



## Adaptive Changes in the Psyche of Homo Sapiens during the Period of the Singularity (Part 3)

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### Abstract

Personal constitutional and acquired predispositions form preferences in the vectors of perception of information (cultural) sentences of the environment. On these vectors, contextual factors are formed that affect the processing of incoming information, the formation of representations and images, which determine the interpretation of lexical signs. Multiplication of contexts creates metacontexts that define the boundaries of virtual reality. One of the design features of Clip thinking (ClipT) is the formation of metacontexts by external structures: network associations. The metacontexts of ClipT form a new structure of communicative experience that changes the self-identification and socialization of the subject, causing a state of dependence. ClipT has significant similarities with hieroglyphic thinking (HieT), which consists of quantized combinations: image + sense + emotion + tone. Hieroglyphics (thinking and writing) have a metacontext nature, being a formation of an ethnic scale. According to some structural parameters, ClipT and HieT are similar to the level of identity. Fundamental factors are the external genesis of metacontexts; the imagery of thinking; elimination of causal relationships and abstraction; visual “receiving-transmission” of the sense of the perceptual image, including the graphic image; rigidity of mental and behavioral structures; embedded experience; etc.

The integral structure of a legitimizing nature (HieT + writing + language + metacontext continuum [ethnocultural matrix]) forms a parametrically conjugated social structure derived from it. A monolithic socio-cultural conglomeration with a self-reproduction mechanism is created. We believe this principle is universal, with the possibility of extrapolation to any socio-cultural structure.

Currently, the HS population is in a state of forming a universal cultural matrix with the potential to replace ethnocultural matrices. ClipT—the new operating system of the psyche—defines and unifies the transformation of ethnocultural matrices with the vector of universalization. The significant similarity of hieroglyphics with the parameters of ClipT contains the extrapolation potential of modeling (sociological and mathematical) the expected ethnic/universal dynamics of conglomeration: ClipT (psyche as a whole) and congruent social construction. The identity points of ClipT and HieT can find application in the constructions and artificial intelligence learning, as reference points of operating systems of thinking and language, in the structure of which there are no algorithms for cause-effect relationships, analysis, feedback, abstract thinking, and classification structures dominate. (*International Journal of Biomedicine*. 2021;11(3):318-322.)

**Key Words:** hieroglyphic thinking • clip thinking • metacontext • artificial intelligence • ethnocultural matrix

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### Abbreviations

**AI**, artificial intelligence; **ClipT**, clip thinking; **ConceptT**, conceptual thinking; **EE**, embedded experience; **HS**, Homo sapiens; **HieT**, hieroglyphic thinking; **IU**, information universe.

### Basic Part

Imaginations of the HS psyche create and structure the information field of the two-component (real/virtual) environment. The virtual component made it possible for HS to evaluate an object outside the “reactive behavior”

paradigm. The real reflected object in the variants of future interaction (hunting, protection, rituals, etc.) was transformed into a virtual one, with the possibility of variable processing of the methods of interaction and the search for optimal tactics of behavior. Variants of behavior are formed by the interpretation of a set of representations, “extraction” from subjective

experience, which determines the variant of behavior.<sup>(1)</sup> The totality of “imagination” (perceptual, mental), filled with the content (meaning) of images, forms psychological constructs and synthesizes their connections, constructing an integral two-component environment.<sup>(2,3)</sup>

The dynamics of the HS development transformed the initial thinking from “concrete-objective” to “visual-figurative,” then to “abstract-logical.” In other words, from thinking based on interaction with a real object to the possibility of establishing relationships between objects (close forecast), then to operating with categories that are absent in the real sector of the environment. The perception and processing of images of the external environment formed ideas, symbols (image+sense), which initially had a single storyline, a context that integrated increasingly complex ideas, mental constructs. We deliberately simplify this construction, without bringing the hierarchy of HS needs, to build a general scheme for the integration of images, motivation, thinking, verbalization and behavior.

