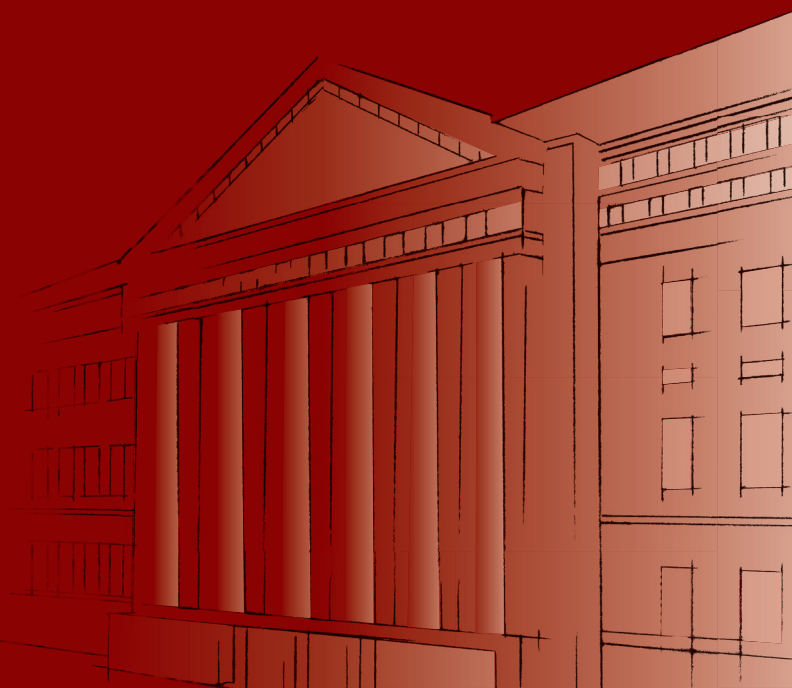


ALEKSANDR FADEEV

Lev Vygotsky's Approach in
the Contemporary Semiotic Research of
Learning, Meaning-Making and
Inner Speech



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UNIVERSITY OF TARTU
Press

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The council of the Institute of Philosophy and Semiotics of the University of Tartu has, on June 13, 2022, accepted this dissertation for the defense for the Degree of Doctor of Philosophy (in Semiotics and Culture Studies).

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The thesis will be defended at the University of Tartu, Estonia, on August 22, 2022, at 11.00 online.

This research was supported by the European Social Fund's Doctoral Studies and Internationalisation Programme DoRa (Archimedes Foundation); The University of Tartu ASTRA Project PER ASPERA (2014-2020.4.01.16-0027), which is financed by the (European Union) European Regional Development Fund; Estonian Research Council's institutional research project IUT2-44 "Semiotic modelling of self-description mechanisms: theory and applications" and PRG314 "Semiotic fitting as a mechanism of biocultural diversity: instability and sustainability in novel environments"; Estonian Science Foundation research grant RANS Professorship of Semiotics of Culture (Department of Semiotics, University of Tartu).



European Union
European Regional
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ISBN 1406-6033

ISBN 978-9949-03-951-7 (print)

ISBN 978-9949-03-952-4 (pdf)

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University of Tartu Press
www.tyk.ee

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ACKNOWLEDGEMENTS

While working on my PhD thesis I was lucky to have people around me who supported and inspired me during this incredible journey. With this note I would like to express my gratitude to them.

First of all, I would like to thank my supervisor professor Peeter Torop for everything I learnt from him, for all his support, and for all his help during my journey to the PhD. No matter whether it was a scientific, professional or personal issue, Peeter Torop has always been there to help me, and I would like to express my sincere appreciation for that. I also want to thank my colleagues, co-authors and friends from the Transmedia Research Group: Maarja Ojamaa, Alexandra Milyakina, Merit Rickberg and Tatjana Menise. I want to say a lot of thanks to Ulvi Urm, who has always helped with any possible question or issue. And of course I am infinitely grateful to all my teachers and colleagues from the Department of Semiotics: Timo Maran, Kalevi Kull, Tiit Remm, Katre Pärn and others. I want to say thanks to my BA and MA students, and also to my colleagues from the Inner Speech Research Group: Krista Tomson and Alec Richard Kozicki.

I want to express my gratitude to the DoRa programme, Archimedes Foundation and the University of Tartu for making my doctoral studies possible and for giving me a chance to move to Tartu and open a new, very interesting and positive page in my life. I am incredibly grateful for the whole university family and for all my Estonian friends for always making me feel so welcome here in Estonia.

I am also thankful to my family, my mother, grandfather and grandmothers for their help on different stages of my life. And of course the incredible amount of help and support came from my dear wife and my best friend Lili. Thank you a lot for always being next to me, no matter what stage of this journey it was. Thank you for listening to me talking about my thesis for hours, for encouraging me in difficult moments and for always being the first person who comes to help, and also for sharing the moments of joy and success. And thank you that on nice sunny days you did not allow me to work and took me for long walks along Tartu and Karlova. I would not be able to write this thesis without your support and inspiration.

0. INTRODUCTION

The value and scientific importance of using Lev Vygotsky's approach to study the influence of culturally elaborated signs and sign systems on human development, behaviour and cognitive functions, was emphasised in semiotics already in 1962 by Vyacheslav Ivanov. In Ivanov's (1962) introduction to the "Symposium on the structural study of sign systems" (1962) he discusses Vygotsky's famous publication "Psychology of art" (1971/1930) and argues the importance of Vygotsky's discovery of symbolic mediation. Ivanov mentions that the process of symbolic mediation is when an individual "acquires sign systems, by means of which a human masters her/his behaviour", which Ivanov considers as "the highest stage in the development of a person" and "a necessary part in the individual development of the society" (1962: 5). Vygotsky's own interest in semiotics possibly originates from his investigations of the origins of the development of higher psychological functions. Vygotsky's semiotic thinking leads him to the idea of the role of culturally produced signs in the development of higher psychological functions. One of the examples of this is Vygotsky's investigation of the relations between thinking and speech, where the meaning of a word becomes the main unit of this interrelation (2012/1934: 5). Vygotsky's semiotic thinking on human psychological and cognitive processes is considered one of the main distinctive characteristics of Vygotsky's cultural-historical theory. Jaan Valsiner also emphasised the actuality of Vygotsky's thinking in the context of contemporary science (Valsiner 2001: 85).

The heritage of Vygotsky's research continued to influence and contribute to the development of semiotic thinking. For instance, the outcomes of Vygotsky's studies are assumed to have a significant influence on the works of Yuri Lotman and other members of the Tartu-Moscow Semiotic School. More specifically, Lotman claims an important role of Vygotsky's discovery of "a special language, intended for the autocommunicative function, which he described as 'internal speech'" (Lotman 1990: 25) in the development of the autocommunication model. In addition to this, Lotman argued the importance of Vygotsky's studies in cognitive functions (1990: 2), such as intelligence.

Vygotsky's study of the relations between thinking and speech (2012/1934) also made an influence on the works of Sergei Eisenstein, who Vygotsky is known to meet personally. Eisenstein turned to Vygotsky's description of inner speech processes when studying the perception of montage as a part of cinematic language. The concept of inner speech became the source for Eisenstein's idea of the most advanced form of cinematic montage, namely intellectual montage, in which "the combination of images that are absolutely different in their origins, yet rich in cultural and symbolic content, creates a new 'intellectual' meaning" (Fadeev 2022). Vygotsky's scientific thinking is also known to have an influence on the works of Mikhail Bakhtin. Caryl Emerson says that through the analysis of the translations between inner speech and "outer speech" Bakhtin "rethinks both the relation of consciousness to the world around it and the relation of the self to others" (Emerson 1983: 249).

This historical overview of the influence of Vygotsky's approach on semiotic thinking demonstrates the semiotic nature of Vygotsky's view on human development and higher psychological processes. It also emphasises the value of Vygotsky's heritage for semiotic research.

Another discipline that benefits from incorporating Vygotsky's research in semiotic studies is the field of cultural psychology. In his theory, which was later developed into cultural-historical theory, Vygotsky described how culture influences human behaviour and development through signs, that when learned by humans shape their psychological functions:

“Higher or cultural psychological functions can develop only in the cultural environment. He was also very clear about what makes cultural environment specific – it is because signs are used there. It is theoretically extremely important that signs have a dual nature. On the one hand, they are used socially, in external activity. On the other, signs have an internal, psychological role, when they are included in the psychological structure of cultural psychological processes” (Yasnitsky et al. 2014: 115).

This makes Vygotsky's theory especially valuable in the context of contemporary culture. The recent cultural shift (including the digitalisation and development of new media) establishes a question of how the movements in contemporary culture will be reflected in the process of learning, meaning-making and thinking for a human psyche. This is where Vygotsky's approach receives its high actuality for cultural psychology. Vygotsky's theory addresses psychological tools (internalised signs and sign systems) as the dominant vehicles of information that humans receive from social and cultural interactions, and which also represent “an important semiotic mechanism of learning” (Fadeev 2019: 26). These psychological tools are provided by culture, meaning that their change presupposes a change in how one learns and makes meanings via cultural sign systems. Vygotsky's understanding of culturally elaborated sign systems as a uniquely human form of mediating learning and memorising proves its high actuality for the analysis of learning in the context of digital culture, where mediation can be established through various sign systems of digital media simultaneously. This makes Vygotsky's approach a powerful tool for contemporary semiotics and cultural psychology.

In the history of semiotic research one of the key challenges has always been the understanding of how one performs various sign operations, including interpretation of signs or meaning-making, learning, memorising, inner speech or thinking, problem solving, etc. (for example Semetsky and Stables 2014; Kull 2020; Emerson 1983). The aforementioned processes are known to have a dyadic nature: they simultaneously depend on the nature of the human psyche and on the culture in which the human psyche develops. The dyadic nature of individual sign-using activity emphasises the necessity to establish an interdisciplinary dialogue for studying sign-using activity in learning and memorising in order to provide a coherent picture of such processes. This is especially

important in the context of digital culture, which provides an ever growing number of diverse cultural tools, namely sign systems, that are internalised in the course of psychological and cognitive development.

Digitalisation and the development of the media environment has significantly shaped the communication processes in culture (Ojamaa and Torop 2015), as well as the way one communicates with culture. At the same time, digitalisation establishes the new challenges and questions for semiotic science, namely how the development of digital culture shapes the individual sign operations. In order to understand how one learns, makes meanings and performs other sign operations in the context of contemporary culture, semiotics needs a cohesive approach to address the relations between one's cognitive processes, signs and culture.

On the basis of the aforementioned discussion we provide the main aims of the given PhD thesis:

1. The given PhD thesis aims at researching and critically analysing the semiotics of Lev Vygotsky's approach to the study of learning, meaning-making and inner speech. By doing so, the thesis attempts to evaluate the actuality and perspectives of Vygotsky's approach for contemporary semiotic research of learning, meaning-making and inner speech, as well as to identify the role of culture in these processes. It also attempts to establish an interdisciplinary dialogue as a necessary step in addressing the aforementioned processes.
2. The thesis also aims at implementing Vygotsky's approach for the analysis of learning, meaning-making and inner speech in the context of contemporary digital culture. Thus, the results aim to demonstrate the influence of the development of cultural communication processes on individual sign-using activity, as well as to show the value of Vygotsky's approach for the semiotic research in this field.

The approbation of the arguments is based on the author's work in the Transmedia Research Group (Ojamaa et al. 2019) at the University of Tartu and the author's practical experience with developing the educational platform "Education on Screen"¹, as well as the analysis of the implementation of the educational platform in a real educational setting.

By doing so, the thesis attempts to contribute to the semiotic understanding of sign-using activity (including learning, memorising, inner speech, etc.) in the context of contemporary culture. The results of the research will provide an input for developing educational practices in teaching and learning in the context of contemporary digital culture.

3. As an important additional aim, the PhD thesis proposes the perspectives for the development of further research in learning, meaning-making and inner speech within Vygotsky's approach.

¹ <https://haridusekraanil.ee/>

The significance of the research originates from its contribution to the growing area of semiotic research of culturally dependent cognitive processes including learning, memorising, meaning-making and inner speech. The study also offers some important insights into how the development of an interdisciplinary dialogue between semiotics, culture studies, education, psychology and neuroscience are able to contribute to a cohesive understanding of the processes which previously were mostly addressed within the research of separate disciplines.

