

1 **Generalized holographic visions of language**  
2 **in Vygotsky, Luria, Pribram, Eisenstein, and**  
3 **Vološinov<sup>1\*</sup>**  
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12 *Abstract*  
13

14 *Holographic theories can be used as a metatheoretical vision of framing an*  
15 *original image or structure. The image can be distributed throughout vari-*  
16 *ous parts of that structure, with the complete image being encoded, so that*  
17 *the whole can be reproduced throughout the parts. This new field has direct*  
18 *implications for many areas of semiotics, pragmatics, and psycholinguistics*  
19 *(within the Russian understanding). Lev Semonovich Vygotsky, father*  
20 *of Russian psychology, wrote about holism in this way, without any knowl-*  
21 *edge of holography. Alexander Romanovich Luria, father of Russian neuro-*  
22 *psychology, also established his theories of language based on a holistic*  
23 *approach. Karl Pribram (who collaborated with Luria in Moscow) wrote*  
24 *much about holography and language, and Sergei Eisenstein (a close friend*  
25 *of Vygotsky and Luria) was a filmmaker and semiotician, writing in a sim-*  
26 *ilar vein, as did Valentin Vološinov. In particular, this paper discusses holo-*  
27 *graphic views of the world, with an introduction to the language theories of*  
28 *A. R. Luria, and the role of image and inner speech within what can be*  
29 *called holographic psycholinguistics.*  
30

31 The brain substrate of the mental processes  
32 are not isolated parts but complex systems of  
33 the whole brain apparatus. (Vygotsky 1997:  
34 105)  
35

36 **1. Introduction**  
37

38 In much of postmodern society, psychological and philosophical theories  
39 tend to focus on “parts” of a whole structure, often without understand-  
40 ing the all-encompassing nature of what “holism” refers to. Postmodern-  
41 ism reflects a horizontal level of communication, of equal voices, often  
42 replacing a vertical level of hierarchy, which in the past had only a few

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1 experts determining research debates. The older, vertical structure de-  
2 manded a holistic approach to knowledge building, however, usually tied  
3 to a traditional foundationalist understanding, most of which is rejected  
4 in postmodern thought. In other words, there are no longer a few experts  
5 at the top, who dictate a limited number of values all of which determine  
6 much research, such as Chomsky's linguistics. The negative side of the  
7 vertical structure can be understood as a reflection of a unitary approach,  
8 which could then be distorted into monolithic—and in terms of politics—  
9 even totalitarian theories. The negative side of the horizontal structure  
10 within postmodernism is the famous statement: "anything goes," nor-  
11 mally in the name of diversity.

12 It is suggested that Vygotsky, Luria, Pribram, Eisenstein, and Volo-  
13 šinov have all contributed to a totally new focus that transcends post-  
14 modern fragmentation, as well as the vertical, more traditional founda-  
15 tionalist, unified approach to knowledge. For example, Vygotsky's  
16 theories are a combination of Spinozist monistic philosophy, combined  
17 with the relative movement of an asymmetrical dialectic (see Karcevskij  
18 1982) that allows for change. It is the combination of the absolute (here,  
19 monism) together with the relative (here, dialectic) that allows Vygotsky  
20 to transcend both vertical and horizontal thinking, entering the philo-  
21 sopherical understanding of holography. To better understand this ap-  
22 proach, V. N. Vološinov (1929/1973: 40) stated:

23 Only on the grounds of a materialistic monism can a dialectical resolution of all  
24 such contradictions be achieved. Any other grounds would necessarily entail ei-  
25 ther closing one's eyes to these contradictions and ignoring them or transforming  
26 them into a hopeless antinomy, a tragic dead end.

