The Problem of Cultural-Historical Typology From the Four-Level-Cognitive-Development Theory Perspective

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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 article 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 (e.g., Ancient Greek, Ancient Chinese, Ancient Indian), and modern industrial culture. The major features of four cognitive levels are described; the links between them and cultural types are explored. Also some conjectures are posed concerning social-cultural processes that entailed the emergence of new cognitive levels.

Keywords
cultural-historical typology, four-level-cognitive-development theory

Introduction
Cultural anthropology has had a notable influence on the methodology of the human sciences 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. Henrich, Heine, and Norenzayan (2010) should be mentioned in this context as a notable example (see also Levinson, 2012). These authors refer to a wide range of data to demonstrate that the referent group for the vast majority of psychological experiments is not representative for studying human beings: Subjects in 96% of investigations are people from communities comprising only 12% of the world’s population (Arnett, 2008; Henrich et al., 2010, p. 63). The results of various comparative studies show graphically that WEIRD (i.e., Western, educated, intellectual, rich, democratic) people turn out to be “weird” in the literal sense, because their data occupy an extreme limit of the experimental spectrum.

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Although this criticism is very important, I would like to focus on the positive program of Henrich et al. (2010). As an alternative of "weird people," they point to people of small-scale societies defined as

social groups living in small, geographically distinct populations (e.g., villages) that range in size from a handful to a few thousand. Prototypically, the social organization of these groups is local, and often kin-based. The division of labour is not extensive, and households typically produce a substantial fraction of their own food. Interactions are mostly face-to-face. (Henrich et al., 2010, p. 123)

The major intention of the article is expressed in the question of which of the groups—small-scale societies or educated Western people—is more representative of human beings in general (Henrich et al., 2010).

In other words, 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.¹

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 modeling 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., for example, Cole & Packer, 2011, p. 135; Cole & Scribner, 1974, pp. 5-8). The present article will not address this definition in detail and will refrain from engaging with the wide spectrum of other definitions of the concept “culture” (for an overview, see, for example, Kroeber & Kluckhohn, 1952; Kuper, 1999; Muller, 2005). I would like to focus on the only aspect that is of great importance for this article: In theoretical culture,² alongside the level that 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, and so on. 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.)³

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.⁴ But in particular, as will be illustrated below, the first theoretical cultures emerged later than large-scale civilizations, which leads to a notable gap between social-historical and cultural-historical typology.

The remarks made above set out the methodological framework of this article. The article addresses the problem of cultural-historical typology from a cognitive perspective; more precisely, it presents a preliminary 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 A, B, C, and so on.

**Level A. Great Apes**

First of all, a further comment on methodology: Researchers investigating cognitive skills of animals (in particular, 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 Glebkin, 2010, pp. 75-84; Hare, Call, & Tomasello, 2001; Tomasello & Call, 2011; Tomasello, Call, & Hare, 2003). Therefore, 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 Tomasello & Call, 1997), 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 (Tomasello & Call, 1997).
   1.2. The skills to estimate number and size of objects and to compare different quantities (Tomasello & Call, 1997).
   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, and so on, to grasp an object); the understanding of simple causal links between objects (Tomasello & Call, 1997).

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, and so on; see Hare, Call, Agnetta, & Tomasello, 2000; Tomasello, 2008; Tomasello et al., 2003).
   2.2. The capacity to understand and to take into account in actions peculiarities of perceptive information, which conspecifics obtained in the recent past (Hare et al., 2001; 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; Tomasello, Carpenter, & Hobson, 2005).
2.4. The capacity to hide from conspecifics intentions and information obtained (Tomasello, 2008).

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, Call, Hernández-Lloreda, Hare, & Tomasello, 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, 2009b; Tomasello et al., 2005). 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, that is, 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 he- or she-perspective seem far-fetched (Tomasello, 2009; Tomasello et al., 2005).

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 intentionalty, 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, 1999, 2009a, 2009b, 2014; Tomasello, Kruger, & Ratner, 1993; Tomasello et al., 2005, pp. 114-117; cf. Heyes, 2014; Rogoff, 2003, pp. 32-101; Sterelny, 2012).

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 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., Bradley, 2002; Eliade, 1959a, 1959b; 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 articles have been published that tackle this issue. They are premised on quite sophisticated assumptions: working-memory capacity (Haidle, 2009, 2010), analogical thinking (Beaune de, 2009), and so on. However, it would be a mistake to underestimate an approach with a long backstory, which looks both more transparent and more convincing. This approach focuses 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). 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 the typological resemblance between prehistoric culture and hunter-gatherer culture states the impossibility of discovering a “clear case,” that is, that almost all existing examples of hunter-gatherer cultures have now had more-or-less intensive contact with modern industrial culture, which significantly decreases the validity of the experiment. However, this argument hardly holds water. First, there remain some hunter-gatherer cultures in the modern world that have not had any notable contact with modernity (e.g., Abbasi, 2001); second, a considerable number of such cultures were described by researchers quite thoroughly at the end of the 19th and in the first half of the 20th century. We mainly address these ethnographical data.

