The 'School of Structural Analysis' in Modern Russian Sinology

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The second half of the twentieth century was marked by the appearance of a new and original school in Russian sinology which uses the so-called methodology of 'structural analysis' in studying Chinese classics and attempts to find an authentic methodology among Chinese philosophers themselves. Its most influential representatives are V.S. Spirin, A. M. Karapetyants, A. I. Kobzev and A. A. Krushinsky. The main thesis of Russian 'structuralists' is that the composition of the ancient Chinese text influences its content directly. A composition of a text is derived from a configuration of its parallel passages. The method of 'structural analysis', therefore, aims to detect and describe these parallelisms, and then makes some interpretation of them.

The present paper gives a short introduction to the history of this school, its main representatives and concepts, and also shows how the method of 'structural analysis' works on some concrete examples.

Keywords: Russian sinology, structural analysis, logic, Chinese, science

1 Introduction

The central problem stated by the school of structural[1] analysis is neither new nor specific for Russian sinology only. It is a problem concerning the foundations of 'Chinese thought', namely: How did (if they did) traditional Chinese scholars produce, search, sort, understand and use (philosophical) knowledge?

By the second half of the twentieth century there was a whole spectrum of views on ancient Chinese rationality in world sinology. At one end of the spectrum, echoing from the Eurocentrism of the seventeenth to nineteenth centuries, there was a position that a full-fledged science and logic in ancient China could have existed. This could be called a 'Chinese scientism' position. Authors as Hu Shi[2], J. Needham[3], J. Chmielewski[4] inclined to this position with varying proximity. At the other end, there was a position according to which ancient Chinese rationality is different from its Western counterpart: it is neither logical, nor scientific. Such authors as A. Forke[5], A. Maspero[6], M. Granet[7] represent this position. Let it be called a 'Chinese anti-scientism'. Such scholars as A. Graham[8], N. Sivin[9], C. Hansen[10] can be placed between 'Chinese scientism' and 'Chinese anti-scientism.' They agree that in ancient Chinese thought there could have been structures, similar (but not the same) to those in Greek or modern thought. Ancient Chinese thought had on this account its own specifics. Neither does this, however, deprive it of rationality nor, in some cases, even of a scientific-like approach.

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The main feature of traditional Chinese thinking, which was discovered in the course of discussions on Chinese science and rationality, was called 'numerology' (Chin. *xiangshu-zhi xue* 象數之學, literally 'studies on images and numbers') or 'correlative thinking' (although not all scholars treat these two terms as synonyms[11]). As a very good example of 'correlative thinking,' we can take the following excerpt from the Early Han text (second century BCE) *Huainan-zi* 淮南子 "Master(s) from Huainan" (Chapter 4, passage 13 according to "Chinese Text Project"):

> 凡人民禽獸萬物貞蟲，各有以生，或奇或偶，或飛或走，莫知其情，唯知通道者，能原本之。天一地二人三，三三而九，九九八十一。一主日，日數十，日主人，人故十月而生。八九七十二，二主偶，偶以承奇，奇主辰，辰主月，月主馬，馬故十二月而生。七九六十三，三主鬥，鬥主犬，犬故三月而生。六九五十四，四主時，時主彘，彘故四月而生。五九四十五，五主音，音主猿，猿故五月而生。四九三十六，六主律，律主麋鹿，麋鹿故六月而生。三九二十七，七主星，星主虎，虎故七月而生。二九十八，八主風，風主蟲，蟲故八月而化。[12]

> Concerning humans, birds, and beasts, the myriad creatures and tiny organisms, each has that from which it is born. Some are odd and some are even; some fly and some go on foot, but no one understands these instinctive responses. Only one who knows how to trace the Way can get to the source and root of it. Heaven is one, Earth is two, man is three. Three times three equals nine. Nine times nine equals eighty-one. One governs the sun. The number of the sun is ten. The sun governs man, so man is born in the tenth month [of pregnancy]. Eight times nine equals seventy-two. Two governs even numbers. Even numbers contain odd numbers. Odd numbers govern the chronograms. The chronograms govern the moon. The moon governs the horse, so horses are born in the twelfth month [of pregnancy]. Seven times nine equals sixty-three. Three governs the Dipper. The Dipper governs the dog, so dogs are born in the third month [of pregnancy]. Six times nine equals fifty-four. Four governs the seasons. The seasons govern the pig, so pigs are born in the fourth month [of pregnancy]. Five times nine equals forty-five. Five governs the musical notes [of the pentatonic scale]. The musical notes govern the ape, so apes are born in the fifth month [of pregnancy]. Four times nine equals thirty-six. Six governs the notes [of the pitch pipes]. The pitch-pipe notes govern the deer, so deer are born in the sixth month [of pregnancy]. Three times nine equals twenty-seven. Seven governs the stars. The stars govern the tiger, so tigers are born in the seventh month [of pregnancy]. Two times nine equals eighteen. Eight governs the wind. The wind governs insects, so insects undergo metamorphosis in the eighth month (Major et al. 2010: 162).[13]

In ancient ontological, anthropological, political and other Chinese doctrines and teachings, we observe many examples of a kind of 'playing with numbers,' when numbers were arbitrary correlated with various concepts, ideas and categories of things. Because all these phenomena differed greatly from that logical and mathematical rationality the West was used to, but at the same time were related with numbers, Western scholars named them differently—as 'numerology,' 'correlative thinking' and so on.