27  
28 In order to understand Vygotsky's thoughts, we need to reconstruct scien-  
29 tific thinking, which turns away from the Cartesian model of isolated ex-  
30 periments replicating the "truth" once the same results occur in different  
31 settings. Vygotsky took "units" instead of "elements" as a basic principle,  
32 and in the case of language, he viewed thought and speech as sepa-  
33 rate units, which are capable of being transformed into a unit of verbal  
34 thought. This unit can be understood within Vygotsky's concept of word  
35 meaning, which incorporates thought and speech, where both phenomena  
36 have different origins that can grow together and complement each other.  
37 What has happened in many Western contexts is that many of Vygotsky's  
38 theories are viewed literally, not as a *metapsychology*. His psychology/  
39 philosophy is not a lockstep approach to human development. Various  
40 opponents of Vygotsky then claim that his theories are *metaphysical*,  
41 when in reality they form a new, non-classical psychology. This new  
42 psychology, however, can be viewed as being *metatheoretical*, meaning

1 that there is a higher level of synthesis, combining relative and absolute  
2 principles within a unified whole, but in no way reflecting the older foun-  
3 dationalist, vertical approach to psychology-philosophy. V. Zinchenko  
4 (2002) refers to this understanding as organic psychology, which is a  
5 term meant to imply the living, developmental nature of Vygotsky's  
6 method.

7  
8  
9 **2. Holographic views of the world**

10  
11 As Koffka [1924, p. 160] says, the mental processes point forward and beyond  
12 themselves to the complex psychophysiological wholes of which they form a  
13 part. This monistic integral viewpoint is to consider the integral phenomenon as  
14 a whole and its parts as the organic parts of this whole. Thus, the detection of  
15 the significant connection between the parts and the whole, the ability to view  
16 the mental processes as an organic connection of a more complex integral  
17 process—this is dialectical psychology's basic task (Vygotsky 1997: 115).

18 Within all holographic theories, there is the understanding that the whole  
19 image of a structure is replicated within the parts, and it is therefore  
20 possible to see images of the whole within a single part. Working from  
21 this model, an entirely new science has been formed in both East and  
22 West, and should not be compared with other disciplines such as Gestalt  
23 psychology or a systems theory approach. The holographic nature of  
24 phenomena goes beyond metaphor, metatheory, and metapsychology,  
25 extending into a totally new understanding of the direct connections  
26 between the absolute/relative, monism/dialectic, and internalization/  
27 externalization, among other examples. This model includes phenomena  
28 that literally cannot be explained by today's science. For example, there  
29 is an eleven-year-old girl living in Rotterdam, who has suffered Ras-  
30 mussen (encephalitis) syndrome, having her entire left brain hemisphere  
31 removed a few years ago. Normally such children cannot speak, and al-  
32 though she does not have complete control of the right side of her body,  
33 and has limited vision, she is living a normal life. What is most interesting  
34 is that she can speak in two languages, Turkish and Dutch, perfectly well.  
35 This should be impossible since the language center was removed (cf. Der  
36 Spiegel, 21, 2002). We also have the example of blind and deaf people  
37 writing and communicating in a very rich and prolific context, such as  
38 Helen Keller and many others. There are, as well, tens of thousands of  
39 examples of people from all over the world within naturally altered states  
40 of mind, who can endure all types of torture and pain (cf. Talbot 1991),  
41 without any trace of injury. These examples (called psychokinesis) raise  
42 the question of how a holographic mode of reality can occur, and how

1 we can access such a reality in everyday living, when science cannot  
2 explain these phenomena, and usually ignores them. To what extent are  
3 our mental functions indeed localized, and what type of new framework  
4 must be discovered to penetrate the deeper understanding of holographic  
5 theory in psychology, neurolinguistics, and psycholinguistics? In going  
6 a step further, regarding physical existence in general, we now know that  
7 an electron can manifest as either a particle or a wave, but most of us  
8 don't know that physicists have discovered that an electron *literally pos-*  
9 *sesses no dimension* (Talbot 1991: 33). David Bohm (1980) is radical in  
10 making various assumptions about our universe, and he feels that there  
11 is an *implicate* ("enfolded") order at work at a much deeper, invisible  
12 level. There is also an *explicate* ("unfolded") order in place for our nor-  
13 mal understanding of reality, which he considers to be an illusion, one  
14 we can transform at will, if we could better understand the principles of  
15 holography.

16 The hypothesis of this paper is that the language-semiotic theories of  
17 Luria, Pribram, Eisenstein, Vološinov, and Vygotsky will only be totally  
18 understood once science begins to incorporate a wider perspective and ac-  
19 ceptance of holography, which is no longer viewed as *parapsychology*.