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, Shum, Atran, Medin, & Coley, 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, and so on, as formed in the social domain.
   2.2. The participation in various forms of social communication, such as shared production activity, “rites of passage,” and so on.
   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 (Cole, Gay, Glick, & Sharp, 1971; Cole & Scribner, 1974; Luria, 1976; Tulviste, 1991; cf. Johnson-Laird, 1983a, 1983b); (c) an inability to solve “counterfactual” problems (i.e., problems that 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,” that is, a lack of any “introspective level” of consciousness (Glebkin, 2013; Luria, 1976, pp. 144-160; Romanov, 2014, pp. 176-183; Röttger-Rössler, 1993); (e) a lack of “curiosity,” that is, a lack of interest in things and events beyond day-to-day experience (Luria, 1976, pp. 135-143; Vasilevich, 1936, p. 236).
These points have raised a lot of objections, but these have been based mainly on misunderstandings (e.g., Cole, 1996, pp. 146-177). To avoid such misunderstandings, at least three specifications are needed.

First, 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.

Second, 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. To give only one illustration: The Nganasan people of Siberia give an exposition of the story of the Fall of Adam and Eve that combines some fragments of the biblical plot in a very strange narrative:

Бог сделал двух людей. Были это самоды или русские, не знаю. Одежды никакой не было у них. Теперь бог сказал им: [God made two people. I do not know whether they were the Samoyeds or Russians. They have no clothes. Now God said to them:]

− Траву не ешьте. [Do not eat grass.]

Бог ушел. Два человека сидели. Потом пришел еще один человек. Они его спросили: [God went away. Two people were sitting. Then one more man came. They asked him:]

− Ты какой человек? [What man are you?]

− Я человек. [I am a man.]

− Что ешь? [What are you eating?]

− Траву ем. [I am eating grass.]

Двое людей травы поели. Верно – сладко. Но посмотрели они друг на друга, стало им стыдно, и закрыли они себя травой. Пришел бог и говорит. [Two people have eaten grass. That’s right, it is sweet. But they looked at each other, they felt shame and they covered each other with grass. God came and said:]

− Ну, траву ели? [Well, have you eaten grass?]

− Не ели. [No, we have not.]

Бог посмотрел. [God looked.]

− Ну, ты мужчина, а ты женщина. [Well, you are a man, and you are a woman.]

Увидев это, бог покинул их. После этого стали они жить. [After seeing this God left them. After that they got living.] (Dolgij, 1976, pp. 161-162)

Third, 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., Kitayama, Duffy, & Uchida, 2007; Markus, & Kitayama, 1991; Markus, & Kitayama, 2003; Norenzayan, 1999; Norenzayan, Smith, Kim, & Nisbett, 2002) discovered that educated people from China, Japan, and South Korea, in comparison with similarly educated people from the United States 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 performing it. Of no less importance is the difference in the perception of experimental procedures between people of modern “Eastern” cultures and, say, Luria’s Dehkan. 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). 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.

**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, for example, 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., Friberg, 2007; Neugebauer, Sachs, & Goetze, 1945; Waerden, 1954). 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 that 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, “Lūshi 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 behavior, 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, Peng, Choi, & Norenzayan, 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, for example, Klein, 1992, pp. 37-126; 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, that is, 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., Gill, 1995; Jarcho, 1983; Vernant, 1991).

**Level D. Modernity in Europe, Modern Industrial Cultures**

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). 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 an important sample of this type.

A new level of abstraction in cognitive operations emerges in the wake of the emergence of the world religions. The idea of a transcendent 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).

Let me illustrate this point with the example of the ontological argument for the existence of God suggested by the Benedictine monk Anselm of Canterbury in his *Proslogion* (1177-1178).

Well then, Lord, You who give understanding to faith, grant me that I may understand, as much as You see fit, that You exist as we believe You to exist, and that You are what we believe You to be. Now we believe that You are something than which nothing greater can be thought. Or can it be that a thing of such a nature does not exist, since “the Fool has said in his heart, there is no God” (Ps. 13: 1, 52: 1)? But surely, when this same Fool hears what I am speaking about, namely, “something-than-which-nothing-greater-can-be-thought,” he understands what he hears, and what he understands is in his mind, even if he does not understand that it actually exists. For it is one thing for an object to exist in the mind, and another thing to understand that an object actually exists. Thus, when a painter plans beforehand what he is going to execute, he has [the picture] in his mind, but he does not yet think that it actually exists because he has not yet executed it. However, when he has actually painted it, then he both has it in his mind and understands that it exists because he has now made it. Even the Fool, then, is forced to agree that something-than-which-nothing-greater-can-be-thought exists in the mind, because he understands this when he hears it, and whatever is understood is in the mind. And surely that-than-which-a-greater-cannot-be-thought cannot exist in the mind alone. For if it exists solely in the mind even, it can be thought to exist in reality also, which is greater. If then that-than-which-a-greater-cannot-be-thought exists in the mind alone, this same that-than-which-a-greater-cannot-be-thought is that-than-which-a-greater-can-be-thought. But this is obviously impossible. Therefore there is absolutely no doubt that something-than-which-a-greater-cannot-be-thought exists both in the mind and in reality.” (Translated by M. J. Charlesworth; Anselm of Canterbury, 1998, pp. 87-88)