An increased interest in the methodology of Chinese classical philosophy among Chinese scholars in the middle of the twentieth century inspired Russian researchers[14]. Studies on this subject were initiated in 1950s and 60s by V. S. Spirin, then they were raised to a new level in the middle of the 1970s by A. M. Karapetyants and A. I. Kobzev, and later in 1980s continued by V. E. Eremeev, S. V. Zinin, M. V. Isaeva, V. V. Lihtman-Dorofeeva, A. A. Krushinsky etc. In 1985 in Moscow, at the Institute of Oriental Studies of Russian Academy of Sciences, Kobzev formed an interdisciplinary seminar 'Structural studies of Chinese classics,' which met until 1990. The main results of this seminar were published in the annual journal *Society and State in China*. Kobzev was the first one to call the newborn school 'the school of structural analysis,' but it was Spirin who worked out the very method of this 'structural analysis' in 1976[15]. He analyzed the whole *Si Ci Zhuan* text[16], and later Karapetyants and Krushinsky analyzed *Dao De Jing*[17] with this method.

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Spirin (1929–2002), to my knowledge, was the first one who saw methodological elements, not only in ancient Chinese ontology, anthropology or political theory, that is in the content of their texts, but in *their very composition* (He perceived E. R. Hughes to be his predecessor)[18]. The crucial feature utilized by his method is that ancient Chinese texts are 'larded' with phrase parallelisms. For example, on the basis of a phrase parallelism the second part of previously cited HNZ 4.13 can be aligned as in *Table 1*.

Table 1. Phrase parallelism of the second part of HNZ 4.13. The same aligned symbols are given in bold or in italic.

九**九**八**十**一。	一**主**日，	日數十，			日**主***人*，	*人*	**故**十 **月而生**。
八**九**七**十**二，	二**主**偶，	偶以承奇，	奇**主**辰，	辰**主**月，	月**主***馬*，	*馬*	**故**十二 **月而生**。
七**九**六**十**三，	三**主**門，				門**主***犬*，	*犬*	**故** 三 **月而生**。
六**九**五**十***四*，	***四*主**時，				時**主***彘*，	*彘*	**故** *四* **月而生**。
五**九**四**十***五*，	***五*主**音，				音**主***猿*，	*猿*	**故** *五* **月而生**。
四**九**三**十***六*，	***六*主**律，				律**主***麋鹿*，	*麋鹿*	**故** *六* **月而生**。
三**九**二**十***七*，	***七*主**星，				星**主***虎*，	*虎*	**故** *七* **月而生**。
二**九** **十**八，	八**主**風，				風**主***蟲*，	*蟲*	**故** 八 **月而**化。

Scholars deemed such phenomena a mere manifestation of linguistic parallelism of ancient Chinese written language *wenyan* (as a tool for neutralization of ambiguity or facilitating memorization), or just a frivolous attempt to honor the tradition. But Spirin interpreted the tendency to 'parallelism' in ancient Chinese written language not linguistically or stylistically, but methodologically.

He summarized all known types of simple parallelisms in ancient Chinese texts using the concept of universal or structural parallelism. Spirin proposed that simple parallelisms constitute more complex schemes, which were used by ancient Chinese philosophers as a special artificial scientific language (Spirin 2006: 15). As a hypothesis, he assumed that the syntax of this language is generally based on logic (similar to modern symbolic logic) and that all basic structural features of the Chinese texts could be explained if we admit that they had advanced a logical and epistemological theory, because the structure of their texts is the very manifestation of this theory (*ibid*.: 39, 218). As we can see, Spirin was close to the position of the 'Chinese scientism.'

The next phase began with the expanding of this theory by Kobzev in 1993[19] and with the creation of somewhat opposing theories developed by Karapetyants[20] and Krushinsky[21]by 2015.

Kobzev maintains the moderate 'Chinese anti-scientism' point of view. He was the first one in Russia to state explicitly that 'numerology' is both a universal method *and* a methodology (as a deliberate theory of method) of all classical Chinese philosophy, science and art. Fully accepting the method of 'structural analysis,' he objected to Spirin's interpretation of the results of this method. Kobzev argued that ancient Chinese never

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developed any kind of logic in a strict sense (but only something that may be called 'proto-logic'). Chinese 'numerology' is, too, "neither logic nor science at all" (Kobzev 1993: 31). He agrees with Hu Shi that ancient Chinese did have two competitive methodological systems (but not 'logics,' as Hu Shi put it), that is numerology and proto-logic respectively. He compares their confrontation with the conflict between Aristotelianism and Pythagoreanism, but in China it was not logic that won the ideological war (Kobzev1993: 10, 143–44).

Krushinsky and Karapetyants made an attempt at reconstructing ancient Chinese mathematical logic once more. The main difference between Krushinsky's approach and Spirin's is that he thinks that all previous mathematical interpretations of Chinese logic are 'methodologically untenable,' because they were built on set-theoretic explanations. He maintains that ancient Chinese methodology was in some sense very similar to modern constructive logic and mathematics (Krushinsky 2006: 15–6; 2013: 30–48 etc.). Karapetyants tries to reconstruct a kind of proto-numerology (that is, pre-Qin, before third century BCE), which he calls an 'early Chinese systemology' and compares it with modern science (Karpetyants 2006: 438–439).

Currently Kobzev, Karapetyants and Krushinsky's reconstructions of traditional Chinese rationality are the most influential in Russian sinology.