20 It was Dennis Gabor who first spoke of "holography" and the "holo-  
21 gram" during the late 1940s, defining a hologram as a *photographic rec-*  
22 *ord, containing all of the information to reconstruct the whole image* (Pri-  
23 bram 1971: 147).

24 Gabor holograms can be composed in two ways. A wave form is divided by a  
25 beam splitter (e.g., a half-silvered mirror) so that one part serves as a reference,  
26 the other is reflected off the object to be photographed . . . The reference alone  
27 can then be used to reconstruct an image. Or each part of the divided beam can  
28 be reflected off a different object. (Pribram 1971: 147)

29 A hologram is produced when a single laser light is split into two separate beams.  
30 The first beam is bounced off the object to be photographed . . . Then the second  
31 beam is allowed to collide with the reflected light of the first, and the resulting in-  
32 terference pattern is recorded on film. (Talbot 1991: 15)

33 Within a holographic image, the entire original picture is somehow dis-  
34 tributed throughout the parts with the complete image being encoded,  
35 so that the whole can be reproduced throughout the part. At the same  
36 time, David Bohm views the world as a "holomovement" rather than an  
37 understanding of a static image, believing in the *undivided wholeness* of  
38 everything.

39 There is also a pattern to understanding holography. Karl Pribram,  
40 for example, does not believe that the distribution of the holographic  
41 model is simply "free flowing," just as he does not believe that memory  
42

1 is "... distributed helter skelter all over the brain" (Pribram 1971: 165).  
2 Pribram does believe that there is a holographic informational representa-  
3 tion that is distributed throughout all neural patterns, just as this distribu-  
4 tion is found in holographic photographic records. He states that:

5 According to the holographic hypothesis, the mechanism of these correlations is  
6 not by way of some disembodied "floating field" nor even by disembodied wave  
7 forms. Instead, consider once again the construction of more or less temporary  
8 organizations of cortical columns (or, in other neural locations, other aggregates  
9 of cell assemblies) by the arrival of impulses at neuronal junctions which activates  
10 horizontal cell inhibitory interactions . . . A neural holographic or similar process  
11 does not mean, of course, that input information is distributed willy-nilly over the  
12 entire depth and surface of the brain. Only those limited regions where reasonably  
13 stable junctional designs are initiated by the input participate in the distribution.  
14 (Pribram 1971: 152–157)

15 The focus of this paper is to reconnect aspects of psycholinguistic/  
16 semiotic theory within a higher comprehension of the "whole" related to  
17 the "parts," together with a new unified vision that is not located within  
18 the Cartesian understanding of a division between mind and body.  
19  
20

### 21 **3. A. R. Luria's holistic vision within language theory**

22

23 Luria worked within the Vygotskian tradition by comprehending the rela-  
24 tionship between psychology and physiology, and he also located many  
25 of these ideas within a theory of language. He created new thoughts with-  
26 in the theory of systemic dynamic localization of higher psychological  
27 functions.  
28

29 By reconsidering the notion of "psychological function," which, in classical psy-  
30 chology, signified a primarily hereditary property of psyche, Luria substituted the  
31 notion of a "functional system," which allowed him to create a coherent theory of  
32 the cerebral mechanisms underlying psychological processes . . . According to this  
33 theory, each psychological function, as a complex functional system, is carried out  
34 by the brain as a unitary whole in which every cerebral structure has its own dif-  
35 ferentiated role. Various links of the psychological system are situated in different  
36 cortical and subcortical structures, many of which can substitute for each other.  
37 (Homskaya 2001: 98)

38 In viewing Western functionalism, which was founded in the late 19<sup>th</sup>  
39 Century (e.g., H. Spencer, E. Durkheim, B. Malinowski, etc.), there was  
40 an attempt to compare human society to biological organization. Within  
41 Western sociological, and in particular philosophical functionalism,  
42 criticisms appeared with definitions resulting in circularity, which some-

1 times confused “consequences” with “causes.” There are two areas, if not  
2 more, of similarity between Western and Russian functionalism, although  
3 both terms have very different meanings: 1. In Western and Russian psy-  
4 chology, functionalism views mental phenomena not as states or struc-  
5 tures, but as activities; 2. Societal organization must be studied as a total  
6 unit, and in Russian psychology there is also a focus on the whole person-  
7 ality of an individual.