The study also provides an opportunity for developing learning and teaching practices in the context of digital culture. This emphasises the practical value of the given research. More specifically, the results of the given research can be incorporated to facilitate educational practices of learning and teaching in the context of digital culture. By contributing to the semiotic understanding of learning and teaching process the paper also provides the perspectives of using its results for the development of pedagogical approaches in contemporary education, more specifically in digital education.

The given PhD thesis consists of the three main chapters with an introduction, overview of the academic publications and the summary. The main chapters include:

- **Semiotics of Lev Vygotsky.** The chapter provides the analysis and discussion of the role of semiotics in Lev Vygotsky's approach and in cultural-historical theory, which is considered to be mainly based on Vygotsky's scientific heritage. It also provides the discussion on the role of Vygotsky's research discoveries for the development of semiotic thinking within Tartu-Moscow Semiotic School.
- **Approbation of Vygotsky's approach for the study of sign-using activity in digital culture.** The chapter provides an overview of the research done by the author in studying the role of digital culture in shaping individual sign-using activity on the levels of learning and inner speech. The chapter also provides a discussion on the actuality and perspectives of Vygotsky's approach for the contemporary semiotic studies of sign-using activity, including learning, meaning-making, acquisition of literacies and inner speech in the context of contemporary digital culture. The research results are illustrated with the experience from the work in Transmedia Research group and the educational platform "Education on Screen".
- **Further implications.** The chapter provides a discussion and establishes the perspective for the further implication of Vygotsky's approach to contemporary semiotic research in learning, meaning-making and inner speech.

The articles, discussions and analysis of the provided PhD thesis are illustrated with the examples from the educational platform "Education on Screen"², that has been developed by the Transmedia Research Group at the Department of Semiotics of the University of Tartu. The Transmedia Research Group has been

² <https://haridusekraanil.ee/>

focused on the “application of cultural semiotic framework in creating study materials for humanities-related subjects and topics for secondary school students and teachers” (Ojamaa et al. 2019: 152–153). The results of the Transmedia Research Group have been released in the creation of an open access digital educational platform “Education on Screen” (ibid.). The digital platform consists of several independent digital learning materials (digital learning environments), where each material focuses on a particular work of Estonian literature or cinema, representing their transmedia storyworlds in specific conceptual frameworks that provides topics for learning materials.

Currently, the educational platform “Education on Screen” offers the following digital learning materials:

- Literature on Screen (LoS). The learning material is focused on the process of “cinematic adaptation of literary texts” (Ojamaa et al. 2019: 153). It is based on Andrus Kivirähk’s novel “Rehepapp ehk November” (2000) and its cinematic adaptation by Rainer Sarnet. The material is available via the open access link – <http://kirjandusekraanil.ee/>;
- History on Screen (HoS). The learning material is focused on “explicat[ing] the notion and operating mechanisms of historical memory” (Ojamaa et al. 2019: 153). It is based on Leelo Tungal’s novels “The Little Comrade” (2008) and “Velvet and Sawdust” (2009) and their cinematic adaptation by Moonika Siimets. The material is available via the open access link – <https://ajalugu.haridusekraanil.ee/en/>;
- Identity on Screen (IoS). The learning material is focused on “featuring a multi-level treatment of the notion of identity” (Ojamaa et al. 2019: 153). It is based on the first volume of Anton Hansen Tammsaare’s novel “Truth and Justice” (1926). The material is available via the open access link – <https://identiteet.haridusekraanil.ee/en/>.
- Nature on Screen (NoS). The learning material analyses the mediation and interaction with nature via words, sounds, and images. It is based on Jaan Tootsen’s film “The Beauty of Being” (“Olemise ilu”, 2020). The material is available via the open access link – <https://loodus.haridusekraanil.ee/en/>.
- Estonian Film Classics. The learning materials investigate cultural mechanisms that make an artistic text to become classics, the materials also analyse various characteristics of cinematic language and are based on the following cinematic works: Arvo Kruusement’s “Spring” (1969), Grigori Kromanov’s “The Last Relic” (1969) and “The Dead Mountaineer Hotel” (1979). The materials are available via the open access link – <https://kinoklassika.haridusekraanil.ee/en/>.

The platform served as a suitable research material for two main reasons. First of all, “Education on Screen” represents a digital learning space that relies on the principles of transmedia education and aims at enhancing meaning-making of the aforementioned artistic texts via “intermediary analysis of culture”

(Ojamaa et al. 2019: 153). This makes it possible to incorporate the analysis of learning processes and acquisition of various sign systems as means of meaning-making based on Vygotsky's theory of mediation (Fadeev 2019). Secondly, the platform already involves a number of principles of cultural-historical theory to its methodology. Thus, the platform works simultaneously as a source material and an approbation platform, where the results of the study were implemented.

1. SEMIOTICS OF LEV VYGOTSKY

Lev Vygotsky (1896–1934) was a psychologist known for his innovative scientific thinking and whose scientific heritage later influenced the development of various fields of science, including psychology, psychiatry, medicine, education studies, pedagogy and semiotics. Vygotsky is considered to be one of the most productive researchers of his time (Van der Veer 2014: 25). During his scientific career he made a significant number of experimental studies. However, many of his works remain unpublished, his most famous publications include “Thinking and speech” (2012/1934), “The psychology of art” (1922) and “Pedagogical psychology” (1991). While Lev Vygotsky has never been considered a semiotician, his contribution to the semiotic understanding of higher psychological processes, including learning, meaning-making and thinking processes cannot be underestimated. The reason for this was Vygotsky’s understanding of the role of signs and sign systems in the process of psychological development and in the formation of higher psychological functions (Ivanov 2014: 488).

1.1 Role of Semiotics in Cultural-Historical Theory

Vygotsky is known for developing the so-called cultural-historical psychology and his theories were later conceptualised under the name cultural-historical theory, which Vygotsky never used himself in his works (Yasnitsky et al. 2014: 2). Cultural-historical theory “regards the human psyche as a whole in its cognitive, emotional, and volitional manifestations, in relation to the physical and physiological and, on the other hand, social and psychological environment” (ibid.). Thus, Vygotsky’s theory addresses the process of human development on both “cultural-historical and bio-social” dimensions (ibid.). In other words, Vygotsky’s theory underlines the close connections between the biological and cultural origins of human psychological and cognitive development.

Vygotsky “built a whole system of a new understanding of human high psychic functions on the base of describing the dominant role of the signs found in them as their most important feature” (Ivanov 2014: 488). The results of his research (mostly in 2012/1934) show how deeply higher psychological functions are connected to culture. In accordance with Ronald Miller, Vygotsky establishes a distinction between the elementary (or natural) psychological functions, “such as attention, memory, motor control, and perception, that are the product of biological development (biogenesis)” and higher psychological functions “that arise in the course of the cultural development of the child (sociogenesis)” (Miller 2014: 10). Higher psychological functions are where cultural and semiotic processes possess a key role. Vygotsky understood higher psychological functions as:

“(1) psychological systems, (2) developing from natural processes, (3) mediated by symbols, (4) forms of psychological cooperation, which are (5) internalized in the course of development, (6) products of historical development, (7) conscious and (8) voluntary (9) active forms of adaptation to the environment, (10) dynamically changing in development, and (11) ontogeny of HPFs recapitulates cultural history” (Toomela 2016: 97–98).

These distinctions are still relevant and are used in contemporary psychology (Toomela 2016). Cultural-historical theory views signs and sign systems as elements of our human culture, which act as “artificial stimuli-devices which are introduced by man into a psychological situation” (Vygotsky 1997a: 54). This understanding demonstrates not only the way signs influence psychological development, but also the role of culture in these processes. Thus the human cortex stands in a close connection with culture, being not merely “an extraordinarily large signaling system, but it is connected to a similar social network of communication through signs” (Ivanov 2014: 490).

Vygotsky’s theory emphasises that the role of sign and sign systems in inner psychological processes and psychological development is what differs humans from other species and can possibly be the aspect which defines the uniquely human way of psychological development, learning, memory and cognition. As Ekaterina Zavershneva emphasised, Vygotsky’s works argue for the “idea of a distinctly human way of psychological development of somebody who speaks and thinks, or, even more precisely, thinks by speaking.” (2014: 65) Humans are able to use complex signs and sign systems provided by their culture as symbolic means (psychological tools) in various psychological situations. This allows humans to use signs and sign systems to control their own behaviour (Vygotsky 1983: 118; Ivanov 2014: 491).

According to Vygotsky, the word, which is a linguistic sign, is the type of sign that shapes psychological development the most. He sees the meaning of the word as a key research object for discovering the complex interrelations between thinking and speech.

“The unit contains, in a simple, primitive form, the characteristics of the whole that is the object of analysis. We found the unit that reflects the unity of thinking and speech in the meaning of the word. As we have tried to show, word meaning is a unity of both processes that cannot be further decomposed. That is, we cannot say that word meaning is a phenomenon of either speech or thinking. The word without meaning is not a word but an empty sound. Meaning is a necessary, constituting feature of the word itself. It is the word viewed from the inside. This justifies the view that word meaning is a phenomenon of speech. In psychological terms, however, word meaning is nothing other than a generalization, that is, a concept. In essence, generalization and word meaning are synonyms. Any generalization – any formation of a concept – is unquestionably a specific and true act of thought. Thus, word meaning is also a phenomenon of thinking” (Vygotsky 1987: 244).

Addressing the development of psychological functions from a semiotic perspective provided Vygotsky with various methodological advantages. First of all, it allowed him to provide a cohesive understanding of the development of higher psychological functions, considering both the biological and cultural origins. It also allowed Vygotsky to identify the role of culture in the development of individual psychological functions, including learning, memory and thinking. Addressing the process of internalising words and other elements of natural language helped Vygotsky to establish the understanding of inner speech, which still remains relevant for contemporary semiotics, psychology and neuroscience.

1.2 Vygotsky within Tartu-Moscow Semiotic School

For a considerable period of time Vygotsky's research was not well-known within the scientific community. Vyacheslav Ivanov mentions that "Vygotsky's main contribution to semiotics had not been known and appreciated until 1960, when the first five chapters of the book on the development of high psychic functions (written in 1931) and his general course of lectures (taught in 1932) were first published" (Ivanov 2014: 489).

It can be assumed that Lev Vygotsky's inclusion into Tartu-Moscow Semiotic School happened in 1962 when he appeared as one of the authors at the "Symposium on the structural study of sign systems" (Ivanov 1962) with his publication "Psychology of art (the analysis of esthetic reaction)". Ivanov also mentions Vygotsky in the introduction article for the symposium proceedings, in which he emphasised Vygotsky's discovery that human's psychological development is governed by culturally created signs and sign systems, namely that humans "use outer signs, which help them control their own behaviour" (Ivanov 1962: 4).

Vygotsky's contribution to the development of semiotic thinking in general and within Tartu-Moscow Semiotic School in particular cannot be overestimated. The "impact has been seen in Russia and Estonia in the works of some members of the Moscow-Tartu semiotic school" (Ivanov 2014: 490). One of the most active members of the Tartu-Moscow Semiotic School, Yuri Lotman, has frequently referred to Vygotsky's scientific heritage (e.g. 1990: 25). More specifically, Lotman admits that his well-known model of autocommunication originates from the phenomenon of inner speech described by Vygotsky (2012/1934). Autocommunication represents the model of communicating with yourself, in "a direction which we can schematically describe as the 'I-I' direction" (Lotman 1990: 21). Lotman refers to the origins of this model of communication:

"Vygotsky pointed out the existence of a special language, intended for the autocommunicative function, which he described as 'internal speech'. He pointed out its structural features: The essential difference between inner speech and external speech is the absence of vocalization" (Lotman 1990: 25).

Another relation can be found in Lotman's (2009) concept of cultural explosion, in which he described dynamic processes "through which culture moves forward" (Gherlone 2013: 331). In his famous work "Psychology of art" Vygotsky also referred to the phenomenon of explosion, but rather in artistic processes. Vygotsky asserts that an important feature of aesthetic reaction in artistic perception as a psychological process is that it does not follow the process of energy preservation, but rather "destroying our nervous energy, it is more like an explosion" (Vygotsky 1922: 132).

Lev Vygotsky's heritage has also influenced the works of Mikhail Bakhtin, who is known for his dialogic approach (Bakhtin 2010; Eun 2019). We may assume that the studies of inner speech undergone by Vygotsky inspired Bakhtin's investigations of the dialogic nature of human consciousness. According to Caryl Emerson, Bakhtin describes inner speech as a link between the human's inner and outer (social) experiences, or a mechanism of encoding experiences (1983: 250).