2 Structural Analysis at Work[22]

The main thesis of Russian sinological 'structuralists' is that the composition of an ancient Chinese text influences its content directly. The composition of a text is derived from a configuration of its parallel passages (*cf. Table 1*). Passages are parallel if they are identical with each other in some way (see *Table 2*) and follow each other linearly. The method of 'structural analysis,' therefore, first aims to detect and describe these parallelisms, and then makes some interpretation of them.

At the stage of 'detection,' the method of 'structural analysis' follows the 'principle of completeness.' This principle implies that, if possible, one should find each and every parallelism in a given (fragment of) text (Spirin 2006: 39–40). While doing so, it is convenient to use a kind of tabular form, where passages of the text are arranged linearly (from top to bottom) and are matched with the corresponding parallelisms. For example, for HNZ 4.13 cited above, see *Table 2*.

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Table 2. The linear sequence of the HNZ 4.13. Parallelisms: **syntactical** — passages share common syntactical features; **quantitative** — passages (or larger fragments) have the same or similar number of elements (characters, phrases, etc.); **rhyme** — the same rhyme; **content** — a common or similar object of thought; **composition** — the second level parallelism (further parallelism of some parallelisms). Different colors of columns are used simply for contrast.

<table>
<tr><th>passages</th><th colspan="5">parallelism types</th></tr>
<tr><td>a) 凡人民禽獸</td><td rowspan="6">quantitative
(four words in every passage; not counting frame function words in a) and d), shown in italic)</td><td>syntactical
(introduce the subject, the first graph is a function word, minor semantic parallelisms (shown by spacing))</td><td colspan="2" rowspan="2">composition
(a)–a') introduce subject, b)–c') introduce predicate, subject is marked with frame function word, shown in italic)</td><td rowspan="2">content
(passages introduce a kind of condition or initial data)</td></tr>
<tr><td>a') 萬物貞蟲，</td></tr>
<tr><td>b) 各有以生，</td><td rowspan="4">syntactical
(subject is omitted, the first and the third graph are function words, shown in bold)
rhyme
(b) rhymes with c'), b') rhymes with c))</td><td colspan="2" rowspan="4"></td><td rowspan="4"></td></tr>
<tr><td>b') 或奇或偶，</td></tr>
<tr><td>c) 或飛或走，</td></tr>
<tr><td>c') 莫知其情，</td></tr>
<tr><td>d) 唯知通道者，</td><td rowspan="2">same as a)–a') above
(although semantic parallelisms and spacing are different)</td><td colspan="2" rowspan="2">same as above
(d) is subject, d') is predicate, subject is marked with frame function word, shown in italic)</td><td rowspan="2">content
(passages introduce a kind of result or consequence)</td></tr>
<tr><td>d') 能原本之。</td></tr>
<tr><td>e) 天一</td><td rowspan="4">syntactical
(the predicate is numeral word)</td><td rowspan="3">quantitative
(every passage consists of two graphs)</td><td colspan="3" rowspan="3"></td><td>same as a)-c')</td></tr>
<tr><td>f) 地二</td></tr>
<tr><td>g) 人三，</td></tr>
<tr><td>h) 三三而九，</td><td></td><td>same as d)–d')</td></tr>
<tr><td>i) 九九八十一。</td><td rowspan="18">syntactical and composition
(see Table 1)</td><td rowspan="18">syntactical
(same ending, shown in italic)</td><td rowspan="9">quantitative
(every passage has extra sub-passages, shown in bold)</td><td rowspan="9"></td><td rowspan="9">composition
(two passages with extra sub-passages)</td><td>same as a)–c')</td></tr>
<tr><td>j) 一主日，</td></tr>
<tr><td>j') 日數十，</td></tr>
<tr><td>k) 日主人，</td></tr>
<tr><td>l) 人故十 月而生。</td><td>same as d)–d')</td></tr>
<tr><td>m) 八九七十二，</td><td rowspan="5">same as a)–c')</td></tr>
<tr><td>n) 二主偶，</td></tr>
<tr><td>n') 偶以承奇，</td></tr>
<tr><td>n'') 奇主辰，</td></tr>
<tr><td>n''') 辰主月，</td></tr>
<tr><td>o) 月主馬，</td><td rowspan="2"></td></tr>
<tr><td>p) 馬故十二月而生。</td><td>same as d)–d')</td></tr>
<tr><td>q) 七九六十三，</td><td rowspan="9">quantitative
(four sub-passages in every passage)</td><td rowspan="9">quantitative
(same amount of graphs in every passage)</td><td rowspan="9"></td><td>same as a)–c')</td></tr>
<tr><td>r) 三主門，</td></tr>
<tr><td>s) 門主犬，</td></tr>
<tr><td>t) 犬故 三月而生。</td><td>same as d)–d')</td></tr>
<tr><td>u) 六九五十四，</td><td rowspan="2">same as a)–c')</td></tr>
<tr><td>v) 四主時，</td></tr>
</table>

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passages	parallelism types					
w) 時主堯，						
x) 堯故 四*月而生*。						same as d)–d')
y) 五九四十五，					**composition** (two passages, of which one has one extra graph)	same as a)–c')
z) 五主音，						
A) 音主猿，						
B) 猿故 *五月而生*。						same as d)–d')
C) 四九三十六，				extra graph (shown in bold)		same as a)–c')
D) 六主律，						
E) 律主麋**鹿**，						
F) **麋**鹿故 *六月而生*。						same as d)–d')
G) 三九二十七，					**composition** (two passages, of which one is with difference in ending and less graphs)	same as a)–c')
H) 七主星，						
I) 星主虎，						
J) 虎故 *七月而生*。						same as d)–d')
K) 二九 十八，		different graph (shown in bold)		less graphs		same as a)–c')
L) 八主風，						
M) 風主蟲，						
N) 蟲故 八月而**化**。						same as d)–d')

