THE CONCEPTION OF INSTRUCTION

The more you begin to understand something, the more you become convinced that you know nothing at all, and the process of recycling texts can be endless. The more you read texts on culturology and art history, the more boring and tasteless different forms of culture and art seem. Of course, you don't want to be ignorant either, but you get the impression that humanitarian knowledge poisons the human brain, making you a squeamish snob snorting at everything and everybody. Therefore, I want to be *the enlightened ignorant*.

The Internet has not only made information super-available, it has also made it available to the masses — *mass* education, *mass* media, *mass* culture, — all this has led to a huge uncontrollable flow of information viewed from the screen, which is falling on a human being, as a result of which the so-called clip thinking is formed.

Clip thinking is criticized for deliberate simplification; of course, any simplification is a little misleading. However, to avoid drowning in the flow of information, we need to be able to benefit from this format.

Below are the texts which, with a certain pathos, are called "instructions". We understand the concept of instruction as a special form-factor of information transfer, a communication strategy, which sets the task not so much to generate new knowledge but rather helps to orientate oneself on the plane of many discourses, providing a *map of knowledge*. Actually, the format of the instruction comes from the "technical" (non-humanitarian) attitude to texts as descriptions of algorithms, structures and mechanics of the work of any entities.

Each instruction begins with a kind of dictionary that defines the most basic concepts; it is necessary to be clearly synchronized in the interpretation of certain terms, as some words have many different definitions, as well as to maximize the threshold of entry into the text. Moreover, each paragraph can be understood as a *clip* and the entire text as a feed of clips, resembling, to a certain extent, the usual format of news feeds in social networks, applications and other resources. It should also be noted that each instruction, being a kind of *communication protocol*, uses the terms of semiotics as the most universal and capacious, because all objects and concepts — these are things created by a human being for a human being, and therefore related to the processes of communication and interpretation of sign systems. Actually, if the reader has difficulties with semiotic terminology, we recommend to read the corresponding instruction.

All the theses, definitions and quotations, related to semiotics, are taken from different sources, which I do not consider necessary to give with such a strong simplification. But I can list in general those thinkers to whom I have addressed to a greater or lesser extent: Thomas Sebeok, Jacob von Uexküll, Jean Baudrillard, Roland Barthes, Ferdinand de Saussure, Charles Sanders Peirce, Julia Kristeva, Kalevi Küll, Walter Benjamin, John Deely, Yuri Lotman, Charles Morris, Roman Jakobson, Umberto Eco, Niklas Luhmann, Paul Cobley, Susan Petrilli, Martin Krampen, Julien Greimas, Bruno Latour, Marshall McLuhan, Lev Manovich and I would like to highlight Sign System Studies journal separately.

Three instructions are provided here:
1. Instruction for Semiotics
2. Instruction for Street Activity Semiotics
3. Instruction for Computing Machine Semiotics

INSTRUCTION FOR SEMIOTICS

1

Basic concepts

Semiotics is the science of signs and sign systems. Within it, the whole conceivable (perceptual) world is a set of signs and relations between them.

A sign is an agreement to attribute the signifier (image) to the signified (meaning).

A signifier is the formal side of the sign (expression of the sign).

A signified is the content of the sign (meaning of the sign).

A code is connects the signified and signifier. The codes provide the framework within which the signs make sense: they are guidelines for interpretation. Codes are combined into an interpretive repertoire, a set of acceptable codes into sociolects (within a group of individuals) and idiolects (within a single individual).

Communication — coding and decoding (interpretation) according to the conventions of relevant codes.

The referent is what is meant. The sign indicates the referent.

Semiosis — process of generating meaning.

Denotation is the main meaning of the sign.

Connotation is a concomitant meaning, one more meaning.

Syntax — studies relations between signs (science of signifiers).

Semantics — studies the meaning of the sign (the science of the signified).

Pragmatics — studies the correctness of the interpretation of the sign (the science of the connection between the signifier and the signified, the science of code).

Discourse is a code constructor that defines a specific interpretation of a specific character. We always consider the phenomena within a certain discourse. By changing discourses, we discover and at the same time lose denotations and connotations and change the meaning of the sign. Discourse is a scheme that encodes phenomena, linking the signified and the signifier.

Culture is the infrastructure of discourses that forms the hierarchy of dominant values that encode messages. The hierarchy determines the relevance of the codes used. Every discourse strives to become commonplace.

Ethics can be understood as a list of relevant codes.

Semiotics, in its original form, was a semiotic of culture that establishes a dichotomy of nature-culture and draws a line between them. Nature is a set of reflexes and instincts. Culture is a superstructure over reflexes and instincts that forms a world of things (in the broad sense of the word) created by human for human.

2

Biosemiotics

Biosemiotics is an advanced understanding of semiotics that studies the processes of communication and interpretation for all living beings, presenting the human being as an individual case. The world can be imagined as a continuous noise of things-in-itself. The act of communication, as a result of which a signal is emitted from the noise, forms what is called information. The same idea can be defined in another way: the separation of the signified object from the continuous world and attributing to it the signifier, i.e. the creation of a sign, is conceptualization (signification). Any living being can be understood as a receiver of signals, which decodes (interprets) the data. The correct interpretation of signs influences the survival of an animal (for example, an antelope, which interprets the rustle of grass behind its back as a sign of potential danger - a sneaking predator).

Biosemiotics can be divided into more specialized sections, such as zoosemiotics (animals), phytosemiotics (plants), anthroposemiotics (humans; what was originally intended by the word "semiotics" or "culture semiotics") and cytosemiotics (living cells), which in turn can be divided into endosemiotics (individual cells in a multicellular organism) and immunosemiotics (immune cells).

Umwelt — all the signs with which the subject (understood here as any living being) can communicate and which can interpret, the personal semiotic space limited by the senses.

Semiosphere — the complex semiotic space, the intersection of umwelts. Space of symmetric codes. Several umwelts are semiosphere.

Semiosphere can be understood globally, both as a region of intersection of several umwelts, in which all sign systems and all interpreters (as a biosphere) are immersed, and more locally as well as a region of intersection of several umwelts. Further on, the text will use the local definition of the semiosphere. It is within the framework of the semiosphere that hierarchies of dominating values of signs appear.