8 Returning to Russian psychological/psycholinguistic functionalism,  
9 Průcha (1972: 40) states that “. . . the concept of function (*funkcija*) is in-  
10 terpreted in terms of the ‘role,’ ‘purpose,’ or ‘goal,’ of verbal means and  
11 messages in the process of the use of language.” The question is then  
12 posed as to the origins of higher mental functions within a functional  
13 system, and the answer offered by A. R. Luria is that “‘higher mental  
14 functions’ must have an origin; but this origin must not be sought in  
15 the depths of the spirit or hidden properties of nervous tissue: it must  
16 be sought outside the individual human organism in objective social his-  
17 tory” (Luriya [Luria] 1967: 54), which focuses on *process* as opposed to  
18 *product*.

19 It should be understood that a functional system is not totally equiva-  
20 lent to a hologram, with the speculation that the hologram is situated  
21 within dialectical, asymmetrical relationships of various functions. Func-  
22 tionalism in the West can have different and variant meanings, which can  
23 also refer to patterns of abstract processing, as opposed to the physical  
24 realizations within models of encoded symbols (e.g., Piaget). At the same  
25 time, and on a positive note, functionalism—within language theories in  
26 the West—has progressed beyond formalist idealization, returning to real  
27 language in real time. Yet, another problem arises in that functionalism  
28 in the West is sometimes connected with “time,” while structuralism is  
29 connected with “space,” ideas foreign to Russian psychology, as both  
30 aspects must work in tandem. As well, in the West there is often a break-  
31 down of the elements of functions without a reconnection to the whole,  
32 such as a concatenation of terms; for example, referential function, prag-  
33 matic function.<sup>1</sup> Naturally, one has to define the elements within func-  
34 tionalism, but, Vygotsky states the following:

35 [M]ental development does not coincide with the development of separate psycho-  
36 logical functions, but rather depends on [the] changing relations between them . . .  
37 consciousness evolving as a real whole changes its inner structure with each step  
38 forward. The fate of each functional ingredient of consciousness thus depends  
39 upon the development of the entire system. (Vygotsky 1994: 167–168)

41 The question now arises as to how the brain can compensate when a  
42 person has incurred damage. For example, Wertsch (1981: 20) offers the

1 following interpretation of Luria that helps us to understand the overall  
2 approach of unity:

3  
4 ... Luria has developed the concept of a “functional system” from a neuropsy-  
5 chological point of view. He has emphasized that, in such global functional sys-  
6 tems as memory, there are many links in a cognitive process, some of which may  
7 be damaged in certain types of brain lesions. In some cases the functional system  
8 can be reinstated if the disrupted link in the chain can be replaced with another  
9 link that is functionally equivalent. The idea of a functional system has been in-  
10 strumental in Luria’s constant struggle against strict localization theories of brain  
11 function, on the one hand, and global theories, on the other.

12 In *Restoration of Function after Brain Injury* (Luria 1963), Luria spoke  
13 of two understandings of functional restoration, deinhibition and reorga-  
14 nization, which will not be dealt with here; however, it is important to in-  
15 clude Luria’s understanding of functions, which are not *inflexible, inevita-*  
16 *ble processes of activity* (cf. Vocate 1987: 84):

17  
18 A complex adaptive “function” ... will usually be executed by a group of struc-  
19 tural units and ... these will be integrated into a “functional system.” The parts of  
20 this system may be scattered over a wide area of the body and united only in the  
21 execution of their common task (for example, respiration or locomotion). Be-  
22 tween these parts there is a pliable yet strong temporary connexion [sic], uniting  
23 them into one system and synchronizing their activity. This “functional system”  
24 works as a complete entity, organizing the flow of excitation and coordinating  
25 the activity of the individual organs. (Luria 1963: 36)