After highlighting the parallelisms, one needs to illustrate them as completely as possible — each and every found parallelism should be illustrated. A parallelism is regarded as illustrated if passages included in this parallelism are arranged in a line. In most cases one cannot illustrate each and every parallelism by presenting a given text in its normal linear one-dimensional order (in HNZ 4.13 various parallelisms of i)-N) would be hidden). Thus, one needs to somehow convert a linear sequence of passages into a two-dimensional arrangement on the basis of their parallelism. Doing that, one must observe the 'principle of compliance with the general sequence of passages' (Spirin 2006: 45) — that is, a subsequent passage cannot be located before the previous (if we fill the two-dimensional arrangement from left to right and from top to bottom, then the subsequent passage cannot be above and to the left of the previous). For a two-dimensional scheme of HNZ 4.13 see *Table 3*.

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Table 3. Two-dimensional scheme of HNZ 4.13. The passages grouped according to the parallelisms in *Table 2* are highlighted. Blocks that are parallel in content and composition are hatched.

a) 凡人民禽獸	b) 各有以生，		b') 或奇或偶，	c') 莫知其情，	d) 唯知通道者，
a') 萬物貞蟲，			c) 或飛或走，		d') 能原本之。
e) 天一	f) 地二			g) 人三，	h) 三三而九，
i) 九九八十一。	j) 一主日，	j') 日數十，		k) 日主人，	l) 人故十 *月而生*。
m) 八九七十二，	n) 二主偶，	n') 偶以承奇，	n'') 奇主辰， n''') 辰主月，	o) 月主馬，	p) 馬故十二*月而生*。
q) 七九六十三，	r) 三主門，			s) 門主犬，	t) 犬故 三*月而生*。
u) 六九五十四，	v) 四主時，			w) 時主彘，	x) 彘故 四*月而生*。
y) 五九四十五，	z) 五主音，			A) 音主猿，	B) 猿故 五*月而生*。
C) 四九三十六，	D) 六主律，			E) 律主麋鹿，	F) 麋鹿故 六*月而生*。
G) 三九二十七，	H) 七主星，			I) 星主虎，	J) 虎故 七*月而生*。
K) 二九 十八，	L) 八主風，			M) 風主蟲，	N) 蟲故 八月而化。

composition (except e)–h)) (every major fragment has at least two passages, which share the same syntax; every fragment has its own syntax)

content (every fragment introduces subject or initial data)

content (every fragment introduces intermediate result or clarifying data)

content (every fragment introduces a kind of result or consequence)

Once the structure of parallelisms is reflected graphically, one needs to interpret it. The method of 'structural analysis' points out that fragments of ancient Chinese texts often form ninefold structures (squares). It calls these squares an ancient Chinese word *jing* 經 'canon (of classic).'[23] In our case, in fact, there are three clearly different vertical blocks: block a)–d'); block e)–h); block i)–N), and three horizontal blocks: block a)–K); block b)–M); block d)–N). In *Table 3*, all these blocks are separated with bold frame lines.

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Table 4. Nine-fold structure of HNZ 4.13. Greek letters represent the main blocks of the structure.

	I	II	III
1	**A)** a) a')	**B)** b), c) b'), c')	**Γ)** d) d')
2	**Δ)** e)	**E)** f), g)	**Z)** h)
3	**H)** i) m) q) u) y) C) G) K)	**Θ)** j), j'), k) n), n'), n''), n'''), o) r), s) v), w) z), A) D), E) H), I) L), M)	**I)** l) p) t) x) B) F) J) N)

Next, the 'structural analysis' encourages one to uncover the 'shape' and 'form' of the 'canon.' The 'shape' of the canon is just a graphic way of describing the sequence of elements (parallel passages or blocks of passages) in the 'canon.' The row or column that consists of three parallel fragments, following each other linearly, is called 'complete'; the row or column that consists of only two parallel fragments is called 'incomplete.' Graphically, they are shown as the points connected with horizontal or vertical (not diagonal) lines. The shape of HNZ 4.13 and the algorithm of its constructing are shown in *Figure 1*.

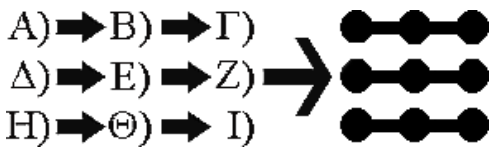

Figure 1. The shape of HNZ 4.13. It consists of three 'complete' (that is, including three elements; shown in black circles) rows (shown in connecting lines).

A shape, which consists of three horizontal full lines, is called 'simple horizontal.' A shape can be 'simple vertical' and even 'complex' (that is, combining one full row/column and three incomplete row/column in different configurations), see *Table 5*.

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Table 5. A classification of 'shapes' of a 'canon' (adopted from Spirin 2006: 59).

Simple forms	Complex forms		
	simple dividing	connecting dividing	disconnecting dividing
Vertical 			
Horizontal 			
	simple uniting	connecting uniting	disconnecting uniting
			
			

It can be seen that the blocks of HNZ 4.13 are actually composed of smaller elements (it could be presented as tables with 6/11 rows and 3/4 columns). According to Spirin, a canon, which contained some deviations among the elements from the nine-fold scheme, could be called a 'hard' (Chin. *nan* 難) canon. It cannot be completely represented with a two-dimensional table as it has some 'depth,' the third dimension of text arrangement. But a schematization of 'hard' canons is non-trivial and complicated, and is not fully developed by Spirin himself, so from now on we would treat HNZ 4.13 as a two-dimensional shape.