Among the other semioticians, who were also influenced by Vygotsky's work is Roman Jakobson, who, according to Vyacheslav Ivanov, "read Vygotsky's posthumous book on language and mind in the original Russian" (2014: 489).

2. APPROBATION OF VYGOTSKY'S APPROACH FOR THE STUDY OF SIGN-USING ACTIVITY IN DIGITAL CULTURE

Vygotsky's approach addresses human higher psychological functions as processes that are rooted in the individual cognitive development and at the same time are significantly dependent on culture and culturally elaborated sign systems. While semiotics has been always focused on developing the understanding of the mutual interactions between human and culture, the recent cultural shift has increased the need to understand the role of contemporary culture on one's meaning-making and learning through culturally elaborated signs and sign systems. This makes the author of the given thesis argue for the necessity to incorporate Vygotsky's approach in contemporary semiotic research as not merely useful, but rather a necessary turn. Lev Vygotsky's approach can help us find the answers to the question of how such cognitive and semiotic processes like learning, memory, meaning-making and inner speech develop in the context of contemporary digital culture. Incorporating Vygotsky's approach also helps to establish an interdisciplinary dialogue between semiotics, culture and education studies, psychology and neuroscience in studying the role of human sign-using activity in the general course of cognitive and psychological development, as well as identifying how it relates to culture.

The initial hypothesis emphasises the need to reevaluate Vygotsky's theoretical heritage in the light of contemporary research methodologies and the evolved cultural and educational environments. As Ronald Miller concurs, "Vygotsky's cultural-historical psychology is an incomplete work and is best understood as a foundation providing solid support for further development" (2014: 12). Miller also emphasised that Vygotsky's cultural-historical theory and his understanding of the two sides of human development "is even more relevant today given the incredible advances in brain science" (ibid.). Vygotsky's understanding of the role of signs and sign systems in the formation of higher psychological functions (Ivanov 2014: 488) emphasises its value in studying these functions, when the available palette of signs and sign systems has been actively shaped by digital culture.

The studies made by the author of this thesis (Fadeev 2019, 2020, 2022; Ojamaa et al. 2019, 2021; Fadeev and Milyakina, 2021) demonstrates the actuality and importance of incorporating Lev Vygotsky's approach to contemporary research in semiotics. The theoretical and empirical dimensions of Vygotsky's approach allows one to establish a more holistic understanding of many semiotic processes, more specifically in the study of:

- meaning-making processes;
- learning, memorising and education;
- individual sign-using activity;

- language use;
- the role of culture in individual development and learning.

At the same time, the studies made by the author of this PhD research shows the relevance of Vygotsky's approach for studying the aforementioned semiotic processes within the context of contemporary culture, more specifically digital culture.

In this chapter we will address how Vygotsky's approach contributes to the contemporary understanding of various semiotic processes on the basis of the results of the author's PhD research. As René van der Veer and Jaan Valsiner assert, "Vygotsky provided us with several intellectual tools that may prove useful in creating psychology's own zone of proximal development" (1991: 400). It won't be an exaggeration to propose that the same can be said about contemporary semiotic research, especially in the study of learning, meaning-making, inner speech and other semiotic processes.

2.1 Symbolic Mediation in Learning

Education, learning and memory have always been important and at the same time challenging objects of semiotic science. The processes of learning through signs and texts have been addressed by the research of many semiotic schools including the ones of Lotman (Ojamaa and Torop 2015) and Peirce (Semetsky 2005). The interest in understanding learning processes through semiotic perspective has recently even led to the development of a separate field – edusemiotics, which aims at "[c]onceptualizing learning-as-semiosis" (Olteanu and Campbell 2018: 247). As Andrew Stables and Inna Semetsky argue, "[s]emiotics offers a systematic framework for consideration of education, learning, childhood and human development in general" (2014: 1).

The recent development of digital culture and the media environment has significantly facilitated the interest towards the semiotic research of learning, memory and education (e.g. Scolari et al. 2018; Ojamaa et al. 2019; Kress 2003). The question of how learning processes are mediated within various sign systems of new media and what influences the specific character of new media (such as multimodality and transmediality) becomes an intriguing question for semiotic studies that is yet to be answered.

Lev Vygotsky's theory of mediation provides a useful and at the same time versatile research tool for studying mediation in learning and memory in the context of digital culture and the new media environment.

Vygotsky's theory distinguishes between the two main courses (types) of learning and memorising: natural (non-mediated) and mediated ones. The natural or non-mediated way of learning is the most essential learning type and is common either for non-human animals (Vygotsky 1978: 39) or humans who did not master the use of natural language. This type of learning and memorising is "characterized by the nonmediated impression of materials, by the

retention of actual experiences as the basis of mnemonic (memory) traces” (ibid.). Vygotsky compared it to eidetic imagery and stated that this type of learning and memorising “is very close to perception, because it arises out of the direct influence of external stimuli upon human beings. From the point of view of structure, the entire process is characterized by a quality of immediacy” (ibid.).

Another type of learning and memorising is the mediated one, which shows that “humans went beyond the limits of the psychological functions given to them by nature and proceeded to a new culturally-elaborated organization of their behavior” (Vygotsky 1978: 39). This is where Vygotsky’s semiotic account opens up. Mediation can be established either via *human mediation* or *symbolic mediation*.

Human mediation is the process related to social communication, which Vygotsky considered to be the key towards the development of higher psychological functions (2012/1934). Human mediation can be best explained via the notion of internalisation, which describes “the activities that start as an interaction between the child and the adult become internalized as the child’s own psychological functions” (Kozulin et al. 2003: 19), a movement from interpersonal to intrapersonal (Vygotsky 1978: 57). Vygotsky stated that “[e]very function in the child’s cultural development appears twice: first, on the social level, and later, on the individual level; first, between people (interpsychological), and then inside the child (intrapsychological)” (ibid.).

Symbolic mediation in learning describes the process of so-called *sign operation*. This means that learning or memorising happen by means of culturally elaborated signs and sign systems. According to Vygotsky, “these sign operations are the product of specific conditions of social development” (Vygotsky 1978: 39).

In the course of the development of human culture, symbolic mediators which humans use for learning and memorising have advanced from “casting lots, tying knots, and counting fingers” (Kozulin et al. 2003: 23; Vygotsky 1978: 127) towards “higher-order symbolic mediators including different signs, symbols, writing, formulae” (Kozulin et al. 2003: 23). Among the most sophisticated forms of symbolic mediators we can name artistic texts and even literacies.

With an example of memory Vygotsky argues the important developmental role of signs and sign systems in higher psychological processes, which “extend the operation of memory beyond the biological dimensions of the human nervous system and permit it to incorporate artificial, or self-generated, stimuli, which we call signs” (Vygotsky 1978: 39). The acquisition of symbolic mediation has an important practical dimension in relation to development, learning and education, as “[c]ognitive development and learning, according to Vygotsky, essentially depend on the child’s mastery of symbolic mediators, their appropriation and internalization in the form of inner psychological tools” (Kozulin 1998, 2003: 24).

Symbolic mediation. The research (Fadeev 2019) conducted by the author of the given PhD thesis discusses that the development of contemporary digital culture and media environment has increased the role of auxiliary sign systems

in mediation of learning. The learning materials are more often mediated via various forms of digital media. This can be the result of the development of cultural communication processes, including the “[t]ransmedial principles of communication and metacommunication”. This has an important educational dimension as “repetition of information with variations in different sign systems or media (e.g. oral, written, audiovisual, etc.) is a central technique of acquisition and preservation of knowledge” (Ojamaa and Torop 2015: 62–63). At the same time, the phenomenon of multimodality has recently become an essential characteristic of learning materials, emphasising “the influence of the medium on the meaning of the message” (Ojamaa and Torop 2015: 62) in the context of learning.

The present PhD thesis incorporates Vygotsky’s approach to analyse the role of the diversity of digital media in mediating learning materials in order to address the affordances that the new media provides for learning and teaching practices. By incorporating Vygotsky’s theory for the analysis we addressed signs and sign systems of digital media, which are used for mediating learning, as potential psychological tools. Such symbolic mediators represent one of the most advanced types of psychological tools. They can be compared to the example that Kozulin brings with complex texts, namely novels, and literature in general. Kozulin argues that “[l]iterature can serve as a prototype of the most advanced forms of human psychological life and as a concrete psychological tool that mediates human experiences” (Kozulin 1998: 6).

Knowledge in digital culture can be mediated via various sign systems simultaneously. For instance, this is what we often observe in transmedia education practices (Scolari et al. 2019) or when learning through digital platforms, where learning and reading “include audio comments, audiovisual examples, musical background, etc. in the reading of verbal text” (Ojamaa and Torop 2020: 52). In this context learners need to quickly switch between various sign systems as well as know how to use them as mediators of information.

As a part of supporting learning practices it is possible to incorporate Vygotsky’s approach to acquiring psychological tools in order to help learners master the sign systems of contemporary digital media as psychological tools. The methodology of the digital platform “Education on Screen” represents the possibilities of how it can be achieved in real educational practice. The principles of semiotics of culture that are used on the platform for the analysis of cultural languages (such as cinematic languages) together with the principles of transmedia education allow the development of a learning environment that can help learners gradually acquire different cultural languages and other sign systems used in contemporary digital culture as potential psychological tools.

Materials of “Education on Screen” communicate different mediational features of sign systems, namely languages, of popular culture to learners. Thus, these cultural languages are represented not as merely artistic forms, but rather as generalised sign systems with their specific characteristics in mediating meanings. Learners are also provided with the activities in which they can familiarise with the ways different languages of popular culture can mediate

meanings³ and practise the generalised nature of such symbolic mediators (Figure 1). This includes several methodological levels: 1. level of representation: the left upper picture in Figure 1 shows an activity that communicates the role of chronotope in the cinematic language. 2. level of analysis: the right upper picture in Figure 1 shows an activity that provides an analysis of the place of a source text in the autocommunication processes. 3. level of practice: the picture below in Figure 1 shows a practical activity in cinematic language, in which learners practise in creating their own storyboard with the unique storyline.

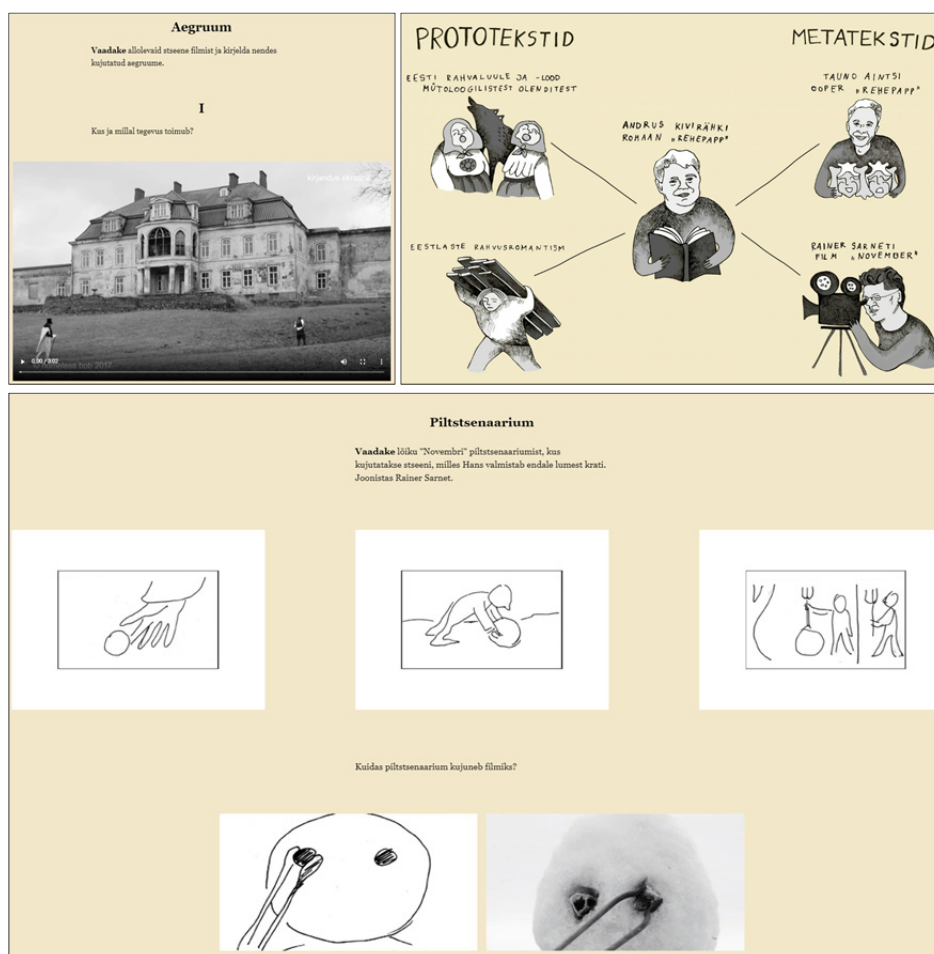


Figure 1. Examples of the activities in the learning environment “Literature on Screen” where learners familiarise with and practise the mediational features of sign systems of popular culture.