During the 50,000-year period, HS has been forming a new (two-component) habitat for hominids, in which the HS thinking (psyche as a whole) was the tool, creating plot-related sequences of mental constructs. Mental activity is the operation of “signs” and the construction of “sign” models of reality by the psyche. Real objects and their reflections (“signs”) are inextricably linked. Artificial “signs” (words, mathematical signs, etc.) are not associated with the substituted natural objects. The two cerebral hemispheres of the human brain are characterized by different cognitive processing modes. As known, tonal information (melody and intonation) is processed in the right hemisphere, logical-verbal information - in the left hemisphere. The left hemisphere operates with artificial “signs,” the right with natural ones.<sup>(4)</sup>

Book printing, which has shaped “textual” thinking, has created a new type of thinking—ConceptT. The mental, social, and technological dynamics of the 18-20th centuries was formed on the basis of the ConceptT.

The operational basis of ConceptT is the construction of complete sequences based on causal relationships, the interference and integration of which forms systemic formations (constellations) in all areas of the HS activity.

We believe that an important feature of these constellations is the possibility of synthetic unions and analytical (critical) assessment of dynamics and results. Causal relationships, semantic unity, logical sequence, as a constructive tool of ConceptT, make it possible to classify, evaluate, synthesize and analyze each stage of the formation and dynamics of these constellations. In other words, the presence of feedback, analytical (critical) assessment makes it possible to correct and change the vector of development of both mental and behavioral structures. A significant limitation, a sign of insufficiency in modern conditions is the failure of ConceptT in critical situations with a rapid increase in information, leading to “transcendental inhibition.”<sup>(5)</sup>

The modern dynamics of technological development transform HS thinking. Communication technologies change the cultural matrix, with a significant delay in reflection.<sup>(6)</sup> Changes in thinking algorithms (ClipT), under the regulatory

influence of interaction with the “information universe” (IU),<sup>(3)</sup> led to the elimination of the mechanism of autonomous construction of images that have a semantic sequence. The result is in a decrease (elimination in the future) of the ability and needs to build cause-and-effect relationships, with the replacement of interdependence (correlation) with an algorithm; a reduction of synthetic and analytical (critical) functions and generalizations; the loss of feedback, insensitivity to contradictions; a decrease in vocabulary (linguistic minimalism). Structural formations of ClipT codes (meme, gif, smile-emoticon, etc.) are nonlinear and hybrid (the combination of verbal, visual, and other components makes them equivalent). In other words, the “new literacy” of ClipT differs in the principles of coding from the “text” ConceptT. ClipT forms and embeds sequences that do not have complete semantic unity, semantic links and do not involve reflection. The predominance of visual discrete information, which has a higher speed (relative to semantic) processing and does not have emotional derivatives, forms the ability to “multitask,” speeds up and shortens psychological (subjective) time. ClipT is discrete, not integrated into the reflection of life and forms a general “picture of the world” as a fragmentary mosaic with reduced emotional background.

We believe that the new operating system of the psyche (ClipT) is formed in accordance with and depending on changes in the main parameters of the virtual sector of the environment—the information universe (IU). The dynamics of constructive change in thinking (psyche) can be calculated based on the need (perspective) of a conjugate combination of the main parameters of interacting systems: psyche (ClipT) and IU.

The standardization of the virtual component of the habitat forms communities united by universal communication codes, symbols, rituals adopted by these communities. Total “particulars” destroy centralized norms and ethnic standards.

Personal constitutional and acquired predispositions form preferences in the development of the perception vectors of informational (cultural) offers of the environment. We believe, understanding the magnitude of the simplification, that it is on these vectors that contextual factors are formed. These factors affect the system of processing incoming information, constituting an actual situational context, forming imaginations. The context that determines the interpretation of linguistic signs is a set of factors of the environment of the object’s existence, in addition to the sign itself,<sup>(7,8)</sup> the cognitive structure (frame) of schematization of experience.<sup>(9)</sup> Frame constitutes the structural context of interaction,<sup>(10)</sup> the scheme of images.<sup>(11)</sup>

The sequence of the interaction of contexts (frames) leads to “layering,” multiplication of contexts, creating the ultimate metacontext and defining the boundaries of social (virtual) reality.<sup>(10)</sup> It must be emphasized that exactly the metacontexts constituting the sense of our experience, not the ontological structure of objects, constitute reality.<sup>(12)</sup>