Once the 'shape' of the canon is determined, one can try to determine its 'form.' The similarities between the whole rows or columns specify the 'form' of canon. Spirin insists that some two nearby rows or columns in a canon often resemble each other more than the third. For example, in HNZ 4.13 they may be arranged as shown in *Table 6*.

Table 6. Form of canon of HNZ 4.13. Two similar rows or columns are hatched. The interception of vertical and horizontal hatching shows the 'basis' of the canon; the 'incomplete part' of canon is highlighted in dark gray, the 'complete part' of the canon is highlighted in gray; the bold frame separates the 'incomplete part' and the 'fifth element' as components of the 'complete part.'

	I	**II**	**III**
1	A)	B)	Γ)
2	Δ)	E)	Z)
3	H)	Θ)	I)

similarity on the basis of syntactical parallelism (include numerals) and content parallelism (share the same topic)

similarity on the basis of various composition parallelisms, see *Table 2*

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If we designate the rows with Arabic numerals (1,2,3), and columns with Roman numerals (I,II,III), then the form of the canon can be written as 1(2,3)–(I,II)III. Depending on the form of canon, one can distinguish its 'parts': a 'basis' of the canon (the four most similar elements, located close to each other horizontally or vertically), and the remaining 'framing.' A 'framing' consists of an 'incomplete part' (two elements) and a 'complete part' (three elements—two forms another 'incomplete part' and one—the so-called 'fifth'[24] element). A canon (nine-fold structure) can have one basis, one complete and one incomplete part (4 + 3 + 2 = 9 elements). For example, all these parts in HNZ 4.13 are shown in *Table 6*. Spirin suggested that the basis of a canon could be indicated graphically with the rim around the scheme of the canon shape. Thus, the final structure of the canon of 4.13 HNZ can be graphically shown in *Figure 2*.

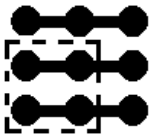

Figure 2. The final graphical representation of the 'shape' and the 'form' of HNZ 4.13.

Once the structure of the text is defined and described, it must be interpreted on the basis of its shape and form. According to Spirin, the 'basis' of a canon describes something concrete, simple, basic, sensible; the 'framing' describes something abstract, complex, inferential from the basic, general etc. 'Incomplete parts' fix some aspects or facets of concrete phenomena, described in the basis of canon; the 'fifth element' is a synthesis or a result of reasoning presented in other elements of the 'framing' (Spirin 1976, 2006: 150–51).

Let's see if it works with HNZ 4.13. Indeed, the elements Δ), E), H), Θ) (the 'basis') describe private, basic laws, although there are doubts about their 'concreteness' and 'sensibility' (it is not quite possible to imagine exactly how "one governs the sun"). On the other hand, the elements A), B), Γ), Z), I) (the 'framing') do provide the inferential result from the 'basis' data (assuming that the oddness and evenness, the ability to fly and walk on land, too, could be deemed as following from numerological properties of things, which is very likely), and Γ) (the 'fifth element') does provide a summary of the whole HNZ 4.13 (the HNZ 4.13 really speaks of the "source and root" properties of the 'Way' of things). Although, again, it is difficult to detect any outstanding 'abstractness' or 'generality' (except for the element Γ)) in the 'frame.'

Spirin also claimed that parallelism designates hidden identity of content. Schematized text is the expression of a specific categorical division of the world; parallel passages just reflect this division. The task of an ancient Chinese text as a whole is to provide material for mastering these categories (Spirin 2006: 124). Categories can be different: 'natural–artificial,' 'active–passive,' 'external action–internal action,' 'given–acquired,' 'space–time,' 'big–small' etc.

In HNZ 4.13, a clear representation of the categories in a number of parallel passages is visible only in row 2 (elements Δ), E), Z)) – that is the division of the whole universe into 'heaven,' 'earth' (natural) and 'man' (artificial) realms, which is very typical for ancient Chinese philosophy. The method of 'structural analysis' hypothesizes that the entire column I (listing the 'things' and their numerical patterns), must have something to do with 'heaven,' while the column II (listing the relations of things and numbers) deals with 'earth' and 'human.' This connection is not evident, although a 'structuralist' could just build his argument as follows: 'heaven' in Chinese philosophy is associated with the beginning (of things), as well as the 'one'—is the beginning of numbers, numerical patterns are the beginning and the reason for all the properties of things, so column I shares the same content (the category of 'beginning'); moreover, in other fragments of HNZ "heaven' is directly linked to the 'numbers' (*shu* 數) (see HNZ 10.21); basic property of 'earth' in Chinese philosophy is a classified diversity[25], so in column II we see the description of the various classified interdependencies of things. Rows

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also show some categorical unity: row 1 is devoted to 'things', row 2 to the ultimate substances ('heaven,' 'earth,' 'man'), row 3 to the numerical laws; transition from row 1 to row 3 represents the category of 'big–small': moving of thought from small (things) and ultimate (heaven-earth-man) to the middle between them (their numerical laws).