Here you can override the previously specified terms:

idiolect = umwelt

sociolect = semiosphere

If all our consciousness is the translation of external stimuli into the language of the nervous system (communication), then the process of cognition can be understood as the creation and destruction of signs and sign systems. An animal differs from a human being in that it allocates less signals from the environment noise, while a human being can flexibly formulate (interpret) a piece of noise as a sign. For example, a teacher explains a certain notion of an audience through a term. The audience does not know this term, and does not have this concept in mind. So, the teacher needs to feel the area of the semiosphere between him and the audience, through the meanings of which it is possible to convey a new concept (to define the sign through other signs). That is, the semiosphere can act as a communicator between umwelts.

To analyze the intersection of umwelten, you can use the example of a house where two cats and two people live. Everyone has their own umwelt. Cats have their own umwelten intersection within the boundaries of which they communicate. People also have their own umwelten. However, in domesticated cats, umwelts are extended for communication, albeit simple, with people. Thus, we have a cat's semiosphere, a human's semiosphere, and a cat-human's semiosphere. The initiative to form a cat-human's semiosphere can be either from the human side (through training) or from the cat side (for example, trying to attract attention to ask for food). Is it possible to replace the word "training" with the word "upbringing" and how will the training differ from that of the child? Can you say that a domesticated cat has a culture?

Another slightly clumsy example. Let's imagine ten color blindness with a red handkerchief in front of them. Five see it as blue, three as yellow, two as green. There is an interpretive repertoire with a rating of dominant values, where blue will be the strongest dominant. And as a result, there may be an appropriate code where the handkerchief will be called blue to communicate with the main part of this "color blindness society". But who indicated that the handkerchief is red, and these people are called color blindness? Who puts the experiment? What will become of this experiment within the framework of the umwelt of some animal that does not distinguish between colors? This handkerchief will not just be not red, it will not be a handkerchief at all, but just a piece of matter, which in principle is not manifested by any sign within the framework of the animal's umwelt.

Nobody educates and teaches a living cell, and that is why it does not have the same superstructure over instincts and reflexes (in this case reduced to physicochemical interactions), so it does not have culture. But as living organisms become more difficult, genetics and heredity cope less and less with the transfer of the volume of information necessary for survival, and more and more it passes to the field of " environmental constructivism ", when the environment and external factors "bring up" the subject after birth, Therefore, the boundary of nature/culture at this level of generalizations (at the level of biosemiotics) is eroded from more or less clear and turns into a gradient, where we find not static "nature" and "culture", but the *process of culturization*.

Upbringing is the formation of the necessary minimal umwelt in the subject, which is equivalent to the umwelten of the majority of people, allowing this subject to communicate on a wide range of signs for successful survival in the environment of human civilization. That is,

upbringing is a purposeful expansion of the field of entry into the general semiosphere of the local umwelt of the subject.

Through training, environmental information collected by the senses is encoded in the nervous system.

How can a human act as a subject if culture largely programming the person? Where does culture come from if it is programmed by a human?

3

Cybersemiotics

Simple cells form complex confederations of cells that make up each living being. They, in turn, integrate into organs and organs into organisms, forming social systems of increasing complexity. Thus, physics, biology, psychology and sociology represent their own special level of semiosis. The genetic code regulates the exchange of messages at the cellular level; hormones and neurotransmitters are mediated between organs and between each other (the immune defense system and the central nervous system are closely interconnected by the dense flow of bilateral messages); a multitude of non-verbal and verbal messages connect organisms in the network of relations with each other, as well as with the rest of the environment.

For example, one human body consists of approximately 25 trillion cells (3000 times the population of the world). Imagine that these cells have direct or indirect connections with each other through messages transmitted by signs in a variety of modalities (chemical, thermal, mechanical, electrical, etc.). That is, we can speak of a "natural" language, as opposed to a conventional language, which, in particular, studies linguistics.

Bacteria can act together as a kind of extensive biological communication network, as a superorganism whose countless parts are able to carry and share information to adapt to any circumstance.

The cell is thus a basic component of reality construction.

Biosemiotics, in a sense, sees the body as a mechanical system, and here it is like cybernetics. The task of cybernetics, for example, when building a robot capable of descending steps, is not so much about how to program the descending mechanics in steps, but how to teach it to *distinguish* steps from the rest of the world. In general, cybernetics can be understood as a science of building artificial semiotic systems and managing interpretation and communication. Semiotics and cybernetics study one area of knowledge, but from opposite ends. One deconstructs existing sign systems, the other tries to construct them.

Second-order cybernetics is cybernetics, which includes an observer in the study, considering it to be a cybernetic system trying to build a model of another cybernetics system (subject's cybernetics, cybernetics of cybernetics), where any observer can find himself as an observer and, thus, indicates that the last observer does not exist.

Just as second-order cybernetics raises cybernetics and system research to a new level, through the inclusion of an observer, biosemiotics also raises semiotics to a new level, through the inclusion of all living systems in the semiosis.

Autopoiesis is self-organization, self-reproduction, replication of living beings, including human beings, society and culture, which generate as a product of themselves without separation into producer and product.

Combining second-order cybernetics and the idea of autopoiesis, as well as slightly paraphrasing the sociology of Niklas Luhmann, one can imagine society (or any set of living beings) as a network of communicating observers, which are connected by signs (meanings); the network consists of subsystems, which are separated through the coding of communication (codes separate local semiospheres), and reproduces itself.

Combining biosemiotics, second-order cybernetics, autopoiesis theory, and Luhmann's sociology is *cybersemiotics*.

A very similar concept can be mentioned here, the actor-network theory, which represents any processes within the network of objects (or *actants* — a word that can be understood to mean any interacting entity at all) as active units of social relations, requiring that nonhumans be considered as active agents in social systems and relationships, equally describing relations that are both material (between things) and semiotic (between concepts). There is no difference between nature and culture (society), text and context, human and non-human — all these concepts are produced as a result of the joint activity of people and non-people. That is, not just non-human, but non-living entities are introduced into the network of communications.

Reaching such levels of abstraction, the question arises even more interesting. Can fundamental physical interactions be considered as a form of communication? Is semiotics of physical processes possible, considering, for example, gravity as a fundamental type of communication? Is semiosis possible between non-living actors?