Some aspects of this text should be stressed. We can see that it is structured as a theorem of geometry. Anselm gives a definition of God as “something than which nothing greater can be thought,” then twice deploys proof by contradiction to argue for God’s existence in the mind, and, after that, also for God’s existence in reality. In the meantime, unlike Euclid and Aristotle,
he addresses the entity without any visual or other perceptual images, and without any human-like representations. In other words, he explores some abstract object using similar techniques to those used by modern mathematics.

There is clear evidence for the last point in medieval Islamic culture, where we can find proofs of God’s existence similar to Anselm’s (e.g., Morewedge, 1979; Yaran, 2003), as well as other quite abstract theological models (e.g., Abrahamov, 1998; Arnaldez, 2000). Meanwhile, medieval Arabian mathematicians interpreted numbers in a more abstract way than their counterparts in Greece; in particular, they almost removed the distinction between magnitude and number, which was one of the keystones of Euclid’s *Elements*. This enabled great strides in mathematics and opened new possibilities for the science of Early Modernity (e.g., Berggren, 1986; Rāshid, 1994).

Being restricted by the domain of theology in medieval culture, cognitive skills on Level D are actualized in a wide spectrum of other domains in Modernity. Such a sign of more complex conceptual structures and of the loss of direct links with physical and social settings is, in particular, 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 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. An important part of the life of modern people is the constructing of possible worlds, in particular, elaborating various games based on a system of abstract rules.6

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).

**Conclusion**

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

A. It should be stressed once again that the levels described build on each other, but do not interchange with each other; 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; and so on. Figure 1 gives a visual representation of this point.

B. To avoid misunderstanding, it is worth noting once again that only a preliminary version of the four-level model was represented in this article. A number of issues left beyond it. First, a thorough specification of cognitive skills on levels C and D in different cultural domains is needed. Second, of great importance is the problem of emergence of cognitive skills on Level D in Eastern cultures (India, China, Japan, etc.). In particular, are there any operations on Level D in medieval Indian philosophy (Vedanta, Samkhya, Nyaya), in Indian and Chinese Buddhist philosophy, or in treatises of exponents of Neo-Confucianism (Zhu Xi, Wang Yangming, etc.)? Third, it is worth to specify different versions of socio-cultural processes that led to emergence of cognitive operations on Level C and Level D. I hope that this article could be a pivot point for further fruitful discussion in this scope.
C. The important challenge is to combine cognitive Levels A, B, C, and D and shifts 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 article; 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, & Vygotsky, 1981), and field-dependent cognitive style (Witkin, 1967; Witkin, Moore, Goodenough, & Cox, 1977; 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, and so on, may be represented as the “slackening” of links with psychological fields and the finding of new “degrees of freedom.”

Declaration of Conflicting Interests
The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Funding
The author(s) received no financial support for the research, authorship, and/or publication of this article.

Notes
1. Other contrasts described by the authors (Western vs. non-Western societies; contemporary Americans vs. the rest of the West; typical contemporary American subjects vs. other Americans) appear as secondary.
2. 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, for example, Glebkin, 2012; Romanov, 2014; cf. Mailloux, 1998).
3. This point does not contradict the considerable influence of cultural context on Euclid’s geometry, as well as on Newton’s physics, philosophical systems of Plato, Descartes, and so on (for an analysis of this influence on Euclid’s geometry see, for example, Glebkin, 2012, and on Newton’s physics, see Popkin, 1990; Webster, 1982). However, this context is not crucial for an understanding of the gist; these ideas are usually processed as independent structures beyond any cultural context.
4. It worth noting, however, that the same problem also characterizes more complicated models, where it looks even harder because of the use of such categories as “civilization,” “state,” and so on. (see, for example, Mann, 1986; Sanderson, 1995).
5. Such a likeness is supposed by default in the concept “primitive culture,” which may mean both “prehistoric culture” and “hunter-gatherer culture.”

Figure 1. The correlation between cognitive levels and cultural types.
6. Certainly, some intellectual games were created in antiquity; however, the cognitive distance between these games and modern ones is comparable with the distance between Euclid’s geometry and modern mathematics.

References


