A cognitive view on cultural-historical typology

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Abstract

The problem of cultural-historical typology is one of the most intriguing issues at the crossroads of psychology and cultural theory. This paper presents a preliminary sketch of the four-level-cognitive-development theory to look at this issue from a new perspective. According to the model suggested, three cultural types are marked out: prehistoric and hunter-gatherer culture, early theoretical culture, and modern industrial culture.

Keywords: cultural-historical typology; cognitive development; hunter-gatherer culture; early theoretical culture; modern industrial culture.

Introduction

Cultural anthropology has had a notable influence on the methodology of cognitive science over the last decades. In particular, a number of works in the anthropological paradigm have recently appeared which have cast doubt on the methodological underpinnings and experimental database of psychology as a human science. First of all, Heinrich, Heine, and Norenzayan (2010) should be mentioned in this context (see also Levinson, 2012). At the same time, a positive program of these researches seems quite old-fashioned. Thus, Henrich et al. pose a binary model based on the contrast "savagery – civilization", originating in the 18th century in the Enlightenment (e.g., in the texts of Rousseau), as an alternative to the universalistic approach that, to their minds, dominates in contemporary psychology. The contrast "primitive or small-scale society vs. industrial or large-scale society" is a pivot point of their coordinate system – although they acknowledge its limitations and its palliative character.

When trying to interpret this contrast, however, we encounter another problem that does not seem properly acknowledged, not only in Henrich et al. (2010) but also in many other works in cultural anthropology and social psychology: the interchangeable use of the concepts "society" and "culture". The recent monograph by Richerson and Christiansen (2013) provides a graphic illustration of this state of affairs. The main focus of the book is supposedly the process of *cultural* evolution; in fact, the modelling of *social* shifts (in particular, the shift from small-scale to large-scale societies) turns out to be its bottom line. To a considerable extent, such interchangeability is connected with the definition of culture as "the ideas, skills, attitudes, and norms that people acquire by teaching, imitation, and/or other kinds of learning from other people" (Richerson & Christiansen, 2013, p. 3; cf., e.g., Cole & Scribner, 1974, pp. 5-8). The present paper will not address this definition in detail. I would like to focus on the only aspect that is of great importance for this article: in theoretical culture,[1] alongside the level which provides direct regulation of social life and, by and large, is consistent with the quoted definition of culture, there is also a 'theoretical' or 'hypersocial' level. This level is not connected directly with day-to-day social practices and develops according to its own logic. Euclid's geometry is both one of the earliest and one of the most influential examples of theoretical constructions on a 'hypersocial' level, but not the only one. The 'hypersocial' level is also the basis for Newton's physics, the philosophical systems of Plato, Aristotle, Thomas Aquinas, etc. Such systems have independent structure, the acquisition of which is not directly connected to the social background of a subject (for example, Euclid's geometry is more or less equally accessible to modern industrial European, Indian, and Chinese people).

So, the interchangeable use of the concepts 'society' and 'culture' leads to additional obstacles to the use of the binary model 'small scale society – industrial society' as a tool to elaborate cultural-historical typology. But in particular, as will be illustrated below, the first theoretical cultures emerged later than large-scale civilizations, that leads to a notable gap between social-historical and cultural-historical typology.

The remarks made above set out the methodological framework of this paper. The paper addresses the problem of cultural-historical typology from a cognitive perspective; more precisely, it elaborates a model of cultural-historical typology premised on four basic cognitive levels: level A characterizes great apes, whereas levels B, C and D characterize various cultural practices performed by humans and cultural institutions connected with them. It is to be noted that these levels build on each other, but do not interchange with each other: bearers of culture operating in some cases on level D, in other cases may perform cognitive operations on levels B, C, D, etc.

Level A. Great apes

First of all, a further comment on methodology: researchers investigating cognitive skills of animals (in particular,

[1] Theoretical culture is understood here as culture with developed forms of theoretical activity, that is, forms based on special practices for their acquisition, translation and evolution which are set apart from everyday life (see, e.g., Romanov, 2014, pp. 189–196; Glebkin, 2012, p. 1603).

primates) often highlight the capacity of some animals to perform high-level cognitive operations, right up to discovering the 'theory of mind' (e.g., Byrne, 1995; Heyes, 1998). More precise analysis, however, establishes that such inferences are based on an incorrect use of the concept 'mind', where a 'psychological' approach is confused with a 'philosophical' one (for criticisms of such works see Tomasello et al., 2003; Tomasello & Call, 2011). Therefore, in order to avoid incorrect interpretation a researcher has to choose investigations in this field with great care, focusing on those where the results are represented with a maximum of detail and without short-hand generalizations. The works of Michael Tomasello and colleagues seem to correspond to these demands.