Here appears *physiosemiotics*, which assumes the presence of a vocabulary of virtual signs in all the actants, which can be actualized during interaction with a living organism in the future. For example, the skeleton of a dinosaur located somewhere in earthly rocks is a virtual sign indicating the dinosaur that once lived only until the paleontologist comes across it, and then the sign from the virtual transforms into the actual one. Thus, in this network as actants it is possible to include, for example, another dinosaur who killed the first dinosaur, and also each chemical-physical process occurring with remains in soil. Each of these actants contributed to the semiosis, because it is the result of the action of all of them that makes the meaning of the skeleton exactly as the paleontologist discovers it, and will then restore the entire chronology of the actions of these actants.

We should not ask where the boundary between nature and culture passes, but at what level of abstraction we are interested in the answer to this question, because as the boundary between nature and culture is gradually blurred, and at some point so much so that the original question becomes meaningless.

If we sum up the entire field of meaning described above, all semiotic processes are the result of interaction of a network of communicating actants, who create a total semiosis of everything.

4

Ideology

Naturalization — naturalized codes are those that are common in culture and are taught in such early years that they do not appear to be constructed but "natural". Ideological function of naturalization is myths, where not the object of message is important, but the form of message, that is, how this object is reported for the purpose of a certain communication.

Preferred reading — readers of the text are aware of the preferred reading and are guided away from undesirable reading through the use of codes. Preferred reading is not necessarily the result of any conscious intention on the part of the text producer(s). The term is often used as if it referred to a meaning that is somehow "embedded" in the form and/or content of the text.

Denaturalization is one of the goals of semiotics, the notion that defamiliarization was a key function of art — "we need to make the familiar strange" in order to have a fresh look at things and events that are so familiar to us that we are no longer able to see them in their true light. Semiotics are attempting to denaturalize signs and codes in order to make the underlying rules for encoding and decoding more explicit, and often even with the intention of detecting the usually invisible effects of ideological forces.

Ideology is a system of codes that define how we interpret certain signs, as well as a list of signs that need to be discovered and those signs that are better not to be noticed (to notice and evaluate only those aspects of reality that ideology recognizes as important), plus mythology that frames and naturalizes the ideological system of signs, forcing us to think in certain categories, creating dominant cultural and historical assessments, attitudes and opinions that seem "natural", "self-evident" and "sensible". All the products of social-linguistic practice, all the sociolectures developed by generations, classes, parties, literary trends, press organs, etc. during the existence of society, can be imagined as a huge warehouse from which an individual is forced to borrow his or her "language" and, with it, the entire system of value-meaning attitude to reality.

Queer theory, for example, can be considered as a semiotic practice of destroying the established dictionary of gender identities. The theory of social constructivism separates the biological sex (defined by physiology) and the social sex (defined by psychology). Individuals of different biological and social sexes may experience sexual attraction to individuals of any other biological and social sexes. Every correspondence between sex and attraction is determined by gender identity. The totality of all gender identities can be called the dictionary of gender identities. All identities have a repertoire of symbols through which they are represented (dress codes, behavioral patterns, etc.). Queer not only opposes heterosexuality as a sign of normality, but also denies the very notion of gender identity through which one can identify someone.

Ideology is based on connotations. Denotation is an extra-ideological utopia, a pure abstraction (meaning that we cannot look at the sign in isolation from all its links with other signs, the main value is inevitably accompanied by additional values). The connotation mimics to the denotation, trying to naturalize and merge with the denote, hiding its ideology.

5

The Stock and Everyday Life

A stock is an organization that contains a database of images and provides them for sale (or, more precisely, the right to use them). In case someone bought the material from the photobank, the photobank transfers remuneration to the author of the material. Now it is not only a photo, but also video, illustrations, design templates, gif-animations, so it would be more correct to speak not about the photo stock, but about the *stock content*. This content serves as an empty template for advertising and everything that in one way or another is associated with sales and related sales processes.

In any advertising, the product itself is secondary, connotative, in fact, the advertising tells about something else, entering (naturalizing) the product within a larger narrative. Stock content is remarkable because it does not sell any goods, but sells universal images for any goods, exposing the pure narrative. This narrative is told in the most comprehensible language for the widest possible audience, and in such a way that this story could be suitable for the widest possible range of advertised goods, as the stock content never knows what it will advertise.

Each of the signified may have a repertoire of meanings (and vice versa), and these correspondences (links, codes) are arranged in the frequency of use rating. Stock searches for and produces the dominant values of these ratings and codes shared by members of the mass audience. These codes are structurally simpler, use standard conventions and formulas, and thus generate cliches and stereotypes, distorting and turning into simulacres where denotation is absent, but we are comprehending (imagining). Such codes contain elements that serve to emphasize preferred meanings.

Thus, the stock (as well as ideology) is engaged in the construction of semiotic systems, in a sense being a manual on cybernetics.

Stock is a machine of everyday life. Everyday life is a daily repetition of the same actions, events in which there is no creative (changing) component, turning the interaction into a mechanism that does not need reflexion. A set of ready-made solutions to known problems. Everyday life is a space of fully naturalized codes. It is with these codes that the stock works, transforming them into images, modeling everyday life, carried out by *cultural managers*. Stereotypes, cliches, patterns, form passages, production of ordinary images, unification of specificity and originality, templating, decontextualization - all this allows you to extract maximum capital from the images. Stock is the most detailed semiotic study of everyday life. It is a machine that processes all images into everyday ones, depicting them in the most mythological way possible.

The search for stock content is done by keywords, which illustrates the boundary between linguistics and semiotics, and together with the annotation text is a compositional addition to the image. The stock content database with keywords, as well as all links to similar content in different categories, is a *thesaurus of everyday life.*

Having rid the sign of all unnecessary connotations, the stock makes it so synthetic that it seems to be more real than reality itself.

It is not so much the critique of capitalism or consumerism that is interesting here, but the semiotic field — what are the guidelines for those who create stock stories? How do they determine which connotations are unnecessary and which are necessary? What is interesting is the process of selecting many synonymous signs and defining the dominant sign (within the framework of mass consciousness). Because people specializing in the creation of stock content are, in fact, connoisseurs of semiotics, denotations and connotations.