³ For instance, the materials of “Literature on Screen” make a gradual comparison of the meaning-making features of literary and cinematic languages.

The combination of the approach of semiotics of culture to education and Vygotsky's understanding of mediational functions of culturally elaborated sign systems in the context of learning and memorising provides us with the methodological framework that aims at supporting the mastering of sign systems (or languages) that contemporary culture communicates with in order to provide learners with the necessary tools to access, analyse and share knowledge in the context of contemporary culture.

Human mediation. The second type of mediation provided in Vygotsky's theory (Kozulin et al. 2003: 19) that is also addressed in the given PhD research (Fadeev 2019: 33) is human mediation. According to Vygotsky's theory, interaction is a process that enhances the acquisition of complex signification processes (namely inner speech, internal use of culturally elaborated languages) and can also serve as a mechanism of learning and development (Fadeev 2019: 33).

Vygotsky describes the role of communication in learning and individual psychological development in his concept of the zone of proximal development (2012/1934). The key value of interaction comes out in learning in the zone of proximal development when a child is able to learn through imitation by "engag[ing] in interaction with more competent others around specific tasks that the child would otherwise not be able to perform alone, because of the presence of maturing psychological functions" (Chaiklin 2003: 10).

An important change in the contemporary learning environment, which is caused by the development of digital culture, is that a part (or entirety) of a learning space is moved to the digital environment, where real communication can be limited to merely digital tools. The developmental role of communication (as provided by the concept of the zone of proximal development) argues for the necessity to establish active communication practices even in a digital learning environment, in which the most (or even the whole) part of learning is conducted digitally.

In the context of learning through a digital platform this can be achieved by two main principles. The first presupposes the digital platform to act as an interactive mediator of communication in learning, providing a learner with the necessary tools for communication. This was well demonstrated in the work by Semetsky and Stables (2014: 71). The study showed multiple benefits of this form of communication, for instance allowing communication in situations when otherwise it would be difficult.

Another option is when the digital learning environment itself facilitates real communication within a classroom setting. One of the possibilities to establish this can be found in the principles of informal learning which is a necessary part of transmedia learning practices (Scolari et al. 2018: 806, see the "Map of transmedia skills and informal learning strategies"). According to Scolari et al., these practices include: learning by doing, problem solving, imitating/simulating, playing, evaluating and teaching (ibid.). Some of these principles were also approbated in the methodology of "Education on Screen". For instance, Figure 2 demonstrates an activity from the learning environment "Identity on

Screen” that offers learners a collaborative game. In the game learners are asked to create their own virtual farm in one of the popular landscapes (represented by national parks) in Estonia. In the process of problem solving, imitation and co-teaching, students learn to use the limited resources for problem solving and practise their skills in collaborative work not only within, but also outside of the digital environment.

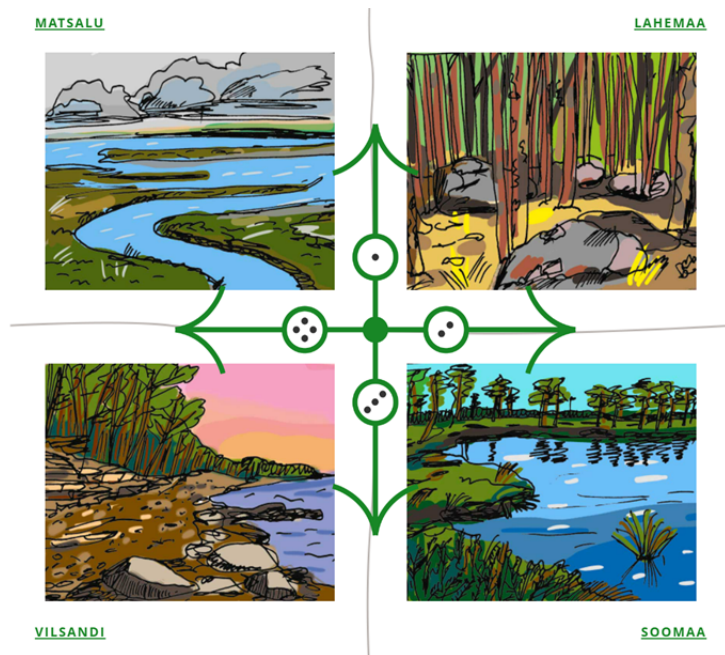


Figure 2. An activity from the learning environment “Identity on Screen” that features a collaborative game, in which learners create their own farm.

Considering the previous discussion on the role of acquiring culturally elaborated sign systems for the purpose of learning and the affordances that semiotics of culture provides for conceptualising education, it is possible to suggest one more level of interaction that can be established in a learning environment. This level relies on the concept of inner speech and cultural autocommunication, and can be used as a general methodological framework. This presupposes supporting learners’ development of cultural literacy that allows them to address cultural texts as a part of cultural communication (autocommunication) processes. In other words, developing conditions for enhancing learners’ ability to engage in communication with culture by means of cultural texts.

2.2 Mediation Function of Literacy

The new media (Kress 2003) emerges as a common mediator of learning in digital culture. Since new media in one way or another represents various artistic forms, the role of artistic texts in mediating learning becomes more important than ever in the context of contemporary culture. In Vygotsky's terms we can suggest that symbolic mediation in learning in digital culture is more often manifested in different artistic languages as means of auxiliary sign systems. This also means that the role of acquiring these languages becomes very important for enhancing learning practices.

While artistic languages of digital media have become an important and even essential everyday tool for young learners in such fields as entertainment, it does not necessarily mean that they are able to successfully identify the mediating functions of media and "detect a symbolic relation, no matter how obvious it appears to adults" (Kozulin et al. 2003: 24). This is especially important when media is used in learning and emphasises the need for educational methodologies to help young learners enhance their understanding of how different artistic languages (or sign systems) are able to mediate meanings. As Kozulin et al. argues "[s]ymbols may remain useless unless their meaning as cognitive tools is properly mediated to the child" (2003: 24).

This is where Vygotsky's theory and semiotics of culture approach to education can benefit from each other in contributing to educational methodologies that aim at enhancing learning practices in digital culture.

Semiotics of culture addresses the artistic languages as languages of culture, meaning that these are the languages that culture uses for cultural communication processes (e.g. cultural autocommunication). Semiotics of culture sees the "essence of culture" as "the translation of messages into different cultural languages" (Ojamaa et al. 2019: 154). The semiotics of culture approach allows conceptualisation of culture as education, considering that learning cultural languages is an important component in developing cultural literacy and thus developing abilities for learning from culture (Ojamaa et al. 2019). The given study hypothesises that by merging the semiotics of culture approach with Vygotsky's theory it is possible to establish learning practices, which are able to support acquisition of artistic languages used for mediation of learning as potential psychological tools.

In order to analyse the skills and competences learners use for the meaning-making of artistic texts as a unified whole we used the concept of artistic literacy as the object of the study and attempted to reconsider it in the context of learning and teaching in digital culture. The theoretical framework of the concept of artistic literacy in the given study originates from the works of Vygotsky (1991; 1971/1930) along with recent research in artistic literacy and artistic perception (Kindelan 2012; Lindqvist 2003).

Vygotsky's theory is known to provide an understanding of how signs, sign systems and diverse cultural artefacts that are created and introduced by culture influence the course of psychological development. At the same time, Vygotsky's study of artistic perception (1971/1930) makes his approach a valuable

scientific tool in researching the way artistic processes happen in learning practices in the context of contemporary culture. The importance of developing “the culture of artistic perception” was emphasised by Vygotsky in his well-known collection of research outcomes in education called “Educational psychology” (1991: 292). He also elaborated on the question of art, learning and cognition in one of his most famous works “Psychology of art” (Vygotsky 1922).

Vygotsky’s research showed that children begin using artistic processes for communication of inner psychological and social experience from a very early age (Fadeev 2020: 139) and emphasised its developmental and educational role as “it teaches [students how] to acquire a system of emotional experience” (Vygotsky 1991: 288). Vygotsky also emphasised that the value of involving learners in the artistic process in education “grows as a tool of fostering perception of artistic works” (1991: 291).

According to Vygotsky’s theory, the development of meaning-making abilities by means of artistic texts also has an important cognitive dimension as “understanding artistic work cannot be realized by means of logical description” (Vygotsky 1991: 293). The argument that “artistic work never mediates reality as a coherent whole” (ibid.: 275) emphasises the role of the medium and its relation to meaning, which becomes an important aspect of learning practices.

As Vygotsky states, “[t]he greatest change in children’s capacity to use language as a problem-solving tool takes place somewhat later in their development, when socialized speech (which has previously been used to address an adult) is turned inward” (1978: 27). The same can be true about other culturally elaborated sign systems, such as languages of new media. Their acquisition as psychological tools can provide learners with the necessary abilities of meaning-making in the context of contemporary digital culture.

Supporting the development of artistic literacy as a whole plays an important role in the context of learning, development of semiotic and cognitive functions. According to Vygotsky’s theory, literacy “constitutes one of the most powerful of psychological tools” (Kozulin et al. 2003: 16). In this respect, literacy is considered a very special type of psychological tools, “the acquisition of literacy changes the entire system of the learner’s cognitive processes” (Kozulin et al. 2003: 24). However, in order to do so it needs to be “mediated to a student as a cognitive tool” (Kozulin et al. 2003: 25).

The concept of artistic literacy has also been addressed by recent papers in art education, such as the one by Nancy Kindelan (2012). Kindelan analysed artistic literacy in the context of theatrical work and described it as abilities “to see, experience, and understand a theatrical work of art [...] and to interpret metaphorical images that can illuminate the psychology of characters” (Kindelan 2012: 7).

The understanding of artistic literacy in the context of contemporary culture is still broad and requires reconsideration. It is especially important in the context of learning in digital culture, assuming that digital technologies become an essential part of everyday environment. It also has an important educational value, as the learning environment becomes more digitised and uses various

forms of new media. Thus, the study suggests reconsidering the notion of artistic literacy “in the framework of contemporary education and a media-rich environment requires framing artistic literacy in a new ‘literacy landscape’” (Fadeev 2020: 136; Stordy 2015). The study suggests reframing artistic literacy so that it reflects the course of development of *new literacies* which were emphasised by Sukovic (2016). Thus, in order for artistic literacy to reflect the context of contemporary culture and media environment, it is supposed to “capture many of the complexities of living, learning, and working in the contemporary information world” (Sukovic 2016: 5) just as other new literacies attempt to do.

Considering the number of new literacies that appear within a cultural shift, it is important that they do not lead educational methodologies in different directions, but rather support the general course of development and learning outcomes. The framework for this development was proposed by Sucovic in the concept of *transliteracy*, which presupposes a “movement across a whole range of contexts, technologies, and modalities” (2016: 2).

One of the key arguments of the study made within the given PhD research (Fadeev 2020) is that the development of artistic literacy is a necessary prerequisite for enhancing learners’ meaning-making abilities in the context of contemporary digital culture. When talking about artistic literacy in general education we argue to focus not on “merely developing artistic skills” (Fadeev 2020: 140) but rather on providing learners with the necessary psychological tools that will allow them to access, analyse and share knowledge mediated through various artistic texts. Thus, the analysis and acquisition of the mediational functions of artistic text becomes the main educational and pedagogical focus in developing artistic literacy (Fadeev 2020: 140).

By incorporating approaches of Vygotsky and semiotics of culture to conceptualising educational processes, the study provides a framework for development learning and teaching practices that aim at enhancing learners’ artistic literacy in the context of digital culture.

When talking about the mediational function of artistic literacy it is necessary to consider how different artistic languages are able to mediate meaning. For instance, do different artistic languages (literary, cinematic, etc.) mediate the story in the same way? And if not, then what should a learner pay attention to while perceiving an artistic text? And which artistic tools do different artistic languages use in order to communicate various messages? These questions become especially important when we consider artistic languages of digital culture, where the number of sign systems involved is constantly growing.