The cognitive skills of great apes (i.e., capacities providing for cognitive operations on the level A) can be described as follows:

1. Skills in the physical domain.

1.1. The skills to remember an object's location and to choose a shortcut to an object of interest in a nearby space; in other words, the skills of cognitive mapping of the region of everyday activity (for a review of experimental research see in Tomasello, Call 1997, pp. 27–28, 34), and also other skills of spatial cognition (e.g., searching for hidden objects or food in small spaces, based on the understanding that the object of interest does not disappear behind an opaque obstacle, and furthermore that it can change its location while hidden, performing both rotational and forward motion (ibid., pp. 36–46).

1.2. The skills to estimate number and size of objects and to compare different quantities (ibid., pp. 136–161).

1.3. In a number of situations, the skills to exploit tools 'deliberately' (e.g., by necessity exchanging a thick stick for a thin one, a short stick for a long one, etc., in order to grasp an object); the understanding of simple causal links between objects (ibid., pp. 57–99).

2. Skills in the social domain.

2.1. The capacity to understand and to take into account in actions peculiarities of perception of conspecifics in the process of direct communication (e.g., understanding what conspecifics can and cannot see, what is for them a physical obstacle to gaining the object of interest, etc.; see Tomasello et al., 2003; Tomasello, 2008, pp. 47–48).

2.2. The capacity to understand and to take into account in actions peculiarities of perceptive information, which conspecifics obtained in the recent past (Tomasello et al., 2003).

2.3. The capacity to understand and to take into account in actions whether conspecifics perform consciously or not, to allow for a direction of their focus of attention (Tomasello, 2008, pp. 45–46).

2.4. The capacity to hide from conspecifics intentions and information obtained (Tomasello, 2008, pp. 45–46).

Data from comparative experiments show that scores for physical-domain skills among great apes are around the same level as those for 2.5-year-old children from industrial-nation families (Herrmann et al., 2007). Meanwhile, skills in the social domain for great apes are limited by rivalry; a change of a task for social cooperation blocks an actualization of these skills (Tomasello 2008, pp. 39–41, 52–53; Tomasello 2009, pp. 16–17, 31–33). Also, the capacities to estimate a location and interpret intentions of conspecifics, as well as situational competences are connected in apes with a superficial level of perception, which ignores, for example, reasons for intentions or possible alternatives. In other words, great apes act in an ego-perspective, perceiving the intentions of their conspecifics as similar, in the great scheme of things, to the solidity of stone or the elasticity of certain kinds of wood, i.e., a characteristic of the environment that can be used in one's interests. If this is so, the claims of some researchers that great apes can change ego-perspective to you-perspective or even s/he-perspective seem far-fetched (Tomasello, 2009, pp. 31–33, 67–68).

The unique feature of human beings that distinguishes them from other primates is, for Tomasello and his colleagues, their capacity for cooperation and sharing interests in a wide range of situations (common activity, learning, etc.), in shared intentionality, connected with the emergence of special milieu, described by the word 'culture'. Cooperation for human beings as a biological species turned out to be the most effective means to respond to the challenge of their environment, and it intensively developed in evolution, prompted by the positive feedback system (Tomasello, 2009, pp. X–XV; Tomasello, 2009a).

It is worth noting that Tomasello with colleagues look at mankind as a single biological species with a set of specific features, and they do not address the problem of the development of human cognitive capacities in the wake of cultural evolution, despite the fact that a majority of their experiments has been provided with children from WEIRD people families. Meanwhile, few comparative researches in this field support the thesis of the universality of human beings, at least, for basic communicative and cognitive skills (understanding intentions and attention; sharing intentions and attention; corresponding and using symbols): all these skills emerge in a wide range of cultures given some differences in the time of their emergence (e.g., Callaghan et al., 2011).

Taken the theory of the universality of human beings beyond any discussion it is worthwhile to note that some levels of cognitive operations may be marked out in humans in order to create the basis for constructing a cultural-historical typology. Let us move on to their description.