We believe that in the structure of ClipT, each perceived image (each structural unit) includes an associated (but not actualized) context. Due to the lack of cause-and-effect relationships of the perceived images, this construction does not have a “metacontext” covering contexts of the same

logical type. The structure and parameters of the actual metacontext in ClipT are formed, imposed, and updated by network associations, which form (regardless of scale) closed systems with their own identification codes. In other words, the constructive feature of ClipT is the formation of the metacontextual potential under the regulatory influence of external systemic formations: network associations that have unified cultural symbols, their own dialect, providing equal access and a way of formatting information. The result is the formation of a new structure of communicative experience, leading to changes in the socialization of the subject, deformation of self-identification, atomization of society, and dependence on an impersonal network association. Replacing the algorithm for creating authentic images with the implantation of generated images of external genesis, forms the embedded experience (EE). That is, a subjective experience is formed, the basic arsenal of which (embedded image + sense) is outside the scope of personal experience, supplementing and replacing the integral structure of individual knowledge and skills acquired during training. Thinking algorithms, built on the basis of EE, actualize the potential of creativity and the creation of abstract-logical constructions based on structures from the arsenal of EE. The defining vector of thinking is the appeal to the EE, which determines the options for behavior in ClipT.

From the basic cognitive ability of subject construction, cognitive abilities associated with languages of different types were formed in phylogenesis.<sup>(13)</sup> The native “proto-languages” of primitive people did not have an analytically differentiated structure.<sup>(14)</sup> Thinking always adapts to the peculiarities of the language, as a factor in the socio-cultural environment.

ClipT, being a new operating system of the psyche that adapts HS to changes in the virtual segment of the environment, in our opinion, has a significant similarity with HieT. Of all the pre-existing hieroglyphic types of writing and thinking, we believe that the most suitable for comparison and research is the classical (not pinyin) hieroglyphic thinking and writing in China.

Hieroglyphs arose from pictographic writing transmit the general idea (sense) of the designated object, phenomenon, concept, and include an image and emotion, being a structural unit of HieT. HieT (a 5000-year period of existence), consisting of quantized integral combinations (image + sense + emotion + tone) is semantically discrete, coming closer to the thinking of the Neolithic people. The Chinese language genetically recorded the earliest form of thinking – figurative thinking.<sup>(15)</sup>

Hieroglyphic writing limits the development of language and eliminates the space of abstract thinking.<sup>(16)</sup> The perception of the world through hieroglyphics is consistently progressive, not divided by signs.<sup>(17)</sup> In colloquial Chinese, the context is significantly limited in accordance with the algorithm for selecting the optimal meaning of a word from a variety of options. This limitation makes the lexical potential several times higher in comparison with the spoken one, increasing the role of the metacontext to the size of a directive factor. The metacontextual nature of hieroglyphic writing is an ethnic-scale formation that structures and determines communication of a legitimizing nature. It is the metacontexts that form not

only the stability of the integral structure (hieroglyphic writing, thinking, and language), but also the balancing of society as a whole (for example, the Confucian category of ritual and ethics - “Li”), ensuring the replication of standard mandatory forms of behavior, forming the EE. The “space of imagination” in the Chinese tradition, in contrast to visual perception (limited by the limits of visibility), is infinite. A lot of events and actions, separated in time and space, are transmitted at a time. In this coordinate system, HS is not the “center of the universe,” but an element, a participant. We believe that the figurative illustration is the “parallel perspective” of Chinese painting, reflecting the dualism of the Chinese worldview.<sup>(18)</sup>

Being a derivative of a pictorial image, in contrast to phonetic writing, hieroglyphs reproduces a complex of associative imaginations associated with the hieroglyphic “image of a concept,” and denotes the sense of a perceptual image through a graphic symbol. When reading hieroglyphs, understanding the meaning occurs in a holistic manner, instantly. Alphabetic writing (ConceptT), to reveal the meaning, requires reading all letters, with the subsequent construction of an image and filling it with sense, sequential processing (“step by step”). Hieroglyph contains “sense” only as an integral image, and the analytical division into graphemes does not reveal the meaning of the integral hieroglyph.