6

Guerrilla Semiotics

Guerrilla semiotics — a set of tactics against mainstream culture; any redesignation of dominant meanings. Social reality is organized into discursive fields consisting of hierarchically structured dominating or preferred meanings by means of which the coded communicative impact on the audience is carried out. Partisan semiotics is an attempt to change the circumstances in the light of which the addressees of these semiotic tactics will choose their own way of interpreting signs. That is, the society encodes information messages by its structure, the tactics imply deconstruction of these messages, or rather the creation of such circumstances that the addressee again gets the freedom of decoding. In other words, guerrilla semiotics is any purposeful intervention in a sign system; it means manipulation that breaks or, on the contrary, intentionally constructs signs in an already existing sign system in order to reveal the sign system as such.

Cultural jamming is a tactic of undermining the basic principles of mass culture by demonstrating the mechanisms of its action, in particular, through corporate advertising, through its modification and desemantization (subvertising), various anti-consumer tactics, social hacking (manipulation of social behavior through planned actions, for example, through media interventions).

Subversive affirmations are a deliberate mimicry for images. In subversive affirmations there is always something excessive, which destabilizes the order of the affirmation and turns it into its opposite. Mimicry (super-identification) as a strategy of resistance, the use of existing dominant codes in order to "respond to these languages themselves".

The essence of creativity in the production of signs that cannot be interpreted, the deformation of existing signs, the search for a way out of the language, the creation of a language that does not speak. Minimalism is the poverty of a language, the absurdity is its destruction.

7

La Société du spectacle

The Society of the Spectacle is a society in which any information becomes a commodity. Capital accumulates not only physical benefits, but also images born by the media. In fact, criticism of commodification processes in which an increasing number of different types of human activity acquire monetary value and become goods bought and sold on the market.

Consumer capitalism took all the real human experience, transformed it into a commodity, and then sold it to us through advertising and the media. Thus, all aspects of human life are a kind of spectacle, which in itself is nothing more than a system of symbols and images. A performance is capital at the stage of accumulation when it becomes an image.

Situationism is the idea of a cultural revolution through the production of counterculture and countercultural situations. The production itself is essentially aimed at the dominating values of sign systems, and the situation is understood as an event that directly destroys sign dominants.

Recuperation is the transformation of an image into a commodity, for mass sale and introduction; the formation of dominant meanings in some sign system; and it is believed that these very dominants have absolutely nothing to do with what they are trying to mean, or distort the original meanings.

Détournement is the destruction of these dominants in the sign system and the return of the initial values to the signs, the "rerouting" of the images of mass culture, the methods against recuperation.

8

Author

The "rightist" discourse views the author as a metaphysical phenomenon that existentially experiences this world and, as a result, can create an artwork. The original created by the author is traditionally considered to be more valuable than the copy, since the category "artwork" includes the uniqueness of the object that is the result of once-reflected experiences, and its copying negates these properties.

The "leftist" discourse says that the author is a social construct, and there is no metaphysical author; that we create the author in our own minds, as well as the work, that is, the author is part of a artwork that we can interpret.

In the semiotic sense, in any case, each person frames the author and the work in his or her own discourse, which will give value to the work of art. Therefore, the author can be understood simply as a hashtag for a search query.

9

The critique of the "leftist" critique

A society of spectacle, recuperation, détournement, cultural jamming - all these concepts, being part of the left critique of society, understand capital, social institutions and culture as a whole as oppressors of the individual. All leftist criticism is directed towards destruction. Marxism is the destruction of a market that oppresses capital. Freudism is the destruction of society, which oppresses by the totality of social institutions. Situationism is the destruction of culture, which oppresses with one existence, including capital and social institutions.

The avant-garde, of course, can also be seen as a form of left criticism, but the avant-garde has created a powerful alternative to dominant conventions and institutions, *destroying through creation*.

All leftist critiques are more likely to reveal, uncover, and formulate important things, but cannot oppose them. The weakest point of countercultural thinking is the inability to form notions of a truly free society, let alone to offer a practical political program. It equates order with repression, and disorder with freedom.

Here it is appropriate to cite the prisoner's dilemma, the essence of which is that each individual strives for his or her maximum benefit, and as a result, everything becomes worse as a whole. (Two prisoners are taken to their rooms and offered to give up their partner in order to free themselves, or to keep silent and serve a year; if your partner gives you up, you will serve 5 years. Ideal if both keep silent and serve a year). Any convention is a desire to level out such situations. Actually, conventions can be understood as capital, social institutions and culture.

The whole leftist idea tries to bring us back to the primitive society, criticizing the existing one violently (only in this society there should be not monkeys, but saints who will not rob, kill and rape in the absence of the state, law and social institutions). But all the drawbacks of modern society have been brought up by us ourselves for the sake of advantages that far exceed these drawbacks. Leftist critique tries to destroy conventions, but destruction is usually castrated by the society itself and allows it within a safe framework. Now all the infinite leftist critique in all its manifestations has become conventionalized and ceased to mean anything.

All the processes criticized in society can be considered as dual. The society of the spectacle is a simultaneous global process of recuperation/détournement — the more obvious are the dominant values of sign systems, the more obvious are the disadvantages of recuperation; the stronger is the détournement, the faster is it recuperated (counterculture creates a new culture of consumption). These processes take place in the perception of each individual person, each creative action in the heads of some produces détournement, in the heads of others — recuperation. And the course of these processes leads to the opposite - recuperation leads to détournement, détournement leads to recuperation.

In the same way, the class of masses and the class of elites can be contrasted. For the masses, the more popular the sign is, the *higher* its importance is, for the elites on the contrary, the more popular the sign is, the *lower* its importance is (*inflation of value*). The hipster rejection of everything popular is an intuitive attempt to protect from the recuperation of the society of the spectacle. In particular, the ironic game with popular culture. Clothing that

belongs to the so-called high fashion, has a high price tag not because its production is expensive, but because in this way it is possible to make a thing inaccessible and prevent the masses from devaluing it. Ultimately, the process of consumption or anti-consumption is driven by the desire to occupy a special position in the semiotic system of competition.

INSTRUCTION FOR
STREET ACTIVITY SEMIOTICS

1

Basic concepts

Street art is an illegal, non-utilitarian deconstruction of the everyday life of the urban exterior.

Public art is the same as street art, but legally, with the organization of the necessary list of approvals and, most likely, with external sponsorship.