26 The inter-systemic relationships of mental reorganization occur through a  
27 system of generalization within spoken language. Based on the theories of  
28 Vygotsky, Luria situated his language theories within the social first, the  
29 *external conditions of life*. A child cannot progress to generalized, abstract  
30 communication without the help of others, who are more advanced. In  
31 traditional Russian psychology, there is a focus on the entire individual  
32 personality within a more holographic structure, whereas in Western  
33 psychology one often speaks of individual factors, not related to a whole  
34 construct, such as parts of personality, e.g., motivation, anxiety, empathy,  
35 tolerance to ambiguity, and risk taking. Russian psychology, however,  
36 anchors the unit of an individual personality within the importance of  
37 the social environment, human consciousness, language and concept de-  
38 velopment, and activity.

39 Luria worked with twin boys, Liosha and Yura, who had not devel-  
40 oped linguistically or mentally. Luria changed the overall learning envi-  
41 ronment of the boys, and in the end, the improvements made could be  
42 monitored when the boys were able to separate their actions from

1 language, hence, internalization, where meaning was then relocated and  
2 transformed within a new sense of action. Luria viewed the entire envi-  
3 ronment and personality of these boys in finding answers that would  
4 help them, not just partial aspects and partial tests. The contributing  
5 factor to this development was language. “In the course of further obser-  
6 vations we were able to note cardinal improvements in the structure of  
7 the twins’ mental life which we could only attribute to the influence of  
8 the one changed factor—the acquisition of a language system” (Luria  
9 & Yudovich 1972: 107). In viewing such problems, Luria would isolate  
10 “. . . a leading factor (or factors) whose damage defines the character of  
11 the whole syndrome” (Homskeya 2001: 106), and he would use the prin-  
12 ciples of *displacement*. “In the last analysis this meant that the children  
13 were now in a position to “*detach themselves from the immediate situa-*  
14 *tion, to subordinate their activity to a verbally formulated project*” and so  
15 “*to stand in a new relation to this situation*” (Luria & Yudovich 1972: 87).  
16 It is hypothesized that the role of the mirrors used in producing the image  
17 of a hologram can be metaphorically understood through the psychologi-  
18 cal concepts of *displacement* and *inner speech*. It is at this moment where  
19 the internal/external can fuse with both intrasubjectivity and inter-  
20 subjectivity (avoiding the term objectivity). Viktor Frankl (1985) uses the  
21 term *dereflection*, which ultimately implies being authentic and ultimately  
22 giving of oneself. Instead of watching and observing oneself, *dereflection*  
23 contains a sense of temporary forgetting of one’s immediacy (cf. Frankl  
24 1985: 171). Another similar term is *deautomatization* (making strange,  
25 *ostranenie*).

26  
27 The role of conflict, of opposition, of deautomatization (“making strange”) was  
28 central to Eisenstein’s contemporaries, the Russian Formalists (in particular,  
29 V. Sklovskij and Ju. Tynjanov). In his article “Art as Device” (1919), Sklovskij  
30 advanced the view that artistic communication was based on “making strange”  
31 (*ostranenie*) and making difficult (*zatrudnenie*) perceptions that have become au-  
32 tomatized, thus enabling the receiver to derive new information through an active  
33 process. (Eagle 1980: 184)

34 *Displacement* in Vygotsky’s and Luria’s terminology, *dereflection* in  
35 Frankl’s understanding, and *deautomatization* Sklovskij’s understanding,  
36 can serve as a metatheoretical bridge that can lead to Vygotsky’s under-  
37 standing of catharsis (from art theory) and potential self-regulation (from  
38 psychology).

39 It is precisely the simultaneous focus on the “whole” and the “parts,”  
40 the individual and the social that can be of ultimate importance within a  
41 new holographic understanding for Western psycholinguistics. Vygotsky  
42 (1997: 317) stated:



1 When our Marxists explain the Hegelian principle in Marxist methodology they  
2 rightly claim that each thing can be examined as a microcosm, as a universal mea-  
3 sure in which the whole big world is reflected. On this basis they say that to study  
4 one single thing, one subject, one phenomenon *until the end*, exhaustively, means  
5 to know the world in all its connections. In this sense it can be said that each  
6 person is to some degree a measure of the society, or rather class, to which he be-  
7 longs, for the whole totality of social relationships is reflected in him . . . We must  
8 reconquer the right for psychology to examine what is special, the individual as a  
9 social microcosm, as a type, as an expression or measure of society.