Level B. Prehistoric culture and hunter-gatherer culture

Given the lack of written sources and the extreme scarcity of archaeological data, any hypothesis on the structure of prehistoric culture is fated to be speculation. Theories of prehistoric culture based on radically different underpinnings confirm this point (e.g., Eliade, 1959; Renfrew, 2008; Rossano, 2010). At the same time, the problem of establishing basic characteristics of prehistoric culture is

too important not to attempt the elaboration of a theoretical model, given the understanding of its hypothetical character. Some assumptions then are needed. In the last decade a number of papers have been published which tackle this issue. They are premised on quite sophisticated assumptions: working-memory capacity (Haidle 2009, 2010), analogical thinking (Beaune de, 2009), etc. However, it would be a mistake to underestimate an approach with a long backstory, which looks both more transparent and more convincing. This approach focus on the cognitive likeness of prehistoric culture to hunter-gatherer culture (or foraging culture), based on the likeness of everyday activities (e.g., Romanov, 1991, pp. 6–10)[2]. To some extent, indirect evidence for this can also be found in the cultures of Ancient Egypt and Ancient Babylonia (Glebkin, 2011).

The analysis of cognitive skills in hunter-gatherer (or foraging) cultures gives, therefore, an 'upper level' for a description of prehistoric culture: people belonging to prehistoric culture perform cognitive operations on level A, at the same time gradually elaborating level B.

A traditional argument against typological resemblance of prehistoric culture and hunter-gatherer culture concerns the impossibility of discovering a 'clear case': almost all such cultures that exist now have had more-or-less intensive contact with modern industrial culture, which significantly decreases the validity of the experiment. However, this is not so for ethnographical data from the end of the 19th and the first half of the 20th century. These data are more authentic, so we will address mainly them.

The major cognitive skills on level B can be described as follows:

1. Skills in the physical domain.

1.1. The use of language to conceptualize the environment; the emergence of fine-grained classification schemas (e.g., in the field of 'folk biology'; see Bailenson et al., 2002, pp. 37–41) based on language.

1.2. The constructing and systematic use of special tools obtained from objects in the environment.

1.3. The planning of everyday activity within a production cycle over a long time, taking into account specificity of season work.

2. Skills in the social domain.

2.1. The understanding and the conscious following of norms of social stratification, rules regulating kinship relations, etc., as formed in the social domain.

2.2. The participation in various forms of social communication, such as shared production activity, 'rites of passage', etc.

2.3. The production of various (mythological, ritual, folk) oral texts based on day-to-day experience.

It is of the same importance, however, to describe which actions cannot be performed on the level B. Cognitive skills on this level are characterized by strict links with the domain of day-to-day activity, and they do not assume either any operations in 'theoretical' domains or any view on such activity from a 'theoretical' perspective.This leads to the following consequences: a) the lack of capacity to apply an abstract criterion to single out an excess object in a group of objects, to determine limits of a concept ('complex thinking': see Luria, 1976, pp. 48–100; Vygotsky, 1986, pp. 113–127); b) an inability to understand the structure of syllogisms (or to repeat them correctly); a failure to solve syllogisms (Luria, 1976, pp. 101–135; Cole, Gay, Glick and Sharp, 1971, pp. 184–197; Cole & Scribner, 1974: 160–168; Tulviste, 1991, pp. 176–195; cf. Johnson-Laird, 1983); c) an inability to solve 'counterfactual' problems (i.e., problems which contradict everyday experience), despite having the capacity to solve similar problems that are consistent with everyday experience (Luria, 1976, pp. 101–134); d) a lack of capacity to characterize one's merits and demerits, to 'tell one's autobiography', i.e., a lack of any 'introspective level' of consciousness (Luria, 1976, pp. 144–160; Romanov, 2014, pp. 176–183; Röttger-Rössler, 1993); e) a lack of 'curiosity', i.e., a lack of interest in things and events beyond day-to-day experience (Luria, 1976, pp. 135–143).

These points have raised a lot of objections, but these have been based mainly on misunderstandings (e.g., Cole, 1996, pp. 146–177). In order to avoid such misunderstandings, at least three specifications are needed.

Firstly, the point is not that people belonging to hunter-gatherer cultures fail to solve syllogisms and perform abstract operations as a matter of principle; it is rather that their mode of life does not lead to the necessity to perform such operations. As Luria's results clearly show, if such people live in a context where skills of abstract reasoning are demanded (e.g., studying in boarding schools), they are rather successful in acquiring them.

Secondly, followers of cultural psychology are often reproached with the unnatural conditions of their experiments. However, similar inferences can be made from an analysis of oral texts created by hunter-gatherer peoples on their own. In particular, when people of a hunter-gatherer culture try to acquire a story from a theoretical culture, they tend to lose in their exposition logical links between the particular parts, which is consistent with their failure to repeat a syllogism while saving its logical frame.