Spirin used such arguments to criticize those in early twentieth-century sinology, who considered Chinese philosophy illogical, irrational and unscientific, and to show that ancient China had its own logic, epistemology and methodology[26]. He even went on to find the terms corresponding to those text structures described by his method of 'structural analysis' in ancient Chinese philosophy: for the nine-fold structure he found the corresponding ancient Chinese term *jing* 經 'canon,' for the 'basis' he found term *qi* 期, for the 'basis and incomplete part' he found term *nuo* 諾. He also connected technical terms of the Chinese theory of language and argumentation with the structure of the text: he connected *bian* 辯 'debate' with the course of the development of thought in the 'disconnecting canon' (when a text begins with a 'framing'), *lun* 論 'discourse' with the logical inference in the 'uniting canon' (when a text begins with a 'basis'), *shuo* 說 'explanation' with the conclusion of the "if… then…" type expressed in the columns[27], *yi* 疑 'doubt' with a kind of connection of elements of the text in rows.

But Spirin's position is debatable on some points. Some of his interpretations seem rather far-fetched. For example, it is doubtful that the ancient Chinese had the same idea of the 'abstract–concrete' or logical 'general–specific' as modern logicians have and, accordingly, paid any attention to these characteristics in their philosophizing[28]. It looks much like an anachronism. Also, as far as I know, the interpretations of ancient Chinese (proto)logical terms mentioned above are rather different in world sinology[29].

However, a methodology does not necessarily have to be built on the basis of Western symbolic logic to be rational; it just needs to provide some rules of obtaining knowledge. Thus, many contemporary Russian sinologists choose to somewhat modify Spirin's theory. While agreeing with the general idea that the structure of the ancient Chinese text directly expresses the ancient Chinese (proto)scientific methodology and style of thinking, they treat this Chinese methodology differently—not as logic, but as numerology.

Spirin's method of 'structural analysis' (as found in Spirin 1976, 2006) does not involve the study of the numerical side of the structure of ancient Chinese texts: it analyzes neither the total number of characters (all or some) in the given text/chapter/fragment, nor the number of chapters/sections/fragments/rows, nor the number of stylistically different places in the given text (citations/narratives/general rules etc.) etc. Meanwhile, all of these may hide numerologically significant quantities which reveal the numerological foundation of text. Therefore, contemporary 'structuralists' (with Kobzev being the most known of them) began to pay attention to such numerical characteristics in first place.

In terms of Kobzev's structural analysis, HNZ 4.13 shows a clear sign of numerological playing with numbers. The chapter containing fragment 4.13 is called "Terrestrial forms" and is the fourth in the book[30]. Not surprisingly, the entire passage is riddled with a number 4 or (2x2), where 2 is clearly the number of 'earth' (as announced in the fragment itself). The whole fragment of HNZ 4.13 schematizes as a square with 3 clearly distinguishable blocks horizontally and 4 vertically; in the first horizontal section each element is divided into 2 passages with 4 graphs each (not counting framing function words); in the second horizontal section total number of elements is 4, 2 graphs in the first three blocks, 4 in the fourth; the third block itself is divided into 4 sub-blocks. The second vertical element in it has either 1 or 2 or 4 passages, although the total number of graphs in the passages is either 3 or 5, or 7 (with insignificant omissions of 'one'). Moreover, the 'basis' of the canon of HNZ 4.13 has 8 (4x2) illustrative propositions. Furthermore, there are only 48 (2x2x2x2x3) passages in the whole fragment, of which 44 (2x2x11) are strictly parallel. As it can be seen, in HNZ 4.13 besides 2 and 4 we encounter such prime numbers as 3, 5, 7, 11, of which 3 and 5 are the most important numerical values (3 reflects fundamental numerological scheme dividing the totality into three parts: the 'heavenly,' 'earthly' and

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'manly' (the so-called *san* 參 'location in the series of three parts'); 5 represents a scheme of a fivefold division, associated primarily with the well-known Chinese *wu xing* 五行 'five elements' (the so called *wu* 伍 'location in the series of five parts'). Thus, there are 36 (2x2x3x3) passages that illustrate the numerical patterns in the fragment (the blocks Δ), E), Z), H), Θ), I)), which are assembled into 5x3 sub-elements (from e) to N)), see *Table 3*). The whole fragment has 195 (5x3x13) words in total. And so on, and so on.

Spirin saw the practical application of his own method in the fact that it allows us to clarify an uncertain context in ancient Chinese texts. If we do not understand a certain term, we can reconstruct its meaning on the basis of the context of parallelisms in the text. To understand the author's thought and its development, we have to consider the relationship between the parts of the canon. For example, in HNZ 4.13, when the properties of things are described, it is not clear what 'odd and even' mean. Based on parallelism of these qualities with 'flight' and 'going on foot' and according to general knowledge that in the ancient Chinese philosophical literature numerological laws connect 'flight' as an instance of 'going up' with *yang* 陽, (all that is bright, active, aspiring upward, masculine etc.; it is also connected with odd numbers), and 'walking' with *yin* 陰 (all that is dark, passive, underwear, feminine etc.; it is also connected with even numbers)[31], we can conclude that 'odd' in things is some kind of the active state associated with numbers such as 1, 3 etc.. 'Even' on the other hand is a passive state associated with numbers such as 2, 4 etc. These words have corresponding values—'single/independent' for 'odd' and 'pair/meet together' for 'even.' If we translate and understand these two words as mentioned above, we could see that their parallelism with 'flight' and 'going on foot' would be categorical opposition—of dynamic qualities (flying, walking) vs. static configurations (independent, complementing).