In order to help learners answer the aforementioned questions the study offers to address it with educational practices that enhance learners’ abilities to distinguish between an artistic form and the meaning of the message mediated within this form (Fadeev 2020: 147). One of the approaches that semiotics of culture offers for a practical analysis of these relations is intersemiotic translation or “interpretation of verbal signs by means of signs of nonverbal sign

systems” (Jakobson 1959: 261; Dusi 2015: 182). The learning practices in which texts are “translated into different types of texts and effectively become intertexts” (Torop 2003) help to investigate characteristics of different artistic languages that shape the meaning of a message and emphasise the question of “translatability (Dusi 2015) of artistic texts” (Fadeev 2020: 148).

The given study refers to the approbations made during the author’s MA research, which included the development of the course “Language of music”. The course was developed to study how the methodology that incorporates Vygotsky’s approach and semiotics of culture to conceptualise education is able to enhance learners’ “meaning-making [abilities] of music as an artistic language in school education” (Fadeev 2020: 134). As a part of its methodology the course includes “the analysis of translatability between music and different artistic languages” (Fadeev 2020: 148). Figure 3 demonstrates the learners’ results after listening to “Chi Mai” by Ennio Morricone and “translating” the piece of music they hear into a visual narration, in this case – a drawing.



Figure 3. Learners’ results of translating a piece of music (“Chi Mai” by Ennio Morricone) into a visual narration in the form of drawing during the author’s course “Language of Music”.

Another example includes the references to the digital materials of the educational platform “Education on Screen” called “Literature on Screen”, which deals with investigating the translatability between the language of literature and cinema. The materials challenge learners with various activities in which they are involved in translating different parts of literary narration into a cinematic story (Figure 4).

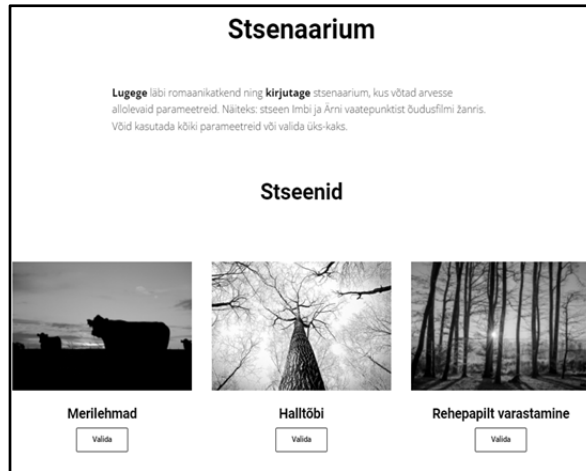


Figure 4. An activity of the learning environment “Literature on Screen”, where learners practise their skills in creating a cinematic script out of a literary text.

The study (Fadeev 2020) suggests that another important component in developing artistic literacy is the acquisition of it as a psychological tool. An important aim of the study is to analyse the possibility of developing artistic literacy in a digital environment and in the context of digital culture. Thus, it suggests considering both the diversity of digital artistic forms of representation and the specific character of learning in the digital space.

It is suggested that methodologies of digital educational platforms are able to provide the necessary materials and establish a learning environment in which this acquisition will be possible. This is where the semiotics of culture approach together with the advances of transmedia education become a useful methodological tool (see the methodology of “Education on Screen” as an example, Ojamaa et al. 2019). As a result, it is possible to establish learning practice in which learners are able to practise their meaning-making abilities of artistic languages on the levels of accessing, analysing and sharing knowledge through artistic languages.

An important methodological input originated from Kozulin et al.’s argument is that “the acquisition of psychological tools requires a different learning paradigm” in comparison with learning “content knowledge” (2003: 25; Fadeev 2020: 143). Considering their study it is suggested that there are three main components that constitute the successful acquisition of psychological tools:

1. Establishing teaching processes that aim at supporting the mediation of artistic literacy as a psychological tool.
2. Establishing a learning procedure that is supportive for acquiring psychological tools: “(a) a deliberate, rather than the spontaneous character of the learning process; (b) systemic acquisition of symbolic tools, because they themselves are systemically organized; (c) em-

phasis on the generalized nature of symbolic tools and their application” (Kozulin et al. 2003: 25).

3. Involving learners in analysing and learning from cultural conventions where many signs and sign systems originate from. Thus, mediation of meaning by means of psychological tools is only possible within specific cultural conventions as “[s]ymbolic tools (e.g., letters, codes, mathematical signs) have no meaning whatsoever outside the cultural convention” (Kozulin et al. 2003: 26).

On the basis of the analysis made in the study (Fadeev 2020) the scheme in Figure 5 is suggested to conceptualise artistic literacy as a psychological tool in learning in the context of digital culture.

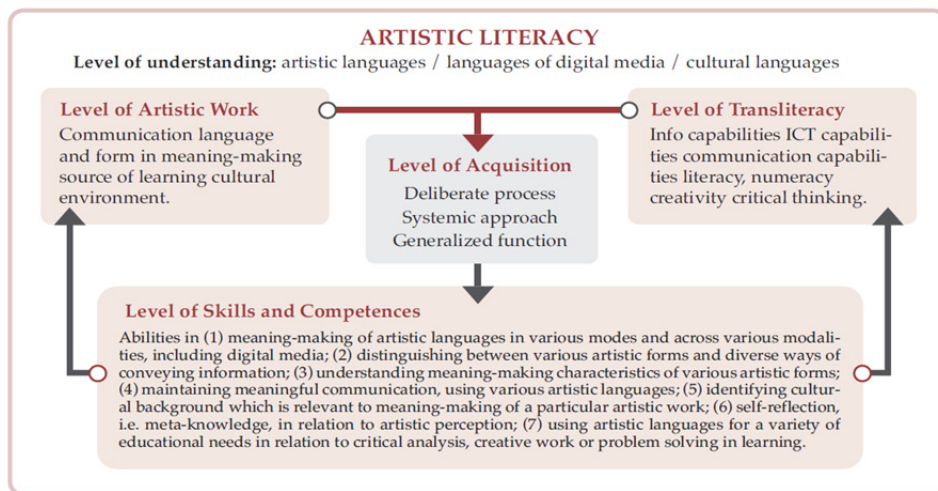


Figure 5. The framework of the concept of artistic literacy represented as a potential psychological tool in the contexts of digital culture

2.3 Inner Speech and Meaning-Making

Vygotsky’s theory of symbolic mediation addresses not only the role of culturally elaborated signs and sign systems in the mediation of learning, but also the process of internalisation or “the internal reconstruction of an external operation” (Vygotsky 1978: 56). Thus, internalisation represents the process when external, namely social or cultural, phenomena become interiorised and individualised to serve various internal higher psychological functions, such as learning or memory. According to Vygotsky’s theory, this process of acquiring sign systems from culture shapes human psychological functions, and “involves the reconstruction of psychological activity on the basis of sign operations” (1978: 57).

Vygotsky's theory considers natural language as the sign system that has the most influence on the formation of higher psychological functions, with the word being "a particularly important type of sign" (Ivanov 2014: 496). Vygotsky attempts to research the links between the internalisation of speech and development of thinking processes. One of Vygotsky's most influential study "Thinking and speech" (2012/1934), which was also his final work, identified that "meaning was the most important aspect of a sign" (Ivanov 2014: 496) and the phenomenon of "a close amalgam of thought and language" (2012/1934: 225).

The process of internalisation of natural language results in the most sophisticated form of sign-using activity – inner speech. The research and analysis of inner speech provided in Vygotsky's study "Thinking and speech" (2012/1934) and his understanding of the important role of natural language in the formation of psychological functions represents another aspect in which Vygotsky's approach can contribute to the development of contemporary semiotic science. The phenomenon of internalisation of cultural sign systems, more specifically natural language, can provide an insight into the study of one of the most important and intriguing processes in semiotic science, namely meaning-making. The research (Fadeev 2022) made within the given PhD thesis addressed the role of inner speech in the meaning-making through verbal and artistic discourses.

Inner speech plays an important role in many cognitive and psychological functions and "has been proposed to have an important role in the self-regulation of cognition and behavior in both childhood and adulthood" (Alderson-Day and Fernyhough 2015: 931). The importance of inner speech for semiotics originates from its role in the formation of complex sign-using activity and the development of individual meanings of words. Vygotsky describes that the internalisation of natural language consists of two main lines: phonetic and semantic. In other words, mastering natural language involves distinguishing between complex meanings of words. Meaning is also one of the main focuses of Vygotsky's research in "Thinking and speech" (2012/1934) as it represents the phenomenon of thinking and speech simultaneously, namely "[w]ord meaning is a phenomenon of thought only insofar as thought is embodied in speech, and of speech only insofar as speech is connected with thought and illuminated by it" (Vygotsky 2012/1934: 225). Vygotsky describes the meaning of a word as "a unit of both generalizing thought and social interchange" (2012/1934: 9), which can be characterised by the "level of abstraction and generalisation" (Vygotsky 2012/1934; Fadeev 2022).

Vygotsky describes inner speech as "a rather late product of the transformation of a speech that earlier had served the goals of communication into individualized verbal thought" (2012/1934: ii). Inner speech is "speech for oneself" and "is, in a sense, the opposite of external speech", in inner speech "[o]vert speech sublimates into thoughts" with the consequent change of its structure and functions (Vygotsky 2012/1934: 239).

In describing the course of internalising speech Vygotsky revealed the differentiation "between two planes of speech", including "the inner, meaningful, semantic aspect of speech and the external, phonetic aspect" (Vygotsky

2012/1934: 232). Vygotsky pointed out that the development of the phonetic side of speech begins with the growing ability to connect several sounds to words and then sentences to utterances, meaning that a child “proceeds from a part to the whole” (ibid.). Whereas the semantic, namely meaningful, side of speech develops with an opposite direction or “from the whole to the particular” (ibid.). This means that a child first operates with *meaningful complexes*, and gradually learns to differentiate between specific meanings.

When speech is internalised, natural language as a complex cultural sign system begins to serve human internal processes. In the same way as human psychological functions are shaped by the use of internalised speech, the nature of psychological functions inevitably changes the structure and characteristics of internalised speech. Among such specific characteristics Vygotsky described: the absence of vocalisation, the use of “almost entirely predicative syntax” (2012/1934: 258), agglutination and the dominant role of sense. The latter characteristic is of the highest interest, as it postulates that in inner speech individual senses of words or “the sum of all the psychological events aroused in our consciousness by the word” (Vygotsky 2012/1934: 259) become more important than the *dictionary meanings* of words.

The development of contemporary research methodologies, especially in psychology and neuroscience, renewed the interest in the inner speech research, as they made possible the study of complex relations of internalised speech with other cognitive and psychological functions on a completely different level. The study conducted as a part of this PhD thesis asserts the importance of semiotic science to contribute towards new perspectives of inner speech research (Fadeev 2022). There are two predominant reasons for the necessity of new inner speech research perspectives. First of all, semiotics with its significant heritage of inner speech research is able to provide the analytical tools which can develop the understanding of inner speech on a new level. Another reason is that it is also important for semiotics itself. Studying inner speech provides answers for questions that have been of interest for semiotic science, namely the question of how the ability of meaning-making develops.

The research (Fadeev 2022) done by the author of the given PhD thesis reveals the relations between individual inner speech and meaning-making through verbal and artistic discourses. The following paragraphs provide an overview of the results for this study.

Vygotsky’s analysis of inner speech (2012/1934) demonstrates the significant role of verbal communication in the formation of inner speech and the development of individual meanings of words. A child’s involvement in verbal communication with the following imitation and acquisition of natural language results in the development of “individual senses [of words], which are independent from cultural conventions” (Fadeev 2022). Therefore, social and communication experience enrich the senses of internalised units of natural language, namely “[a] word acquires its sense from the context in which it appears; in different contexts, it changes its sense” (Vygotsky 2012/1934: 259)”. Thus,

verbal discourse becomes an important source of meaning development and a place for its manifestation.

There is evidence that “inner speech is also able to internalise other modalities of social communication” (Fadeev 2022). One of these is the acoustic one, and it is illustrated with Bakhtin’s idea of a “polyphony of voices” (2013) that is a part of internalised social communication experience. This means that the units of social communication are being internalised with the associated voices. In the recent psychological studies of inner speech this idea was supported by describing the separate process in inner speech called *inner hearing* or “the experience of hearing something that does not exist in the external environment” (Hurlburt et al. 2013: 1485). McCarthy-Jones and Fernyhough in their study of various types of inner speech identified “the presence of the voices of other people in inner speech” (2011: 1587) as a relatively common inner speech experience.