Thirdly, some of the points posited above correlate, at first sight, with data from experiments that establish a difference between 'Western' and 'Eastern' models of reasoning. Thus, a number of studies (e.g., Norenzayan et al., 2002; Kitayama et al., 2007) discovered that educated people from China, Japan and South Korea, in comparison with similarly educated people from the USA or Western Europe, are more oriented to context and less focused on formal schemas when performing various intellectual operations (in particular, solving syllogisms). This seems consistent with results for the people of hunter-gatherer cultures. However, there is a crucial difference between variation in percentage scores in performing a cognitive operation and total rejection of per-

[2] Such a likeness is supposed by default in the concept 'primitive culture', which may mean both 'prehistoric culture' and 'hunter-gatherer culture'.

forming it. Of no less importance is the difference in the perception of experimental procedures between people of modern 'Eastern' cultures and, say, Luria's Dehkans. In Luria's experiments the Dehkan people understood the experiment as a part of their everyday life, something like table-talk; they did not see it as a special procedure, distanced from their day-to-day experience (cf. Romanov, 2014, pp. 157–163). On the contrary, the modern-society Chinese, Japanese and South Korean participants clearly recognized limits to the experimental situation. To generalize this point, there is a radical difference in cognitive skills between hunter-gatherer people and 'Eastern' people. We will return to the contrast 'Eastern cultures vs. Western cultures' later on.

Level C. Early theoretical cultures

First of all, it is worth noting that the emergence of the first large-scale civilizations (Ancient Egypt, Ancient Babylon, etc.) did not bring about the complete acquisition of cognitive level C by these peoples. Evidence for this can be found in a general examination of both the 'scientific' and 'artistic' views which characterize these cultural traditions (see, e.g., Diakonoff, 1982, pp. 61–62, 68, 81–83), as well as in the analysis of particular texts. Thus, mathematical problems in the Babylonian tradition are strictly connected with a concrete production context; Babylonian mathematics has no special terminology or abstract domains to which such terminology might correspond (e.g., Waerden, 1954, pp. 15–81; Frieberg, 2007, pp. 1–11). Also the Babylonian legislative text 'The Code of Hammurabi', which according to its social function should be expected to have a robust, formal structure, turns out to implement a complex type of thinking, which characterizes people of hunter-gatherer cultures (Glebkin, 2011).

In fact, level C first emerges in early theoretical cultures, such as Ancient Greece, Ancient China, and Ancient India. This level is connected with a developed written language, and a literature which is based on this language and has no direct links with practical (magical, etc.) tasks. It can also be characterized by the emergence of special theoretical domains, some of them providing theoretical analysis of social processes (e.g., historiography – Herodotus, Thucydides, Sima Qian, etc.; social theory – Plato, Aristotle, Confucius, Laozi, etc.), and others distant from everyday life, existing as self-sufficient theoretical systems (e.g., mathematics – Euclid's "Elements", "Jiuzhang suanshu", etc.; linguistics – Pāṇini's "Ashtadhyayi", etc.; philosophy – Plato, Aristotle, "Lüshi chunqiu", Vedanta, etc.; literary theory – Aristotle's "Poetics", etc.). These domains give rise to special institutions, systematizing and passing on theoretical knowledge, and also to complex forms of social behaviour, providing for the application of this knowledge in everyday experience.

Given this, some researchers take for granted the lack of qualitative difference between early theoretical cultures (e.g., that of Ancient Greece) and modern ones, and refer to them as the same (e.g., Nisbett et al., 2001). Nevertheless, there is clear evidence against this. For example, the analysis of Ancient Greek mathematical texts (e.g., Euclid's "Elements") and Ancient Greek historiography (e.g., treatises of Herodotus and Thucydides) brings out the crucial role of visual experience in the approaches used. In mathematics, this leads, in particular, to visual ('geometric') images of numbers and to a lack of abstract symbols as signs of mathematical objects; this brings about a certain 'bulkiness' of proofs and radically limits the potential for development of Ancient Greek mathematics (see, e.g., Waerden, 1954, pp. 82–202). In historiography, the analysis of Herodotus's and Thucydides's scientific styles gives some evidence that is consistent with this. The bulk of Herodotus's "Histories" is made up of 'cinematic' scenes based on visual perception; meanwhile, Thucydides represents key ideas in the form of imaginary speeches of characters, and the description bears a strong resemblance to Euripides' tragedies (Glebkin, 2012).