Hieroglyphic writing provides immunity to any external influence, eliminating abstractness during translation, radically changing the sense. Any alien system of representations and meanings is leveled and assimilated by specific symbolic graphemes of hieroglyphic writing and language.<sup>(19)</sup>

We believe that the fundamental constructive similarity between ClipT and HieT is the formation and actualization of the metacontext under the regulatory influence of external factors. In many structural parameters, ClipT and HieT are similar to the level of identity. Here are some parameters: 1) the dominant flow of information is visual, with a similar unit of coding (image-meaning-emotion), including a graphic image; 2) semantic discreteness; 3) sequential-progressive perception, not separated by signs; 4) simultaneous perception of heterogeneous information; 5) the universal codified communication system, cross-border to interdisciplinary borders; 6) elimination of causal relationships; 7) lack of analytical and synthetic functions; 8) hybridity of structural codes (equivalence of components); 9) one-pointedness in thinking and difficulties in correction; 10) a feedback loss, as a result of the lack of analysis and signs of separation (perhaps this is the root cause of the appearance of “parallel perspective” as a self-consistent picture of the universe); 11) the rigidity of the dynamics of the vectors of development of mental and behavioral structures, etc.

HieT excluded the creation of abstract thinking as a mechanism of “distraction” to highlight essential features. In the naturalistic world of the Chinese, classification structures dominate, instead of abstract logical ones (numerology instead of logic).<sup>(20)</sup> We believe that the listed points of the ClipT/HieT identity can find application in programming and AI learning, by extrapolating the principles of operating systems of thinking and language, in the structure of which there are no algorithms of cause-and-effect relationships, analysis, abstract thinking, and classification structures dominate.

Language, as a system of reflection, fixes in its structure the specifics of ethnically conditioned thought.<sup>(21)</sup> Thinking and language (writing, phonetics, grammar, etc.) are part of a culture that has a selective effect on the population.<sup>(13,22)</sup> Culture as a whole is a “grid” that structures the evaluation criteria of environmental images,<sup>(23)</sup> forming ethnocultural matrix.

We believe that the integral structure (Hie-writing + Hie-thinking + language + continuum of metacontexts (Ethnocultural matrix)) is an integral part of a single, holistic education, including a parametrically conjugate, congruent construction of a social structure (hierarchical, centripetal, regardless of the name). We consider that primary in this structure is the “cultural matrix” (language, writing, thinking, metacontext), which has existed unchanged for about 5000 years, while the stable, unchanging social component associated with the matrix (documented statehood) has existed for about 3500 years. We believe that the superimposition of the cultural matrix on the associated social structures derived from it forms the stability and self-reproduction of the social structure as a whole, regardless of external influences.<sup>(24)</sup> In other words, the ethnocultural matrix forms and stabilizes its derivative, parametrically conjugated structure of the social structure (statehood), in accordance with ethnic characteristics. We believe that this principle is universal, with the possibility of extrapolation to any developed socio-cultural structure.

Currently, a global system of unified coding marks is being formed, including identification systems of social networks, the transformation of evaluation criteria, letters and speech, neologisms, emoticons (containing “image + sense + emotion”) and other signs, codes, methods of communication and perception. The expected milestone result of these changes is the formation of a universal coding system of global communication, universal metacontexts, synergistic (multiparadigmatic) thinking, transboundary in relation to disciplinary boundaries.<sup>(25)</sup>

ClipT, formed by the psyche for adequate interaction with the information field of the IU, contains signs and properties that constructively coincide with HieT. As an attractor of the dynamics of the observed changes in the HS psyche, we consider the expected integral structure of conjugated constructs (the “information universe” and the adapted psyche of HS), in which ClipT is the fixed part of the transformation of the psyche. A feature of this construction is the inversion of the vector of the formatting influence: from the “information universe” in the direction of the HS psyche. The interference of the “information universe” and ClipT (psyche as a whole) determines and unifies the transformation vector of ethnocultural matrices. Currently, the HS species population is in a state of forming a universal cultural matrix with the potential to replace ethnocultural matrices.

## Conclusion

The legitimizing constructs of classical Hieroglyphics (thinking, writing, language, metacontext), making up the ethnocultural matrix, form a parametrically coupled stable

social structure. The expected result of modern changes in the HS psyche (ClipT, the formation of a coding system of global communication and universal metacontexts, as well as a synergetic thinking, cross-border to disciplinary boundaries) is the creation of a universal cultural matrix with the potential to replace ethnocultural matrices. The constructive similarity of Hieroglyphics with ClipT contains the potential for sociological and mathematical modeling of the expected dynamics of conglomeration: ClipT (the psyche as a whole) and a social structure congruent to changes in the HS psyche.

## Competing Interests

The authors declare that they have no competing interests.

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