10

#### 11 **4. The role of image and inner speech in holographic psycholinguistics**

12

13 One of the basic challenges in various areas of all psycholinguistics is  
14 to establish an environment of success or an *image-of-achievement*. There  
15 needs to be a broader holographic comprehension, for example, that the  
16 visual cortex encodes situations beyond the visual, just as the motor cor-  
17 tex encodes events beyond movement (cf. Pribram 1971: 243). During the  
18 1930s, N. Bernstein made some interesting experiments using subjects  
19 who wore black costumes with white tape placed over their joints. While  
20 monitoring various movements, such as walking, writing, typing, Bern-  
21 stein could use the wave patterns of the human movements, by analyzing  
22 them mathematically.

23

24 For instance, Bernstein found that any rhythmic movement could be represented  
25 by a rapidly converging trigonometric series and that the next step in such move-  
26 ments could be predicted 'to an accuracy of within a few millimeters in the form  
27 of a sum of three or four harmonic oscillations, the so-called Fourier trigono-  
28 metric sums . . .' The fact that these activities could be represented in mathemati-  
29 cal terms that can be characterized as a 'temporal hologram' immediately leads to  
30 the realization that their brain representation might also be organized by this sort  
31 of transformation rather than the usually assumed keyboard control mechanism  
32 . . . This Image-of-Achievement, therefore, encodes environmental contingencies  
(e.g., forces), not patterns of muscle contraction. (Pribram 1971: 251)

33

34 It is within the understanding of R. Rommetveit's prolepsis (Cole 1996)  
35 and inner speech and inner programming, that an imaged picture of  
36 future success can be established within many areas of language theory.  
37 It should not be forgotten that inner speech/inner programming directly  
38 connects with outer/external speech, and the reciprocity between the two.  
39 Michael Cole (1996) refers to a concept developed by Rommetveit (1974)  
40 called prolepsis. The example of adults reacting to a baby offers a good  
41 picture of prolepsis. Adults speak baby talk to very young infants, but  
42 they also speak an adult version of language as well. Adults do not expect

1 the infant to respond in a proper fashion, but assume that the infant will  
2 grow into the community and one day will be able to use social language.  
3 At this point, the focus should be on the potential age of the learner. The  
4 goal is to view the learner within his/her highest potential age, not as s/  
5 he communicates today (cf. Cole 1996: 183–184). This side of imaging-  
6 for-achievement represents the external or social side of language commu-  
7 nication. The second level is reflected in inner speech and inner program-  
8 ming. Luria (1982: 154) stated the following:

9  
10 What is primarily represented in inner speech is the predicative part of the future  
11 utterance (the rheme). The predicative character of inner speech is the basis for  
12 the conversion of the initial thought into an expanded, syntagmatically structured,  
13 speech utterance.

14 The syntagmatic element of speech is connected with the organization of  
15 the speech process, as opposed to the associative, paradigmatic linguistic  
16 structure. Relating these thoughts to the Russian semiotician and film-  
17 maker, Sergei Eisenstein, H. Eagle (1980: 186) refers to Eisenstein’s un-  
18 derstanding of the syntagmatic:

19  
20 What is characteristic of the cinema is that syntagmatic juxtapositions proceed  
21 simultaneously on so many levels, levels which are to a degree independent but  
22 which at a deeper level must relate to the totality and unity of the concept . . .  
23 What is the syntagmatic process through which these signs are united? It is both  
24 horizontal (the development of sign linearly in time) and vertical (the concatena-  
25 tion of signs simultaneous in time).