Urban intervention (urban hacking) is a utilitarian transformation of the urban environment within the framework of social activities, the format of art-activism by street art methods. Initially, this term was understood to mean works that use only street elements, without introducing any of their own elements for their placement.

Art-activism is any utilitarian and politically engaged form of creative activity. Utilitarianism can be understood, in particular, the political goals or intentions of some social transformations in society.

Graffiti — in the narrow sense is an attribute and a way of articulating the belonging to the hip-hop culture. More broadly, it is a set of stylistic and methodological practices engaged by hip-hop culture, where the instrument of action is an aerosol can, and the object to be created is the font type of a nickname of a person or group of persons.

Land art is a non-utilitarian deconstruction of the natural (non-urban) landscape.

Environment — a concept in which the system of exhibiting is understood as a part of the art object. Generally speaking, it is not very much about street activities, because such works are done more often in the gallery, but here we can understand this term as a particularly subtle game with site-specific, when the environment merges with the artistic object and is radically dependent on it.

Actionism — an action can be understood as any artistic act in which the artwork is not an object or not so much an object as an action, event or situation. Happening — a artist cannot control the course of an action. Performance — artist can control of an action.

Psychogeography is passive urbanism, contemplation and analysis of the urban environment in terms of its psychological impact. If street activity is a direct *transformation* of the street, then psychogeography is a change in its *perception* by a specific subject.

Diggering (urban exploration), trainsurfing and roofing are essentially highly specialized forms of psychogeography, aimed at exploring the urban environment.

Diggering is the study of areas of urban or industrial space beyond public space, which have either lost this status or are taboo (e.g. the territory of an abandoned factory may, over time, acquire the status of a public space through regular human visits; if the territory is protected from intruders, then security is carrying out a taboo on the acquisition of public space status by the territory).

Roofing is literally a change in the angle of view of the urban landscape by penetrating the roof of a building.

Trainsurfing — travel outside the train; can be considered as a special way of interacting with public transport.

2

Street

Street activities can be understood as a set of non-standard strategies of behavior in outdoor spaces.

The city is a sign system of dominant values that define the image of the city, which significantly distorts its perception. Street activity and psychogeography can be understood as semiotic practices and détournement of urban space, deconstruction of everyday street exterior. (When we talk about "street" and "urban" in general, it is not quite clear what a street is and what a city is. Is it possible to have street art, drifting or diggering in a remote village? How relevant are these practices where the door threshold is not a strict boundary between house and street? Of course, when we say "street", we represent the urban landscape; however, we need to understand that the more pronounced the urbanity, the more pronounced the boundary of the house-street, the more actual all these practices.) The problem is not how to redefine dominant meanings and create new ones, but how to do it gracefully. What lies beneath the word "elegantly", within what limits and criteria it can be described, is quite unclear; perhaps there is what is called a creative search, that is what inspiration and other romantic metaphysical things are directed at; that is the search for how to go beyond the framework of the language (although it is claimed that there is nothing outside the language).

The totality of public utilities engaged in cleaning the city can be understood as an unofficial street censor, which destroys everything that is knocked out of the dominant sign system of the city, that is, it is a tool for recuperation.

The concept of hooliganism is used as a universal legal marking tool to prosecute any unauthorized activity, including street activities.

Any exit to the street is utilitarianally motivated, you need to buy something, go to work or study. That is, the street is an intermediary between the two premises.

In order to go through some part of the street, you need to look through a kind of advertising clip — billboard, city light, stand with posters, etc. To get on the tram, you need to look at the advertisements on the body of the tram, then inside look through the small flyers at window level, sitting passengers see the advertisements on the front seat. That is, the way

through the city between the two rooms can be compared to a block of content on TV, video hosting or news feed in a social network, which is regularly interrupted for advertising.

3

The sanction as a tool

For anyone involved in street activities, there is an obvious binary street/gallery. Gallery exhibition activity, or rather its sanctionability, is interpreted as "betrayal" of street art. Taking into account that under the supervision of institutional curators, street activities are simply transferred into the canvas space, thus being expropriated by the art industry, leaving it only as a signifier. In other words, street artists, being independent antagonists of institutions, entered/absorbed/reworked or, in terms of situationalism, were recuperated by these institutions, and the works turned into purely decorative objects. The highest point of "death" of street art can be considered to be the appearance of its own biennale (although in institutional discourse it is, on the contrary, the highest point of maturity).

There is no need to compare a gallery, a street or a festival, trying to build them into a hierarchy in order to find the right way. Any street art is site-specific, and its key component is the game with the language of the environment. The space of the gallery, the "white cube", is also a kind of site-specific, which defines the methodology of the works. A gallery, a street or a festival should be understood as a repertoire of sign systems that can be used to implement their ideas.

4

The moment of detection

The key thing that street activities work with is the moment when the work is detected. How does one not expect to see anything out of the familiar sign system of the street, triggers a kind of surprise effect, the effect of discovery. In addition to these obvious effects, the person is also responsible for the street work found at the moment of detection, as he or she is not at all limited in his or her interaction with it — including the possibility of destroying it. This means that each individual passerby in some way assigns himself a artwork, because it is up to him to decide whether the artwork will continue to exist for some time. This effect can be defined as a *public appropriation*. That is, a street artist, producing détournement of the city, shares the effect of détournement with passersby.

An artist creates an object that is detected by an unknown random viewer (*the moment of detection of the first order*). If, for example, stickers are not glued but handed out, then, as a matter of fact, there is a transfer of one's subjectivity to another. It follows from this that the moment of detection works for the artist when he accidentally discovers a glued sticker (*the moment of detection of the second order*). The artist approves the viewer's eyes. If we go further, another person can tell the figure that he saw the sticker where the artist himself has never been. That is, the moment of detection works first for the viewer, then it is passed through him to the artist (*the moment of detection of the third order*).

5

Antiutilitarianism

Artworks should not have an imposed or far-fetched conceptual background, as any concept is conceived as a justification for action. Political engagement is not just a justification for action, it is a utilitarian use of activity within a specific goal, where creativity itself is not interesting at all and, by and large, is not necessary. Political engagement can be understood as a part of the recuperation of the artwork by the artists, critics and curators themselves, since this engagement constitutes the spectacularity for the sake of which and to which all activity is reduced. That is, the concept as a text does not work in the original conceptualist discourse, as a description of some deconstructing practice, but as a protection of its actions from the lack of meaning, protection from the shame of nonsense.