The question of the role of inner speech in meaning-making leads us to the question of the relations between internalised natural languages and other internalised sign systems. The study by Nikolai Zhinkin (1998) shows that in the situation when one cannot produce the verbal dimension of inner speech or this production is difficult, one turns to the use of pictorial (non-verbal) representations of specific objects in the reality replacing words in natural language and thus using, as he called it, an *object-pictorial code*. While natural language has its own specific logic which hypothetically makes it a perfect sign system to serve such complex psychological functions as thinking or memorising, “the content of a thought is greater than the limited possibilities of language”⁴, this is where Zhinkin sees the reason of why “the origin of thought is carried out in the object-pictorial code” (1998: 159).

Zhinkin hypothesised that inner speech normally operates with a *mixed code of inner speech*, which consists of both, the natural language and an object-pictorial code. This mixed code with the individualised semantics, namely sense, and representations serves as “a universal language” (Zhinkin 1998: 159), which is “decodable to and from any other sign system” (Fadeev 2022).

Vygotsky’s observations show that social communication and cultural experience cannot be internalised entirely, and inner speech “rather, utilises fragmented words and phrases” (Vygotsky 2012/1934; Fadeev 2022). This means that “the relations among words in inner speech do not follow a similar level of coherence as in social speech” (Fadeev 2022; Zhinkin 1998: 159). This makes inner speech a highly individualised tool of meaning-making. In order to decode even one’s own inner speech one “requires what might be called deliberate semantics – deliberate structuring of the web of meaning” (Vygotsky 2012/ 1934: 193).

⁴ Here by “language” Zhinkin means natural language.

“Meaning [...] begins to form before language and speech. It is necessary to see things, move among them, listen, touch — in a word, accumulate in memory all the sensory information that enters the receptors. Only under these conditions is speech received by the ear, from the very beginning it is processed as a sign system and integrated in the act of semiosis” (Zhinkin 1982: 83).

The concept of the mixed inner speech code and Vygotsky’s argument on the role of individual senses in the formation of individual meanings in inner speech demonstrate the role of interactions with artistic texts in the formation of the semantic side of inner speech. While describing the dyadic nature of the inner speech code, Zhinkin emphasised the significance of the special *language of artistic thinking* (1998: 162) as an important part of human emotional communication. According to Zhinkin, the language of artistic thinking is a dyadic code, such as when visual images are used together with captions written in the natural language (ibid.). Thus, in the process of artistic thinking the pictorial sign also goes with the linguistic sign.

The role of artistic works in the formation of inner speech was also emphasised in Vygotsky’s study (2012/1934). Vygotsky argued that when appearing in different contexts words are able to acquire a number of individual meanings, namely senses. This results in the effect of the influx of sense, when “[t]he senses of different words flow into one another — literally ‘influence’ one another — so that the earlier ones are contained in, and modify, the later ones” (Vygotsky 2012/1934: 261). Vygotsky postulated that this may also occur in the cultural context, for instance as a result of artistic communication, “a word that keeps recurring in a book or a poem absorbs all the variety of sense contained in it and becomes, in a way, equivalent to the work itself” (Vygotsky 2012/1934: 261).

These observations let us hypothesise that artistic texts together with social communication can be potential sources for the formation of inner speech code. The study made within the given PhD thesis (Fadeev 2022) proposed the following scheme (Figure 6) that illustrates the relations between the internal and external communication, and provides a general overview of the meaning-making processed through inner speech. The scheme is a modified version of the model proposed by Alderson-Day and Fernyhough (2015: 951).

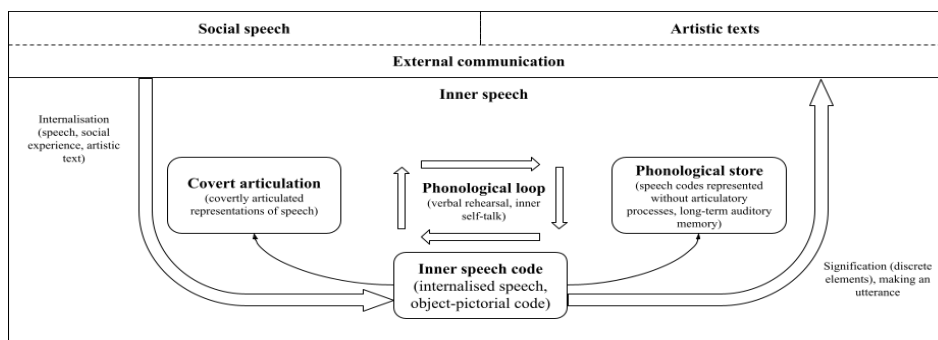


Figure 6. The scheme is a modified model presented in Alderson-Day and Fernyhough's work (2015: 951) that illustrates the relations between various aspects of inner speech.

While having a significant role in the formation of inner speech code, artistic discourse is also a place for the manifestation of individual inner speech. In other words, "inner speech is indirectly present in multifaceted artistic discourses" (Fadeev 2022). This represents "another level at which inner speech is involved in meaning-making processes" (ibid.).

One of the ways how inner speech is manifested in artistic discourse is by embodying, namely "encoding, one's inner speech in the form of artistic narration" (Fadeev 2022). Here it is necessary to refer to Bakhtin's argument on the role of inner speech in the creation of an artistic work. As Caryl Emerson noticed, Bakhtin states that an author's artistic process originates from her/his inner speech processes, whereas "inner speech is itself the product of his entire social life" (Emerson 1983: 249). In addition, Bakhtin emphasised the role of polyphony in an artistic narration, which may consist of unified while of "[a]uthorial speech, the speeches of narrators, inserted genres, the speech of characters" (Bakhtin 2004/1935: 674). As a result of embodying, the author's inner dialogic processes can sound in different "voices" in an artistic narration, which significantly enriches the understanding of how inner speech can be manifested in artistic texts.

The process of manifesting one's inner speech in artistic texts is very essential for humans. For instance, Vygotsky in his study on the imagination and creativity in childhood (1997b) describes the way young children communicate their inner experience in artistic works. He argues that instead of possessing an "aesthetic dimension" children's artistic works are rather communicative (Fadeev 2022). Vygotsky explains the inconsistency of artistic features (e.g. proportions) in a child's drawing with the function of this drawing being aimed at communicating the child's inner experience rather than at making a work artistic as such. Vygotsky's observations show that even the processes of creating these artistic works has a lot in common with communication as "while a child is drawing a picture, he is thinking about the object of the picture in the way as if he would talk about it" (Vygotsky 1997b: 56). The result of this work

is an inner monologue manifestation via artistic narration and at the same time a result of the author's own autocommunication processes.

Another way how inner speech becomes manifested in artistic discourse is when it itself becomes a model for an artistic narration. One of the thinkers who incorporates this approach in art and described it in literature is Sergei Eisenstein, who relies on the possibilities that "the inner speech concept provides for the organisation of artistic narration and its inner monologue" (Fadeev 2022) in creating sophisticated forms of cinematic montage. Eisenstein attempted to take the phenomenon of human inner speech processes as a model for creating an inner monologue of a cinematic narration in order to get "a perfect mode of expression" (Werner, Gunnemark 1990: 500). In other words, he used a model of inner speech processes as a "method of compositional construction of an artwork" (Bakirov 2019: 178). The result of this work was Eisenstein's well-known intellectual montage, a form of montage in which "conflicting combination of accompanying intellectual effects with one another" (Eisenstein 2019: 123). The process of interpreting an inner monologue of artistic narration is closely related to the involvement of the viewer's (or reader's) own inner speech. Boris Eikhenbaum also emphasised that even cinematic language uses "symbols and metaphors, the meaning of which depends directly on current verbal metaphors" resulting in "a continual process of internal speech" (1974: 14).

The development of digital culture and the new media environment move the manifestation of one's inner speech on a completely new level. On the one hand, it is related to the possibilities of new media in how they are able to portray the inner monologue of artistic narration. Whereas on the other hand, it is related to how culture communicates its main texts, especially within the processes of cultural autocommunication (Lotman 1990: 20–35; Ojamaa and Torop 2015). The development of transmedia storytelling and the transmediality of cultural autocommunication (Ojamaa and Torop 2015) have increased the role of metatexts in the perception and meaning-making of source texts. At the same time, digital culture provides limitless possibilities for artistic and media production. The principle of collaborative cultures (Jenkins 2009) made the possibility to contribute to the storyworld of a source text much more accessible for "readers". This contribution of the readers of a text into creating its metatexts and thus enlarging the transmedia storyworld of an artistic text leads to "increas[ing] the 'polyphony of voices'" (Fadeev 2022) within an artistic text as a representation of the unified whole. Thus, in digital culture we cannot consider any more an artistic text to be a manifestation of only the author's inner experience, namely realisation of inner speech via an artistic language. An artistic text in digital culture is often perceived not as a single text, but rather a collection of its metatexts, and thus represents a resemblance of a collective inner monologue. Thus, the manifestation of the inner monologue in the polyphony of different sign systems contributes to meaning-making.

One of the most vivid examples where it is possible to investigate this multiplicity of voices within an artistic text is reading via digital platform, as a form

influence both the semantic and syntactic dimensions of inner speech by increasing the role of object-pictorial code and restructuring the relations with the mixed code of inner speech. While multimodality can already be considered a feature of the mixed code of inner speech, further research should provide more insight into the recent discovery on how inner speech is involved “in integrating multisensory information into internally consistent mental representations” (Vissers et al. 2020: 3).

3. FURTHER IMPLICATIONS

While providing a theoretical framework and empirical approbation of incorporating Vygotsky's approach in the contemporary semiotic research of learning, meaning-making and inner speech, the given PhD research also establishes perspectives for its further development and implication in the other semiotic studies. The following chapter will address the author's own contribution to the further development of the research established in the given PhD thesis.

3.1 Further Study of Inner Speech

One of the important outcomes of the study made within the given PhD thesis is that it demonstrates the perspectives of involving semiotics in the contemporary study of inner speech as a unique semiotic activity. On the basis of the challenges we had with establishing a coherent theoretical framework of inner speech, we argue that it is necessary to have an interdisciplinary dialogue in the study of inner speech. This dialogue should necessarily include the leading disciplines in the field, such as semiotics, psychology, psychiatry, neuroscience and also linguistics (possibly culture studies).

The recent growth of the interest towards inner speech research has been mostly supported by psychology and psychiatry, whereas we argue for the necessity for semiotics to take an equal (and maybe even one of the leading) role in this process. On the one hand, the heritage of semiotic research (Vygotsky 2012/1934, Lotman 1990, Zhinkin 1998, Emerson 1983, etc.) demonstrates that semiotics has a rich scientific history of contribution to the understanding of inner speech processes on various dimensions. At the same time, the contemporary study of inner speech is also of a high interest for semiotics itself. The reason for this is that it is able to provide answers for the questions of semiotic science. Thus, it can shed light on how one internalises complex sign systems from culture and uses them for internal processes, including thinking and meaning-making, how individual inner speech can be manifested in artistic texts and thus how it influences interactions with the text. It becomes especially important for semiotics to address the meaning-making, artistic and creative functions of inner speech in the context of contemporary digital culture.

As a result of the work on the given PhD thesis, the author has established an Inner Speech Research Group at the Department of Semiotics of the University of Tartu. The research group aims at researching inner speech as a semiotic phenomenon on both the theoretical and practical levels. On a practical level, the research group is currently developing an empirical study that aims at investigating the role of inner speech in the meaning-making through artistic texts. As of its main aims the group considers the establishment of a relevant and reliable semiotic research methodology to address inner speech on different levels of analysis in terms of contemporary semiotic research, also considering the need for maintaining an interdisciplinary dialogue in the field. Currently, the

research group is developing an empirical study which aims at developing the understanding of how the mediation of artistic texts may affect the use of inner speech involved in the interpretation of visual artistic texts. The results of the research will be published after analysing the collected data.

At the same time, the research group understands the necessity for the semiotic research of inner speech to establish an interdisciplinary dialogue to develop a cohesive understanding of the inner speech processes on both the individual and cultural levels. In order to do so the author of the given PhD thesis has established cooperation with the CogTex research group at Leuven University, which is led by professor Eva Van den Bussche. The cooperation aims at shedding light on the links between inner speech and the effect of the insight (Stuyck et al. 2021). The results of the cooperation will be published after the analysis of the empirical research data. Another important cooperation perspective belongs to the group's ongoing contact with one of the leading researchers in the field of inner speech, Charles Fernyhough.