26 It is precisely the transformation and restructuring of inner speech  
27 to external speech that connects thought (understood holistically) and  
28 speech, which must then be developed in a unified form. In looking at  
29 various schools of psychology, from associationism, behaviorism, to Ge-  
30 stalt theories, Vygotsky states that they all have one thing in common,  
31 and that is their anti-historicism:

32  
33 They move between the poles of naturalism and pure spiritualism. They study  
34 thinking and speech outside of the history of thinking and speech . . . But only a  
35 historical psychology, only a historical theory of inner speech can lead us to a true  
36 understanding of the whole of this most complex and gigantic problem.” (Vygot-  
37 sky 1970: 534)

38 And, according to Vygotsky, the deepest aspect of verbal thought is  
39 the motive, a psychological aspect that will always elude psychologists  
40 and psycholinguists within the Cartesian model. “Thus, inner speech is  
41 responsible for the predicative development, the integrity, and the co-  
42 herence of every utterance, no matter how broad in scope” (Akhutina

1 1978: 20). Somewhere between inner and outer speech lies the concept of  
2 inner programming. It is this bridge that serves as a focal point of conver-  
3 gence of holistic thought brought together with partial speech.

4  
5 Inner programming of speech is the uncognized construction of a certain scheme  
6 on the basis of which an outer statement is subsequently produced. There are evi-  
7 dently two types of such programming: (a) programming of a concrete statement,  
8 and (b) programming of a verbal whole. The first is prepared, as it were, one  
9 statement in advance, while the second covers a longer period. (A. A. Leontiev  
10 1968: 12)

11 In viewing Luria, Pribram, Eisenstein, and Vološinov, related to the prin-  
12 ciples of language and communication, it becomes clear that a new path  
13 has been forged, one that truly brings the scientific method in line with a  
14 much higher, holographic understanding of human empowerment. These  
15 theories can also serve the purpose of reconceptualizing research ranging  
16 from studies of brain damaged patients to the acquisition of a second lan-  
17 guage, and many more areas within psycholinguistics, neurolinguistics,  
18 and applied linguistics. There is an underlying assertion that holistic im-  
19 ages are imprinted upon our individual consciousness and individual *wave*  
20 *fields of movement*, and that this overall pattern can indeed be decoded  
21 from an imaged part of the whole.

22 For inner speech to lead to self-regulation it is important to restruc-  
23 ture the outside environment, where strengths compensate for weak-  
24 nesses, and it is important to view the individual personality as a whole  
25 unit, simultaneously tied to external and internal phenomena. In return-  
26 ing to language, Pribram (1971) discusses the differences between signs  
27 (context-free, related to senses and action on the world) and symbols  
28 (context-sensitive, related to the internal world). He states:

29  
30 I believe that sign and symbol come together in man as a corollary of his demon-  
31 strated increased capabilities for action ... My hypothesis is that *all* thinking  
32 has, in addition to sign and symbol manipulation, a holographic component ...  
33 holograms are composed by transformations which, when they are simply re-  
34 peated, essentially reconstruct the original from which the holographic representa-  
35 tion was composed. Holograms are the “catalysts of thought” ... More often  
36 than not, when problems generate thought, contextual and configurational match-  
37 ings are sought, not just specific items of information. These matchings, I believe,  
38 can occur best while the coding operation is in its holographic mode. (Pribram  
39 1971: 366–370)

40 Within this understanding, Vološinov (1998) makes it clear that an  
41 inner sign can also function as an outer sign. “The fact is, after all, that  
42 inner sign is the object of introspection and inner sign, as such, can

1 also be outer sign . . . Self-observation (introspection) is the understand-  
2 ing of one's own inner sign" (36). At the same time, there are many  
3 directions for inner and outer signs. What is interesting is that the core  
4 of an "inner sign is, after all, preeminently the word, or inner speech"  
5 (Vološinov 1998: 37). It is therefore hypothesized that the "word"  
6 within inner speech (always connected with displacement-dereflexion-  
7 deautomatization and outer speech) is the basic encoded element of a  
8 future holographic semiotics. This approach must take a "unified" stance,  
9 as opposed to postmodern fragmentation without a whole, or even a  
10 monolithic holism such as Chomsky's linguistics, without a fundamental  
11 correspondence to meaningful, semantic elements, tied to real life.