6

The notion of semi-legality

Semi-legality — an ethical term for such a place and its actual state and environment, which allows to allow "broken windows" (the broken windows theory). That is, in any city there are places where there is no special sense to seek official permission to create any artwork on the street, but on the other hand, if you want, you can be held accountable. This applies to all sorts of abandoned places that nobody cares about and do not have a clear owner.

The essence of the broken windows theory is that every person has an ethical threshold, which allows, for example, to put an inscription on a wall or, in general sense, to commit vandalism, and the objects of the street exterior have external markers of their condition, interacting with this threshold. For example, for some reason, a window broke in a house that was well-groomed and ennobled. The image of a house with a broken window works as a sign of abandonment, desolation, neglect and marginalization. As a result, the ethical threshold is lowered and a layer of people who feel that vandalism is tolerated is formed. Suppose a tag is applied or a window is finally broken. The signifier of "abandonment" becomes even more obvious, the ethical threshold drops even further, and more people may allow their contribution to destruction. As a result, the building is completely destroyed, robbed and becomes the center of disadvantage.

Actually, here we can describe the reverse process — gentrification, when artistic bohemia attracts attention to the place by its actions, it becomes fashionable, grows into cafes, lofts and other commercial institutions, acquiring meaning "welfare". As a result, the building itself is bought out by business, or it is demolished at all, and on this place elite housing or shopping center grows.

Bombing, as a radical branch of graffiti, perceives vandalism as a philosophy that frees people from the totalitarianism of private property, a riot against the ethical threshold. That is, bombing is such a Marxist technique. Raising the question of art and vandalism, one should understand vandalism not as a desire to spoil, but as a certain philosophy of deconstruction.

INSTRUCTION FOR
COMPUTING MACHINE SEMIOTICS

1

Basic concepts

A machine is a technical object consisting of interrelated functional parts (details, assemblies, devices, mechanisms) that use energy to perform some functions.

Black box is a system that has a set of input parameters and corresponding output values; however, no matter how the system is designed, we are only interested in the interrelation of inputs and outputs.

Cybernetics is the science of how to get the necessary output values at given input parameters.

A computer is a system of switches. It is important to understand that a computer can be non-digital; for example, analogue or mechanical. The digital switches operate and influence each other by means of discrete values (0 or 1). In the case of analogue technology, the basic "switches" will be analogue elements (resistors, capacitors, inductance coils) operating with *value gradients* (resistance, capacitance, inductance). Mechanical switches do not need electricity and are implemented in the form of mechanical units (levers and gears). The word "computational" is archaic to a certain extent, because initially all these types of machines were tools of mathematicians and later informants, and the whole sense of their work was reduced to automation of calculations. By computation we will mean any change in the state of the switches, any communication between the switches. Here and further, under the computer and the machine in general we will bear in mind the electronic computer.

An electric current is the directed movement of electrons.

Voltage a value that shows how hard it is to move the electron in the conductor, measured in volts.

A logic level is an agreement on what voltage level to interpret as 0 or 1. There can be many such agreements, it is important to understand what the machine interprets for 0 or 1 voltage range. For example, a logical zero may be 0 to 0.8 volts, a logical 1 of 2.4 to 5 volts, the gap between 0.8 and 2.4 is called the *undefined state* necessary to unequivocally separate 0 from 1.

The bit is current state of the switch (on/off, 0 or 1), *unit of the machine language.* Theoretical definition: A bit is the amount of information that halves the uncertainty of knowledge.

Boolean algebra is a mathematical set of elementary transformations with switches. We can talk about three main operations on bits:

AND (a conjuncture) — on output 1, if all inputs 1 (one wire has two consecutive switches and a light bulb; the light bulb will light up (output will be 1) only when both switches are on (all inputs 1));

OR (a disjunction) — at output 1, if at least one input 1 (two parallel switches and a light bulb; by turning on any of the switches, the current will reach the light bulb and it will light up);

NOT (an inversion) — at output 1 when the input 0 (the switch is connected in such a way that the light bulb is switched off).

Hardware — physical, tangible parts or components of a machine. "Rigid" switch system, defined during production.

Software — "softness" means the ability to dynamically change the switch system by storing the program in the memory.

2

Hierarchy of hardware abstractions

A transistor — is an electronic switch. Without going into the physics of its operation, you can imagine it as a water pipe with a tap; by controlling the handle of the tap (unscrewing or twisting), we can adjust the flow in the pipe (voltage control), which can then be interpreted as 0 or 1. In addition to the transistor, there are other devices (e.g. electronic lamps) that perform the same functions and operate on a similar principle. It is the switching principle that determines that the machine has only two characters in its alphabet, 0 and 1, which are summed up in words, sentences and texts, wandering through the electronic parts of the machine and interpreted in a certain way.

A logical element — is a set of transistors that implements the operations of AND (conjunctor), OR (disjunctor), NOT (inverter).

A combination element — a set of logical elements implementing a certain function. For example:

A multiplexer — has many inputs and one output. It implements the connection of a certain input with an output;

An encoder — converts a decimal number into a binary number. It has n—outputs and 2^n inputs.

A function block — a set of combination elements that performs a certain set of functions. For example:

ALU (an arithmetic-logic unit) — a device that performs arithmetic and logical functions with input data;

CU (a control unit) — a device that forms sequences of control signals allowing to influence the operation of other functional units;

A memory — matrix of cells (switches) that have the ability to fix external signals.

RAM — dynamic storage of current machine texts that are currently being executed, as well as all intermediate data generated during their execution.

The von Neumann's architecture is the principle of building processors as definitely connected ALU, CU and memory, as well as the principle of storing programs and data in the same memory.

An integral scheme — electronic scheme executed on one crystal. It is a possibility by means of the set of the fused semiconductor materials, compactly to place elements, complexity from a transistor to the functional block.

A processor is a device that performs arithmetic and logical operations on data coming from external blocks, and also controls these blocks.

A microcontroller — processor, RAM and a number of additional peripheral devices (timers, converters, interfaces), single—chip computer executed on one crystal. It is used to control appliances, household appliances, machines, etc.