The application of Kobzev's version of 'structural analysis' often helps to explain the 'irrationality' in ancient Chinese text—artificial division into chapters, textual omissions, widespread use of sorites in reasoning or even lack of justification where it is necessary from our point of view, etc. For example, the fact that HNZ 4.13 has 8 illustrative propositions, but not 9, as it should be according to our expectations (an inference from the multiplication of 9 to 1 is absent)—from this point of view, perhaps, is made deliberately to stay in tune with the overall fourfold-binary scheme of the chapter 4.

3 Conclusion

By now, the structural studies of Chinese classics in Russia have become one of the paradigms of Russian Sinology and gone far beyond the scope of a mere history of philosophy (for example, it was applied in studying of traditional Chinese ornamental patterns (Karapetyants 2015: 473–94) and even of symbolism of money in ancient China[32]). However, the methodological basis of the 'structural analysis' itself is far from obvious. In examining ancient Chinese texts with this method, one often does not know whether the ancient Chinese deliberately constructed their texts using the concepts of *jing* 經, *qi* 期, *nuo* 諾 etc. or whether the structuralist simply attempts to bring order in the seeming chaos which confronts him/her. Russian sinology structuralists complain that reconstructed structural and semantic patterns of Chinese texts often were not mentioned explicitly by ancient Chinese themselves (Karapetyants 2015: 32; Kobzev 1993: 49, 106, 326, 341), and thus the results of their attempts to find a specific ancient Chinese terms corresponding to those patterns sometimes seem arbitrary.

Nevertheless, the method of 'structural analysis' of Russian sinologists may still prove very important to world sinology and philosophy. Modern comparative philosophy claims to be able to spur modern Western thought into adopting some fruitful concepts of Eastern philosophies. Russian structuralism is a vivid example of such a spurring—the attempt to master a completely different style of thinking. Although it is debatable

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whether this method could be applied to the field of natural science, it could, for example, be very profitable in the various fields of modern art (especially related to the problems of composition and expression), humanities (such as hermeneutics, history of philosophy, phycology and philosophy of science etc.) and similar activities.

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1 The reader may think that we are talking about some form of structural linguistics (like that of Ferdinand de Saussure, Roman Jakobson, Leonard Bloomfield etc.) or about an offshoot of structural anthropology (like that of Lévi-Strauss etc.), especially when we use the words 'structure,' 'structural analysis,' 'structural and semantic,' 'structuralism' and the like without specifying their meaning. In fact, everywhere in the present article the above words are used and applied only to a specific scholarly approach in the philosophical school of Russian Sinology. The Russian Sinological 'structuralism' do not use its Western counterparts as a point of orientation (as far as I know). Thus its relationship to structural linguistic or anthropology can at best be said to be indirect merely on virtue of the concept of structure. It is a method of approaching Chinese literary texts, regarding their form and composition structure, as a source of conceptual information. In this sense, the 'structuralism' in Russian Sinology could be (as a working hypothesis) described as a kind of structural philology.

2 Shih Hu, *The Development of the Logical Method in Ancient China*, Shanghai: The Oriental Book Company, 1922.

3 ed. Joseph Needham, *Science and Civilization in China*, Vol. 2, Cambridge University Press, 1956.

4 Janusz Chmielewski, "Notes on Early Chinese Logic," *Rocznik Orientalistyczny* 26.1 (1962): 7–22; 26.2 (1963): 91–105; 27.1 (1963): 103–21; 28.2 (1965): 87–111; 29.2 (1965): 117–38; 30.1 (1966): 31–52; 31.1 (1968): 117–36; 32.2 (1969): 83–103.

5 Alfred Forke, "The Chinese Sophists," *Journal of the Royal Asiatic Society, North China Branch,* Shanghai, no. 34 (1901): 1-100. Alfred Forke, "Mé Ti des Sozialethikers und seiner Schüler philosophische Werke," *Mitteilungen des Seminars für Ostasiatische Sprachen, Beiband zum Jahrgang*, Berlin, no. 23–25 (1922): 1–158.

6 Henri Maspero, "Notes Sur la Logique de Mo-Tseau et de Son Cole," *T'oung Pao* 25, Leiden, (1927): 1–64.

7 Marcel Granet, *La pensée chinoise*, Paris: La Renaissance du livre, 1934.

8 Angus C. Graham, *Disputers of the Tao: Philosophical Argumentation China*, La Salle Ill: Open Court, 1989.

9 Nathan Sivin, "Why the Scientific Revolution Did not Take Place in China—or Didn't It?," *Chinese Science 5*, (1982): 45–66.

10 Chad Hansen, *Language and Logic in China*, Ann Arbor, Michigan: The University of Michigan Press, 1983.

11 Usually 'correlative thinking' is a broader term than 'numerology.' The latter is a part of the former (it is when the correlates are symbols and numbers). To my knowledge, Marcel Granet was the first sinologist who described the Chinese thought as specifically correlative (see Granet 1934), thus putting this anthropological term into a sinological context. Later on, scholars started to call similar patterns of Chinese thought 'numerology' (for example, Needham uses both terms and even counterposes them; see Needham 1956: 201, 272–73, 287, 443). In the present article I treat the terms 'correlative thinking' and 'numerology' as synonyms. About different understandings of 'correlative thinking,' 'numerology' and other similar concepts in Russian Sinology *cf.* Станислав Ю. Рыков, "Проблема методологических оснований китайской классической философии в современной синологии" ("The Problem of the Methodological Foundations of Classical Chinese Philosophy in Modern Sinology"), *История философии*, no. 14, Москва: ИФ РАН, (2009): 123–42. About philosophical

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rationalizations of 'correlative thinking' in ancient China *cf.* Nathan Sivin, "State, Cosmos, and Body in The Last Three Centuries B.C.," *Harvard Journal of Asiatic Studies* 55, no. 1, (1995): 5–37; Angus C. Graham, *Yin-Yang and the Nature of Correlative Thinking*, Singapore, 1986; Артём И. Кобзев, *Учение о символах и числах в китайской классической философии (The Teaching of Symbols and Numbers in Classical Chinese Philosophy)*, Москва: Восточная литература, 1993.