3.2 Concept Formation

Another important perspective that the given PhD research provides for incorporating Vygotsky's approach in the contemporary semiotic research is to develop the understanding of the interrelations and bilateral influence of one's psychological processes and contemporary digital culture. In Vygotsky's approach the key aspect in this question belongs to the dominant role of culturally elaborated sign systems for the individual psychological processes.

As another continuation of the given PhD thesis, the author is currently working on a research that aims at developing the understanding of how one interacts with the diverse texts of digital culture, which are mediated via various sign systems (often simultaneously) and belong to complex cultural communication processes.

As the first step the study addresses the question of how young learners today acquire the concept of texts in digital culture. The study will also discuss the affordances of considering the concept of texts as a necessary object of learning and teaching practices.

The actuality of the given research question first of all belongs to the changes the recent cultural shift brought to the concept of text, by moving from printed texts to mostly digital ones in the context of cultural autocommunication processes (Ojamaa & Torop 2020). Thus, digital texts became a part of everyday reading and informal learning, but it also became inherent for contemporary formal education practices. While the concept of a printed literary text is profoundly addressed by the educational curriculum in literacy classes, the concept of a digital text may lack the necessary attention, and is mostly acquired by young learners within informal learning practices.

The main theoretical framework of the study relies on Vygotsky's theory of concept formation. The theory addresses the developmental processes beyond

the acquisition of various phenomena (including cultural ones) as concepts. Vygotsky's theory, which was further developed by contemporary researchers, including Aaro Toomela (2003; Kikas 2010: 114), provides an analytical framework for analysing the acquisition of different stages of concept formation. We argue that Vygotsky's theory of concept formation can serve as a useful methodological tool for contemporary semiotics research, especially in the field of learning.

4. LIST OF ARTICLES

1. Fadeev, A. 2022 (forthcoming). Inner Speech in Meaning-Making Through Verbal and Artistic Discourses. *Sign System Studies*.
2. Fadeev, A. (2020). Acquisition of artistic literacy in multimodal learning via intersemiotic translation. *Punctum. International Journal of Semiotics*, 06(01), 133–159. <https://doi.org/10.18680/hss.2020.0007>
3. Fadeev, A. (2019). Vygotsky's theory of mediation in digital learning environment: Actuality and practice. *Punctum. International Journal of Semiotics*, 5(1), 24–44. <https://doi.org/10.18680/hss.2019.0004>

Collective publications:

1. Ojamaa, M., Torop, P., Fadeev, A., Milyakina, A., & Rickberg, M. (2021). Digitaalne lugemine ja humanitaarharidus. *Keel Ja Kirjandus*, 64(8–9), 737–754. <https://doi.org/10.54013/kk764a5>
2. Fadeev, A., & Milyakina, A. (2021). Multisensory learning environments. Research project Education on Screen. *SHS Web of Conferences*, 130, 02003. <https://doi.org/10.1051/shsconf/202113002003>
3. Ojamaa, M., Torop, P., Fadeev, A., Milyakina, A., Pilipovec, T., & Rickberg, M. (2019). Culture as education: From transmediality to transdisciplinary pedagogy. *Sign Systems Studies*, 47(1/2), 152–176. <https://doi.org/10.12697/SSS.2019.47.1-2.06>

5. CONCLUSION

The studies made within the given thesis (Fadeev 2019, 2020, 2022) have established the theoretical analysis of semiotics in Lev Vygotsky's approach and conducted the practical implementation and approbation of Vygotsky's theoretical framework to the study of individual sign-using activity in the context of contemporary digital culture. These approbations included the author's work in the Transmedia Research Group, the author's practical experience in developing the platform "Education on Screen" and the analysis of the implementation of the educational platform in a real educational setting in various educational, cultural and academic institutions in Estonia and abroad.

The research conducted in the framework of the given PhD thesis has answered the main research questions raised in the introduction of the work and which were formulated as the main aims of the current study. More specifically, the study has led to the following main conclusions and outcomes:

1. The implementation of Vygotsky's approach in the contemporary semiotic research of learning, meaning-making and inner speech is not merely actual, but is rather a necessary step in the development of semiotic research methodologies that aim at investigating individual sign-using activity in learning, meaning-making and inner speech and at identifying the relation between one's own psychological and cognitive processes with culture and new media environment.
2. The implementation of Vygotsky's approach to the analysis of learning in digital culture shows the increasing role of symbolic mediation on various levels of formal and informal education. This means that various sign systems of the new media environment are involved in the mediation of learning material. Thus, the acquisition of these sign systems in both formal and informal educational settings is considered a necessary step in developing abilities for accessing knowledge in the context of digital culture. As a result, the thesis introduces sign systems inherent for contemporary digital culture and the new media environment as symbolic mediators in learning and potential psychological tools. The given thesis provides solutions for supporting the acquisition of sign systems that are introduced by the digital culture as psychological tools by building bridges between the approach of semiotics of culture for conceptualising education (Ojamaa et al. 2019) and Vygotsky's approach (Fadeev 2019). The study illustrates these solutions with the examples from the methodology and materials of the "Education on Screen" platform.
3. The results of the study also demonstrate the necessity to reconsider some of the common educational literacies in order to make them support the course of learning and psychological development in the context of digital culture and the new media environment. One of the literacies that requires reconceptualisation is artistic literacy. The need for recon-

ceptualising artistic literacy originates from the role of artistic texts in the mediation of learning materials in formal and informal education in the context of digital culture. Thus, artistic literacy plays a significant role in supporting the development of sign-using activity in young learners in digital culture. The study proposed the reconceptualisation of artistic literacy on the following levels: (1) its role in meaning-making in the context of digital culture; (2) its ability to support the acquisition of sign systems inherent for the new media environment; and (3) its relations to other necessary literacies, taking into account the recent emphasis on transliteracy.

4. Another important outcome of the study is related to the role of inner speech in meaning-making. While digital culture has introduced an almost limitless number of visual sign systems and has been in general dominated by visual representations, the human meaning-making processes continue to be led by the internalised natural language, namely inner speech. Inner speech guides not only the processes of understanding, but also the processes of creation. It also remains the key mediator of the interaction on such levels as: interpersonal, intrapersonal and cultural. The research demonstrates that the development of digital culture and the new media environment have shaped the way individual inner speech is manifested in culture and hypothesised an important role of inner speech in supporting meaning-making processes in the context of multimodal representations. We also hypothesise that digital culture may leave its specific traces on the structure and phenomenology of individual inner speech. Further research should shed light on these changes.

Taken altogether the results of the studies conducted by the author of the given thesis, which were published as individual (Fadeev 2019, 2020, 2022) and collective (Ojamaa et al. 2019, 2021; Fadeev and Milyakina 2021) academic publications, provide the understanding of semiotics in Lev Vygotsky's approach and its actuality for the semiotic research in the context of contemporary digital culture. They also establish a unified methodological framework for implementing Vygotsky's approach to the study of learning, meaning-making and inner speech in contemporary semiotic science, considering the challenges and complexity of the research objects of semiotics today.

One of the crucial obstacles faced during this research was the inability to rely exclusively on the heritage of Vygotsky's research. The reason for this was mostly the significant time frame since Vygotsky developed his concepts and theory. While we should admit the innovativity of Vygotsky's scientific thinking, which made his works to be much ahead of his time (and which is one of the reasons of the current growth of interest towards his research), the scientific and cultural contexts have significantly evolved since that time. This includes both the research methodologies and conditions under which Vygotsky conducted his studies, as well as the educational and cultural environment where the results of his observation were meant to be practically applied. This

required reconceptualization of some parts of Vygotsky's theory, as well as referring to the more recent studies that rely on Vygotsky's theoretical framework.

Since various outcomes of the research have their scientific and practical application in the field of education and development of learning and teaching practices, the study would benefit from receiving more quantitative data from the approbations and case-studies, which were established during the PhD research. While the given study initially aimed at primarily relying on qualitative analysis, the author suggests further research to overcome this limitation.

The time limitations inherent to all PhD studies did not allow the author to address all the possible aspects of Vygotsky's approach to the study of learning, meaning-making and inner speech. Therefore, the author had to focus primarily on the concepts that have been more present in the contemporary academic literature and that may potentially be most beneficial for the aims of contemporary research in semiotics. Considering this, the study suggests further exploration of the potentiality of such elements of Vygotsky's theory as the concept formation theory and the zone of proximal development for addressing the diverse research questions of contemporary semiotic studies in the field of learning, meaning-making and inner speech.

In chapter 3 the author has sketched his own view on the further development of the given PhD research. Here we will briefly introduce the possible directions of the development of the given study in general:

1. One of the main directions for the further development of the study is to focus on implementing Vygotsky's approach to address even more specific and narrow questions of learning, meaning-making and inner speech in digital culture from the semiotic perspective.
2. The study also demonstrates the need to increase the role of semiotics in contemporary inner speech research. This direction can actually include the two different levels of analysis, where the first one could be focused on the individual experience of inner speech in various psychological and semiotic functions, including thinking, meaning-making, creativity, communication, etc.; whereas the second one could focus on the manifestation of inner speech in culture and its role as a broader auto-communicative mechanism.
3. Further studies could also address the other aspects of Vygotsky's theory, which could be useful and even necessary for addressing some of the challenges of contemporary semiotic science. One of these aspects is the theory of concept formation, which among other implications can contribute to the understanding of the meaning-making processes in digital culture.

As a concluding remark in analysing the results of the given PhD study, we can note that the research (Fadeev 2019, 2020, 2022; Fadeev and Milyakina 2021) conducted within this PhD work establish a cohesive framework for incorpo-

rating Vygotsky's approach in the contemporary semiotic research in learning, meaning-making and inner speech on theoretical and practical levels of scientific and educational application.

On the scientific level, the study makes a necessary step in critically analysing Vygotsky's approach and its semiotic nature and introducing it as a cohesive methodological and analytical apparatus that can be used for addressing the questions and challenges of contemporary semiotic science. The study also attempted to make a step in fulfilling an important knowledge gap in the understanding of how the recent development of cultural communication processes are reflected in individual psychological functions and sign-using activity.

In the practical educational application the given PhD study may serve as a general framework for establishing and enhancing learning and teaching practices in the context of contemporary digital culture.

The outcomes of the given PhD thesis include not only the results of the scientific research. It also includes the author's contribution to the diverse practical implications of Vygotsky's theoretical framework in the real educational practice and for the purposes of the popularisation of science. Among others, the created works and conducted activities include:

- The author's active participation during the recent five years as a member of Transmedia Research group (Department of Semiotics, University of Tartu), which includes the involvement on both levels, the research activity and the development of the digital educational platform "Education on Screen". The author was involved in the development and approbation of the following digital materials: "History on Screen", "Identity on Screen", "Nature on Screen" and "Estonian film classics".
- The author's active role in the process of approbation of the materials of "Education on Screen" via workshops, schoolings and lectures in various educational, cultural and academic institutions in Estonia and abroad. One of the results of these approbations is the course "Live the Lives of Estonians" (in cooperation with the Estonian National Museum) that incorporates the digital materials of "Education on Screen" and the exhibition of the Estonian National Museum in creating a cohesive course on Estonian culture.
- The creation and carrying out (in 2019 and 2021 at the Department of Semiotics, University of Tartu) the author's own university course "Lev Vygotsky and Signs in Learning" on the basis of the PhD research.
- Collaboration in the framework of the current PhD research with the research groups from other universities. For instance, the current collaboration with the CogTex research group from Leuven University (Belgium, Leuven) is focused on the inner speech side of the research.

- The author's initiative to establish the Inner Speech Research Group at the Department of Semiotics (University of Tartu) as a continuation of the author's PhD research.

Considering the aforementioned results, the author expects that the given PhD thesis will establish a solid basis for the author's further research in the field and professional development in academia, as well as provide a diverse practical application that will benefit science, educational practice and society.

We can summarise the provided results by stating that the implementation of Vygotsky's approach for the semiotic study of learning, meaning-making and inner speech provides contemporary semiotics with a deeper understanding of the aforementioned processes in the context of contemporary digital culture and establishes the foundation for its approbation in the real educational practice. The conducted research also demonstrated the importance of establishing an interdisciplinary dialogue in order to develop a more cohesive understanding of the relations between the contemporary digital culture and the individual sign-using activity, including learning, meaning-making and inner speech.

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SUMMARY IN ESTONIAN

Õppimise, tähendusloome ja sisekõne käsitletud kaasaegses semiootikas: Lev Vögotski perspektiiv

Käesolev doktoritöö uurib Lev Vögotski õppimise, tähendusloome ja sisekõne käsitletuste aktuaalsust, teaduslikku väärtust ja võimalusi tänapäeva semiootika-teaduses. Uuring käsitleb ka kaasaegse digikultuuri rolli inimese kognitiivsete ja psühholoogiliste funktsioonide kujundamisel märkide ja märgisüsteemide kaudu.