A peripheral devices — all additional connected devices, except for the processor and RAM, providing data input, output and storage.

3

Hierarchy of software abstraction

Programming — means to set the switches to the required states, change the topology of their connection. The program can also be represented as a "black box" with input parameters and output values. To make programming easier, programming languages are used.

A machine word is a number of bits that the processor can accept at the same time.

A machine instruction is a combination of machine words that implements some operation.

A machine language is the entire set of machine instructions within a specific processor architecture.

An assembler — a set of mnemonic machine instructions, a programming language more understandable to a human being.

A high-level programming language (HLL) — programming language that uses abstractions to describe machine instructions.

A program is a machine text, a set of machine instructions that implements specific functionality. A program can be written on an assembler or high—level programming language, but eventually it is translated into the machine language of a specific processor (the processor sets the boundaries of *machine's umwelt*, because through the language of the processor architecture the machine recognizes the world).

A library is a set of ready-made modules implementing some functions that can be connected to a program. If the program is text, it can refer to (connect) other texts, forming an *infrastructure of interacting texts*.

A framework — a program to facilitate the writing of other programs, ready-made structure, filled with modules. Creating a program within the framework is based not so much on writing code as on selecting, configuring and organizing the joint existence of a set of repeatedly used modules. The library is always secondary — it connects to the main program text. The framework is always primary — it is the foundation that defines the architecture of the application, to which the modules are already connected.

Building the hierarchy of machine code — assembler — HLL — framework, the programmer gradually moves away from the dialogue with the machine "how to do" to the dialogue "what to do", carrying out of automatization of automatization where the machine itself finds and selects solutions for specific tasks by its own means and the programmer only formulates goals, and as he moves along this hierarchy, the work of the machine becomes even less transparent for the programmer, and the language of communication between man and machine becomes more and more "human".

Translation is the transformation of a text from one language into a language understandable to the addressee. In particular, from a language understandable to a human being in a more understandable machine.

A translator is a program that carries out translation. Different machines speak different languages depending on the operating system and the installed processor. Programming on HLL or the framework, the translator is necessary to translate the code into a specific machine language, the only one understandable to the machine.

An operating system is an infrastructure of programs implementing hardware management and communication between a person and a machine.

Initially, to work with a computer meant to program it, and the equality of the user=programmer worked, because even the use of the finished program also required programming skills and rather deep understanding of the principles of its work. All the progress in computer engineering is connected with the increasing gap between a simple user and a programmer, and the use of programs has ceased to be associated with programming, because now the user does not need to enter any control commands into the program, does not need to know their format, input rules and read manuals on their operation; now work with most programs is intuitively understandable without any training.

The Graphical User Interface (GUI) is a visual language that allows you to operate switches without knowing the programming language. Essentially, a GUI is a set of visual abstractions (metaphors) that mimic non-virtual entities (folder, file, desktop, etc.) to varying degrees. It is the GUI that makes communication with the machine intuitive, mediating between code reality and social reality.

A neural network is a system of switches that can work not only within a given algorithm, but also on the basis of previous experience. It is a combination of hardware and

software, which is programmed not by programmers, but by the external environment. Therefore, the neural network is autopoietic — it creates itself. The more experience a neural network has accumulated, the more complicated its behavior is. The less a person can trace the learning process, the less a person can predict the behavior of a neural network. The increasing non-obviousness of machine mechanics and the deviation from absolutely deterministic behavior, apparently, is a manifestation of what is called the intellect.

4

Hierarchy of network abstraction (TCP/IP)

A computer network — a system that provides data exchange between computers (nodes).

A network segment — logically or physically separated part of the network.

A server — a node in the network that provides the use of its resources to other nodes in the network.

A client — node of the network consuming these resources.

Client-server network architecture — assumes the presence of a server that unites nodes in the network, responding to customer requests.

Peering network architecture — assumes that each node of the network performs the functions of both a client (sends requests to other nodes) and a server (responds to requests from other nodes). For example, I2P networks, Bitcoin networks.

Hybrid network architecture — implies the presence of servers that coordinate the communication of nodes through directories with information about existing machines in the network and their status, which can be addressed with a request. For example, BitTorrent, Tor.

Network equipment — a set of devices that provide network operation. In addition to cable systems (passive network equipment), it is also electronic devices (active network equipment) that convert signals into networks. For example:
a network switch is a network node that connects other network nodes within a network segment.
a router — a network node that connects network segments (connecting networks to networks).

A protocol — an agreement describing the rules of interaction of functional blocks (nodes, programs, electronic actors) during data transmission.

TCP/IP — protocol stack (agreement system) which implements the hierarchy of network construction, fully describing the processes of data transfer. It consists of 4 levels.

Channel layer — defines the physical medium of bit transmission from node to node within the segment (twisted pair, telephone cable, coaxial cable, optical fiber, parameters of electromagnetic waves in wireless transmission), form factors and technical parameters of connectors, cables, integrated circuits; defines the beginning and end of bit streams (combines bits in frames). Examples of protocols: Ethernet, Wi—Fi, DSL.

Network layer — designed to transfer data from any network to any other network. Collects frames into packets by adding sender and recipient address information. At this level, routers work, uniting network segments into a single network, redirecting data packets between any nodes in the network through an arbitrary number of intermediate nodes. The network layer is described by the IP protocol.

Transport layer — carries out data transfer from the initial node to the final node. Collects packets in messages at the end node, checks the order of packets, makes a second request for packets in case of their loss, eliminates duplication of packets, checks the integrity of received data. Transport protocols determine for which application these data are intended (through the port used by the program). Examples of protocols are TCP and UDP (the same as TCP, only without a guarantee of data integrity; used, for example, to organize a live broadcast; when we see artifacts (interference) in the video, it means that some data has not reached the endpoint entirely).

A port is a natural number that indicates which application to send a message from TCP linking the transport and application layers.

Application layer — designed to transfer data between applications on different nodes. Processes messages from a network and gives out result to the user.