12 The original *wenyan* text is taken from "Chinese Text Project" database (http://ctext.org/huainanzi; last accessed on 11 July 2016).

13 trans. John S. Major, Sarah A. Queen, Andrew S. Meyer, Harold D. Roth, *The Huainanzi: A Guide to the Theory and Practice of Government in Early Han China*, New York: Columbia University Press, 2010.

14 Артём И. Кобзев, "Современное состояние историко-философской науки в КНР" ("The Current State of the History of Philosophy in China"), *Общественные науки в КНР*, Москва, (1986): 303–36.

15 Владимир С. Спирин, *Построение древнекитайских текстов (The Construction of Ancient Chinese Texts)*, Санкт-Петербург: Петербургское востоковедение, 1976, 2006.

16 Владимир С. Спирин, "Формальное построение 'Си цы чжуани'" ("The Formal Construction of 'Xi Ci Zhuan'"), *Письменные памятники Востока. Историко-филологические исследования*, Москва, (1982): 212–42.

17 Артемий М. Карапетьянц, Андрей А. Крушинский, "Современные достижения в формальном анализе 'Дао дэ цзина'" ("Recent Advances in the Formal Analysis of the 'Dao De Jing'"), *От магической силы к моральному императиву: категория дэ в китайской культуре,* Москва, (1998): 340–406.

18 Spirin cites Ernest R. Hughes, "Epistemological Method in Chinese Philosophy," *Essays in East-West Philosophy*, Honolulu, 1951. Reprinted in: *The Chinese Mind. Essentials of Chinese Philosophy and Culture*, ed. Charles A. Moore, 77–103 (Honolulu: University of Hawaii Press, 1967–68).

19 Артём И. Кобзев, *Методология китайской классической философии (нумерология и протологика) (Methodology of Classical Chinese Philosophy (Numerology and Protologic)* (PhD thesis), Москва, 1988; Артём И. Кобзев, *Учение о символах и числах в китайской классической философии (The Teaching of Symbols and Numbers in Classical Chinese Philosophy),* Москва: Восточная литература, 1993.

20 Артемий М. Карапетьянц, *Раннекитайская системология (Early Chinese Systemology)*, Москва: Восточная литература, 2015.

21 Андрей А. Крушинский, *Логика «И цзина»: Дедукция в древнем Китае (The Logic of 'I Jing': Deduction in Ancient China)*, Москва: Восточная литература, 1999; Андрей А. Крушинский, *Логика древнего Китая (Ancient Chinese Logic)* (PhD thesis), Москва, 2006; Андрей А. Крушинский, *Логика древнего Китая (Ancient Chinese Logic),* Москва: Институт Дальнего Востока РАН, 2013.

22 Here we will deal mostly with the method of Spirin and Kobzev for the purposes of contrast. The HNZ 4.13 is taken as example. All interpretations and analysis of HNZ 4.13 here are made by the author.

23 Russian structuralists point out that ancient Chinese deliberately understood the word *jing* 經 as paralleled text with the shape of a ninefold square.

24 It received such a name due to Spirin's original interpretation of Chinese term *wu* 伍 as 'constitut[ing] a row of five units.'

25 *Cf.* trans. John Knoblock, and Jeffrey Riegel, *The Annals of Lu Buwei* (Stanford: Stanford University Press, 2000), 3/5.1.

26 To be precise, he criticizes Feng Youlan, Forke, Bodde, Maspero, Granet etc. (Spirin 1976, 2006: 8–9)

27 For HNZ 4.13 this works well; it is really an inference of the "if… then…" type from the columns I and II to III.

28 Among Western scholars writing on ancient Chinese logic *cf.* Christoph Harbsmeier, *Language and Logic* (*Science and Civilization in China,* Vol. VII, Pt. 1, Cambridge, 1998), 218–44; in Russian Sinology, Spirin's ideas are somewhat corrected by Kobzev (see Артём И. Кобзев, "Логика и диалектика в Китае" ("Logic and Dialectics in China"), *Духовная культура Китая: энциклопедия в 6-ти томах*, *Т. 1. Философия.* Москва: Восточная литература, 2006: 82–117).

29 *Cf.* (Graham 1989: 36, 138, 167, 267).

30 About contents and composition of Huainan-zi see Major et al. (2010).

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[31] A good account of various qualities associated with yin-yang 陰陽 can be found in (Graham 1989: 330–31). For the source of this account see Robin Yates, *Five Lost Classics: Tao, Huang-Lao and Yin-Yang in Han China*, (New York: Ballantine Books, 1997), 166–69.

[32] Нина В. Ивочкина, "Отражение нумерологической методологии на средствах денежного обращения Китая" ("The Influence of Numerological Methodology on Monetary System of China"), *Новое в изучении Китая,* Москва, (1988): 134–42.

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