avoid habit-forming of some regular, if not exclusive activities, becoming as addictive as drugs, their users unable to challenge results proposed by machines. I recently asked a technician in a medical start-up business that provides follow-up medical assistance to long chronic diseases via a chatbot, Vik, if they had noticed some "non-medical discussion" with it. The answer was very clear: "Yes, we have a lot of feedback from users trying to have a non-medical discussion. But the cases are very different, we have children who want to play or other asking hours of attention...But where they are the most different is with Vik Depression. Patients want to talk more and exchange with a human rather than having a plain medical answer", typical communicative need transference onto a simple machine.

Teachers have a role to play, making students use their AI machines to reach a certain objective, find some information, kind of reasoning, or

report to be handed in, or develop some type of communication that remains free of any dependence. Mechanical communication via smartphones must lead to real communication with other people to widen their information, otherwise they can become weapons and induce bullying.

Any individual in contact with other individuals, transfers/projects personal subconscious existential patterns onto others, concerning Authority, Love, Desire, Appeal, or any emotion or feeling, positive or negative embedded in the person's psyche, conscious or unconscious. To avoid addiction to AI machines you have to integrate them into daily life in the class, workgroups, studying of the learners. The more they use them for utilitarian valorizing activities, the less excessive dependence will settle in the students.

And that's where we come across motivations among people behind these "satanic" or "miraculous" machines: we have to prepare students for these possibilities. Anyone can use any young or old person's dependence, to transfer it, via machine, onto themselves, and these emotional hackers' motivations can be anything, including deeply criminal ones.

Conclusions

I began the paper with the basic assumption that humanity, starting with the very first human *homines*, is characterized as bipedal, long-distance, fast runners. I argued around the basic ideas that the communicational situation is the only way an extremely dependent newborn survives and I insisted on the child's psychogenesis from Lacan's psychoanalysis perspective. I develop, too, the idea of the raising procedure *Homo Sapiens* had within the old paleolithic division of labor, consequently, a fully three-articulation language at his disposal.

I endorsed McLuhan's ideas for understanding media and the grasp of the world as visually dominant, although discussing on synesthesia and accepting Lanier's theory about haptic perception as the global human core that developed Virtual Reality.

Homo Sapiens' trajectory led to a fundamental pedagogical method, used since the very beginning of

his emergence, called by De La Garanderie as Recapitulative Learning or “pedagogical back-summarizing”.

Arriving to the 20th century, I tried to refute Kurzweil’s proposal of IA Machine beyond human intelligence and I defined human intelligence in a ternary way, also presenting the formal Shaumyan’s proposal of a fourth articulation and I applied the theoretical frameworks examined to education.

All I have said is giving the lie to some of the present-day, 21st century science fiction that is at times carried by some intellectuals and entrepreneurs who find in the university labels they may carry away to develop a drastic prediction about the future that must, should, has to be scientific, since the author is from MIT or UC Berkeley or Stanford, though it is only building the emotional climate necessary for them to promote their entrepreneurship.

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