12 The question is now raised as to what a holographic mode can contrib-  
13 ute to a deeper understanding of language and communication. Luria  
14 (1975) gave a partial answer in responding to the problems of Chomsky's  
15 competence/performance model, where mind and matter are basically  
16 kept separate, with the competence model remaining in the realm of the  
17 unconscious, hence incapable of being cognized, simply labeled as innate.  
18 Luria (1975: 383) stated that:

19  
20 Consequently, we must consider that linguistic "competence" which Chomsky be-  
21 lieves is intuitive, is in actual fact the result of a long and dramatic evolution and  
22 is a problem rather than a postulate. Furthermore, we should assume that "com-  
23 petence" is the result of long and dramatic "performances" which were endowed  
24 with prelinguistic characteristics from the start, but which acquired their linguistic  
25 traits during the young child's early contact with the speaking environment . . .  
26 Language is thus a system of codes used to express the relations of the subject  
27 with the outside world.

28 Luria (1975: 282) made the bold statement that Chomsky's research can  
29 only lead to a dead end. Chomsky, being disappointed in mechanistic  
30 trends in psychology and linguistics, turned to a philosophical model  
31 from the 17<sup>th</sup> Century, which did not connect mind and body, individual  
32 and social, and left deeper questions within an undefined area of the un-  
33 conscious. Vygotsky, Luria, Pribram, Eisenstein, and Vološinov all focus  
34 on a unified whole, and it is precisely within inner speech and inner pro-  
35 gramming, that a holographic model can be developed in future.

36 Closer analysis would show that the units of which inner speech is  
37 constituted are certain *whole entities* somewhat resembling a passage of  
38 monologic speech or whole utterances.

39 . . . These units of inner speech, these *total impressions of utterances*, are joined  
40 with one another and alternate with one another not according to the laws  
41 of grammar or logic but according to the laws of *evaluative* (emotive) *corre-*  
42 *spondence, dialogical deployment*, etc., in close dependence on the historical

1 conditions of the social situation and the whole pragmatic run of life. (Vološinov  
2 1998: 38)

3 In summary, the attempt in this paper is to connect the asymmet-  
4 rical dialectic of inner and outer signs, monologue and dialogue, inner  
5 speech/inner programming and external speech (including displacement,  
6 dereflection, and disautomatization), locating them within a holographic  
7 model. Vygotsky, Luria, Pribram, Eisenstein, and Vološinov already  
8 wrote about such a holism during the early and middle part of the last  
9 century. We will continue to honor their legacy, in remembrance, and  
10 with future models that reflect their intentions of unity.

11  
12 *To see a World in a Grain of Sand*  
13 *And a Heaven in a Wild Flower,*  
14 *Hold Infinity in the palm of your hand*  
15 *And Eternity in an hour* (William Blake)

16  
17 **\*Acknowledgements**  
18

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21 asked extremely interesting questions and helped me begin a difficult dis-  
22 cussion on functionalism within psychology. And, although I speak out  
23 against the Chomskyan model of linguistics, I have deep admiration for  
24 Noam Chomsky.  
25

26  
27 **Note**  
28

- 29  
30 1. In solving the long-standing problem of whether Bakhtin or Vološinov wrote *Marxism*  
31 *and the Philosophy of Language* it has been stated: “Why did he [Bakhtin] refuse to  
32 acknowledge these books as his own? First of all, because there was much in them to  
33 which he would not have signed his name. The title itself of Vološinov’s book, *Marx-*  
34 *ism and the Philosophy of Language*, absolutely did not satisfy him. One of his first con-  
35 fidences when I met him was ‘You should know I am not a Marxist, no, not a Marxist  
36 ...’ He simply dictated it [Marxism and the Philosophy of Language]. Why did he  
37 renounce it? First of all because it did not satisfy him. Moreover, after he had already  
38 acknowledged his authorship, he told me that Medvedev, before turning the book over  
39 to the publisher, introduced certain additions, and ‘they were very unsuccessful,’ said  
40 Bakhtin. Moreover, these books were not written with the same refinement as say the  
41 book on Dostoevsky. He dictated them. And he told me straight out, after he had  
42 already admitted to them, that he wrote them simply for the money” (Rzhevsky 1994:  
43 430–431). For more explanations see: “Vološinov, Ideology, and Language: The Birth  
44 of Marxist Sociology from the Spirit of *Lebensphilosophie*.” Galin Tihanov, *The South*  
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