Consistent with these features is the lack of the notion of Self as modern people have grown used to understanding it, i.e., as a person with the capacity for deep introspection. Ancient Greek man contemplates intently the world around him, rather than his own soul (e.g., Vernant, 1991, pp. 56–59).

A new level of abstraction in cognitive operations emerges in the wake of the emergence of the world religions. The idea of a transcendental God, the basic idea of Islam and an important one for Christianity (represented for example in the concept of apophatic theology), paves the way for much more abstract systems of theoretical knowledge (in particular, a comparison of Plotinus's and Augustine's views brings out radical transformations in the concept of 'number'; see Glebkin, 2009); similar results are yielded by a comparison of Christian and Ancient Greek historiography (Glebkin, 2012). Although arising in the Early Middle Ages, these possibilities are actualized in full measure in Modern European culture.

Level D. Modernity in Europe, modern industrial cultures

In order to characterize level D one can make use of the model originated by J. Piaget and R. Garcia in another context: if conceptual structures on level C are forms of objects from the natural/social world, then on level D these forms are already objects, and new theoretical structures turn out to be forms of forms (Piaget, Garcia, 1976, pp. 270–271). Such structures characterize modern mathematics (non-Euclidean geometry, infinite-dimensional spaces, etc.), but their use in general is much wider. Theoretical mechanics, originated by Lagrange, Laplace and others in the 17th and 18th centuries, can be seen as the first structure of this type.

Another sign of more complex conceptual structures and the loss of direct links with physical and social settings is the high level of introspection that is an important trait of the epoch of Modernity in Europe, and more or less of modern industrial cultures in the East. This trait is

represented, in particular, in the deep psychologism of the European and world literature of Modernity, and also in the emergence of various psychological theories that focus on a scrupulous description of inner states of human beings.

In order to avoid misunderstanding, it is worth noting that cognitive operations on level D are performed by only a limited part of the people of modern cultures. However, addressing even such specific theoretic structures as functional analysis, non-Euclidean geometry, and quantum field theory, it is hard to deny that they are important parts of modern science, and, hence, modern culture. It would be a mistake, therefore, to ignore them to focus on more widespread cultural practices. The emergence of such theoretical structures represents an important qualitative difference between modern industrial cultures and early theoretical ones.

Another important point we should take into account is the difference between Eastern and Western types of reasoning, as mentioned above. Despite the importance of empirical data collected by various researchers, the variations between these types are in one sense not significant: all operations on level D can be performed by both Western and Eastern people. Western and Eastern cultures can be interpreted as two versions of modern industrial culture; both groups can perform cognitive operations on all levels (A, B, C, D).

General discussion

Summing up, I would like to address two aspects of this research.

Firstly, it should be stressed once again that the levels described build on each other, but do not replace previous ones; guided by circumstances the people of a modern culture can perform cognitive operations on levels A, B, C, and D, the people of an early theoretical culture – on levels A, B, and C, etc. Fig. 1 gives a visual representation of this point.

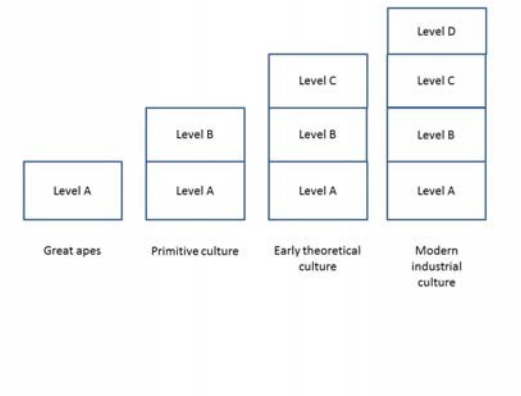

Fig. 1. The correlation between cognitive levels and cultural types.

Secondly, the important challenge is to combine these cognitive levels and shift from one level to another into a general scheme, in other words, to unify the model described. A thorough discussion of this problem would fill at least one further paper; however, a preliminary remark can be made here. Vygotsky, with reference to Levin, and, independently, Witkin, elaborate the concept of contingency with the psychological field (Samuhin, Birenbaum, and Vygotsky, 1981), and field-dependent cognitive style (Witkin, 1967; cf. Kitayama, Duffy, Kawamura and Larsen, 2003). Although Vygotsky's approach seems too general, and Witkin's too narrow to truly explain the issue, the shift from level A to level B, and then to level C, etc., may be represented as the 'slackening' of links with psychological fields and the finding of new 'degrees of freedom'.

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