Vögotski teooria käsitleb inimese kõrgemaid psühholoogilisi funktsioone kui protsesse, mis põhinevad individuaalsel kognitiivsel arengul ja on samal ajal olulisel määral sõltuvad kultuurist ja kultuuriliselt väljatöötatud märgisüsteemidest. Vögotski ideede kaasamine kaasaegsesse semiootikasse võib aidata meil leida vastuseid küsimusele, kuidas arenevad tänapäeva digikultuuri kontekstis sellised kognitiivsed ja samaaegselt sügavalt semiootilised protsessid nagu õppimine, mälu, tähendusloome ja sisekõne. Vögotski käsitletuste kaasamine aitab luua interdistsiplinaarset dialoogi semiootika, kultuuri- ja haridusteaduste, psühholoogia ja neuroteaduse vahel uurides inimmärgi rolli aktiivsust üldises kognitiivses ja psühholoogilises arengus ning leides nende seoseid kultuuriga.

Vögotski arusaam märkide ja märgisüsteemide rollist kõrgemate psühholoogiliste funktsioonide kujunemisel (Ivanov 2014: 488) on eriti väärtuslik digikultuuri kontekstis, mis on kaasa toonud iseomaste märkide ja märgisüsteemide pideva mitmekesistumise. Töö esialgne hüpotees rõhutab aga ka vajadust Vögotski teoreetilist pärandit tänapäevaste uurimismeetodite ning kaasaegsete kultuuri- ja hariduskeskkondade valguses ümber hinnata.

Doktoritöö vastab peamisele uurimisküsimusele, kuidas Vögotski lähenemine suudab toetada tänapäeva semiootikauuringuid õppimise, tähendusloome ja sisekõne vallas ning seab järgmised eesmärgid:

1. Töö eesmärk on uurida ja kriitiliselt analüüsida Lev Vögotski õppimise, tähendusloome ja sisekõne käsitletuste semiootikat.
2. Töö eesmärgiks on kasutada Vögotski lähenemist õppimise, tähendusloome ja sisekõne analüüsimisel kaasaegse digikultuuri kontekstis. Uurimus püüab vastata küsimusele, kuidas aitab Vögotski lähenemine kaasaegsel semiootikal käsitleda kultuuriliste kommunikatsiooniprotsesside arengu mõju individuaalsele märgikasutuse aktiivsusele.
3. Olulise lisaeesmärgina pakub doktoritöö välja perspektiivid, kuidas õppimist, tähendusloomet ja sisekõnet võiks Vögotski lähenemise vaatest edasi uurida.

Uurimuse praktiline eesmärk on arendada semiootilist arusaama õppimisest ja õpetamisest digikultuuri kontekstis. Täpsemalt saab antud uurimistöö tulemusi

kasutada nii digihariduses õppimise ja õpetamise hõlbustamiseks kui ka selle pedagoogiliste käsitluste arendamiseks.

Artikkel 1. Doktoritöö esimene artikkel rakendab ja kohandab Lev Vögotski lähenemist vahendatud õppimise uurimisel digitaalse õpikeskkonna kontekstis. Artiklis käsitletakse ka sisekõne kui sisemise kultuurilise märgisüsteemi rolli multimodaalse õpetamise juures. Uuringu tulemused näitasid Vögotski teooria rakendamise võimalusi kaasaegse digitaalse märgisüsteemi kasutamisel. Õppimise vahendamist kasutati psühholoogilise tööriistana. Uurimistöös väidetakse, et noored õppijad peaksid formaalhariduse haridusmetoodikate tasemel valdama digikultuuri märgisüsteeme. Selle oluliseks osaks on kultuuri kommunikatsiooniprotsesside ja keelte analüüsimine, mis on digikultuuri kontekstis seotud teadmiste vahendamisega. Töös tuuakse välja vajadus luua õppimispraktikad, mis toetaksid interaktsiooni ka digiõppe kontekstis. Ühe näitena võimalikest lahendustest on välja pakutud digitaalse haridusplatvormi “Haridus Ekraanil” metoodilised aspektid.

Artikkel 2. Teine artikkel läheb sümbolilise vahendamise analüüsimisega digikultuuri kontekstis täpsemaks ja vaatleb kirjaoskuse küsimust õppimise vahendamisel. Uurimus püüab Vögotski teooria, kultuurisemiootika ja haridusuuringute kaasaegsete arengute valguses kunstilist kirjaoskust ümber mõtestada. See on vajalik selleks, et toetada õppijaid kaasaegse kultuuri teadmistele juurdepääsul, nende analüüsimisel ja jagamisel. Artikkel tugineb ka Vögotski (1991: 292) analüüsil “kunstitaju kultuurist” ja selle arendamise võimalustest. Vögotski argumendid muutuvad kaasaegse digikultuuri kontekstis üha aktuaalsemaks, kuna õppematerjale vahendatakse sageli erinevate kunstikeelte ja digitaalse meedia (digikultuuri märgisüsteemide) kaudu.

Artikli järeldest tuleneb kunstilise kirjaoskuse väärtuslikkus sümbolilise vahendajana formaalse ja informaalse õppe vahel digikultuuri tingimustes. Artiklis käsitletakse kunstilist kirjaoskust osana ühildava kirjaoskuse paradigmast (Sukovic 2016), kus see on koostöösuhetes teiste tänapäeva hariduses vajalike kirjaoskustega, koos digitaalse, meedia ja ka kultuurilise kirjaoskusega. Samuti tuleneb artikli järeldest võimalus omandada kunstiline kirjaoskus kui psühholoogiline vahend, õppimise spetsiaalne sümboliline vahendaja. Artiklis väidetakse, et kunstilise kirjaoskuse arendamine peaks keskenduma õpilaste oskusele astuda kunstiliste keelte kaudu kaasaegse kultuuriga tähenduslikku dialoogi. See võiks toetada juurdepääsu nendele teadmistele, mida tänapäeva digikultuuris vahendavad erinevad kunstilised keeled. Vögotski teooria ja kultuurisemiootilise lähenemise ühendamine võimaldab autoril välja pakkuda intersemiootilise tõlkimise põhimõtetele ja psühholoogiliste vahendite omandamisele toetuva üldise raamistiku kunstilise kirjaoskuse arendamiseks formaalsetes õppimispraktikates. Artiklis esitatud väiteid näitlikustavad digitaalne platvorm „Haridus ekraanil”, autori magistritöö ja tema isiklik kogemus projektist „Beyond Text“.

Artikkel 3. Kolmas artikkel rakendab Vögotski lähenemist, et käsitleda sisekõne semiootilisi aspekte ning selle rolli kaasaegse digikultuuri tähendusloomes. Teksti fookuses on individuaalse sisekõne osalus erinevates tähendus-

loomelistes protsessides ning digikultuuri mõju sisekõne ilmnemisele kultuuris, sh selle tähendusloomeliste funktsioonidele.

Artikkel mõtestab sisekõnet kui kompleksset märgikasutust, mis hõlmab internaliseeritud kultuuriliste märgisüsteemide (eeskätt loomuliku keele) kasutust erinevates psühholoogilistes ja kognitiivsetes protsessides, sealhulgas tähendusloomes. Tekst võtab arutluse alla (1) sisekõne rolli internaliseeritud sõnadele isiklike ja harjumuspäratute tähenduste genereerimisel; (2) sisekõneks mõeldud eriotstarbelise segunenud koodi moodustamise; (3) sisekõne semantilise korrastuse. Samuti käsitletakse tekstis sisekõne rolli kunstiliste narratiivide loomisel. Artikkel selgitab ühelt poolt, kuidas autorite individuaalne sisekõne ilmneb kultuuris kunstiliste keelte kaudu, ja teiselt poolt, kuidas sisekõne võib ise kujuneda kunstilise vahendamise mudeliks.

Artikkel selgitab, kuidas kaasaegse digikultuuri arengud on märkimisväärselt kujundanud sisekõne ilmnemise viise kunstilistes diskursustes. See osutab koostöömehhanismide kultuuride ja kultuurilise autokomunikatsiooni transmeedialisuse sise-monoloogi kujundavale toimele kunstilise vahendamise kontekstis. Samuti arutletakse artiklis sisekõne koodi olulisuse üle multimodaalses ja transmeedialises tähendusloomes digikultuuri kontekstis. Tekst põhjendab ühtlasi semiootilise ja interdistsiplinaarse sisekõnealase uurimistöö jätkamise vajalikkust.

Käesoleva doktoritöö peamised tulemused ja järeldused on järgmised:

1. Vögotski lähenemine ei ole õppimise, tähendusloome ja sisekõnega tegeleva semiootika vaates mitte üksnes ajakohane, vaid pakub selle teemalise uurimistöö viljakaks jätkamiseks ka metodoloogilise aluse.
2. Vögotski lähenemise rakendamine õppimise analüüsis digikultuuri kontekstis osutab sümbolilise vahendamise rolli kasvavale tähtsusele nii formaalse kui mitteformaalse hariduse erinevatel tasanditel. See tähendab, et uue meedia märgisüsteemidel on õppematerjalides järjest silmatorkavam positsioon. Seetõttu on nende märgisüsteemide õppimine nii formaalses kui mitteformaalses hariduses oluline samm, mis võimaldab digikultuuris teadmiste paremat juurdepääsu. Töö tutvustab kaasaegse digikultuuri ja uue meedia keskkonna märgisüsteeme kui sümbolilisi vahendajaid õppimise protsessis ja potentsiaalseid psühholoogilisi tööriistu. Seega pakub töö ka lahendusi, mille abil toetada digikultuuri märgisüsteemide õppimist ja õpetamist koolihariduse kontekstis.
3. Väitekirjast järeldub ka vajadus mõtestada ümber mõned koolis harjumuspärased arusaamad kirjaoskusest, eesmärgiga toetada paremini õppimist ja psühholoogilist arengut digikultuuri ja uue meedia olukorras. Üks kirjaoskuseid, mis vajab ümbermõtestamist, on kunstiline kirjaoskus, millel on noorte õppurite märgikasutuse arengu juures oluline roll ka digikultuuri kontekstis. Väitekiri pakub selleks võimalusi kolmel tasandil: (1) kunstilise kirjaoskuse roll digikultuuri tähendusloomes; (2) selle potentsiaal toetada uue meedia keskkonnale omaste märgisüsteemide õppimist; (3) selle seosed teiste vajalike kirjaoskus-

tega, arvestades ka hiljutist pööret ühildava kirjaoskuse (transliteracy) suunas.

4. Väitekirja veel üks oluline tulemus on seotud sisekõne rolliga tähendusloomes. Kuigi digikultuur on käibele toonud eelkõige visuaalseid märgisüsteeme ning seda domineerivad just visuaalsed representatsioonid, juhib inimesele omast tähendusloomet jätkuvalt internaliseeritud loomulik keel, ehk sisekõne. Sisekõne ei vea üksnes arusaamisele orienteeritud, vaid ka loomingulisi protsesse. Samuti on see endiselt võtmetähtsusega vahendaja nii interpersonaalses, intrapersonaalses kui kultuurilises suhtluses. Uurimus osutab, kuidas digikultuuri ja uue meedia keskkonna arengud on vorminud individuaalse sisekõne kultuuris ilmnemise viise. Ka püstitab töö hüpoteesid sisekõne olulisusest multimodaalsete representatsioonidega seotud tähendusloomes ja digikultuuri spetsiifilistest mõjudest individuaalse sisekõne struktuurile ja fenomenoloogiale. Nende hüpoteeside kinnitamine või ümberlükkamine eeldab aga edasist uurimistööd.

Väitekirja artikleid, arutelusid ja analüüsi illustreerivad näited Tartu Ülikooli transmeedia uurimisrühma poolt arendatavalt vaba juurdepääsuga platvormilt “Haridus ekraanil”. Platvorm koosneb eraldiseisvatest õpikeskkondadest, millest igaüks keskendub ühele konkreetsele Eesti filmile või kirjandusteosele ja selle transmeedialisele loomaailmale mingis kindlas temaatilises raamistikus. Doktoritöös esitatud väited toetuvad ühtlasi autori isiklikule kogemusele “Haridus ekraanil” platvormi arendamisel ja aprobeerimisel erinevates hariduslikes, akadeemilistes ja kultuurilistes institutsioonides nii Eestis kui välismaal.

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