The information flow from the initial to the final node undergoes transformations at all these levels. Simplified, the simplest and most common chain of transformations will look like this:

HTTP—TCP—IP—Ethernet—IP—TCP—HTTP

All network programs have their own communication protocols and "listen" to their ports. Now the browser became the multipurpose program and necessity in many network appendices has disappeared, but, strictly speaking, for each way of data transmission there is the program—client (sending inquiries to a server on reception of any information) and the report of data transmission. For example, the browser works on HTTP protocol and listens to port 80, the program for viewing e—mail (mail client) works on SMTP protocol when sending and POP3 when receiving mail, and listens to port 25, Facebook Messenger works on its own protocol MQTT and listens to port 1883, Telegram works on its own protocol MTProto for the implementation of cryptography, encrypted messages transmits via HTTP protocol and listens to the corresponding port 80, WhatsApp works on XMPP protocol and listens to port 5222. I2P, Tor, BitTorrent, Bitcoin are also protocols, which, being implemented in the TCP/IP protocol stack, allow you to create decentralized (peer—to—peer or hybrid) networks, and store and transfer information without the need for a unified server.

5

Screen culture

Based on the prevailing mode of data transmission (one might say, *protocol*), culture can be broken down into epochs: oral, written and screen.

Oral culture (pre-written) — a set of manifestations of oral speech, supplemented by intonations, signs of mimics, gestures, clothes and in general appearance. Technically, if we consider oral culture as a stack of protocols (a system of agreements on the transmission of signals), then:
the medium of signal propagation — air,
the type of signal — sound,
coding is carried out through the language,
the transformation of the signal from the language of physics to the language of the nervous system is carried out through the ear.

An additional protocol can describe the visual meaning:
the medium of propagation — space,
the type of signal — electromagnetic waves,
the eyes are responsible for the transformation of the signal.

Manuscript culture — a set of manifestations of texts recorded on carriers (paper, stones, wood) in the form of graphic signs combinations. Text can be considered as an intermediate actant between people, a means of retransmission. In the same epoch, it is possible to include print culture as a more interactive and ergonomic way of creating and distributing texts. Print culture can be understood as an additional set of technical tools for the implementation of writing.

Screen culture is a set of manifestations of data represented by screen and styles of interaction with these data. Data can be defined as any screen content, be it speech, text, graphics, film, video, software, or user interfaces. Oral speech is included here with a certain degree of conditionality — when a smartphone or computer plays some sounds (including speech), we perceive it as a talking screen, which we look at and talk to. Usually the screen culture is understood as a set of works of cinema and, to a lesser extent, television. In this text, the screen culture should be understood more broadly as the culture of any interaction with the screen in general — first of all, with the screen of a smartphone and a computer monitor, as well as to include all screen representations of documents, tables, drawings, sounds and screen metaphors (folder, file, desktop, menu, cursor, icon, window, tab, button).

Since the interaction with the screen is an interaction with a technique that uses machine languages that a human being does not understand, it is necessary to have an intuitive language to represent machine states. This language is a set of screen metaphors implemented in the form of a user interface.

Media is an intermediary that transmits information. To talk about three cultural epochs is to talk about media. Oral speech, a book or a screen are the rules of data interpretation and the intermediaries who carry out their transfer, storage, coding. The evolution of cultural

epochs is the evolution of media, increasing the availability of communication. Media=interface.

The Internet carries out global communication of individuals within the framework of screen culture. The simplicity of data delivery with the help of all these intermediaries (screens and network devices) creates a situation of mosaic culture (clip thinking), when short blocks of information rapidly flicker in the flow of information conveyor belts. To some extent, this text is also a conveyor of such kind.

6

Interface

An interface — a boundary between two functional objects defined by a system of agreements; a set of means, methods and rules of interaction between elements of the system. Boundary between two systems using different languages (both in the humanitarian and technical sense of the word); the interface is the syntax of the language together with the keys to its interpretation, the translator from language to language.

Interfaces can be internal, i.e. inside the system to connect internal nodes and external, connecting the system with other systems.

For example, in the desktop inside the computer coexist: internal interfaces — socket (processor-motherboard), PCI (video card/sound card/network card-motherboard), DDR (RAM-motherboard), SATA (permanent memory-motherboard); external interfaces — Ethernet (internet network card-motherboard), USB (keyboard/mouse/smartphone/other-motherboard), VGA/DVI/HDMI (video card monitor), mini-jack (speakers/headphones/audio card-motherboard). Each component of the computer system speaks its own language and it is necessary to have agreements on translation and means of translation between them for communication with other nodes.

Such things as file format (mp3, docx, webm, jpg) are announcements of the language within which the data should be interpreted, i.e. what interface—translator (i.e. the program) to use. Compression (reduction of data volume) can be understood as a paraphrase of data with acceptable losses.

The internal interfaces are called intra-machine interfaces, the external interfaces are called inter-machine interfaces. Let's also set the equality sign protocol=interface. Stack of TCP/IP protocols can be understood as a set of interfaces, repertoire of languages implementing intermachine communication within the Internet.

Human-Machine Interaction (HMI) is the study, planning and development of interaction between people and machines. The long-term goal of the science of human—computer interaction is to develop a system that reduces the barrier between the human cognitive model of what a person wants to achieve and the understanding of the machine's tasks.

Human-machine interface — engineering solutions providing interaction of a person with the machine controlled by a human being. The term is used to describe the interaction with any technical object.

User Interface (UI) — provides interaction between a user and hardware and software components of a computer system. GUI (Graphical User Interface) acts as a form of user interface, where interface elements are expressed in the form of graphical metaphors, and also includes the concepts of point-and-click, drag-and-drop, etc. Other examples of user interfaces may be:

Character User Interface (CUI), where all data is represented as a set of characters (letters and numbers);

Command Line Interface (CLI), where all interaction with the machine is limited to sequential input of commands and output of the machine results. A device such as a teletype device also used a text-based interface, but the screen role was played by a printer that outputted the information;

Voice User Interface (VUI), where interactions are made by voice;

Gesture Interface, where the signifier for interaction is a gesture (stroke). By gesture interfaces we will understand the touch interface, although strictly speaking, an interface like point-and-click that assumes a mouse is also a gesture (mouse gestures). The key feature of this interface in the absence of a cursor is that it no longer needs a mouse intermediary to deliver the pointer to the interface element, now the finger itself is a pointer, and the interface elements can be accessed directly. This makes such interfaces extremely ergonomic and intuitive (for example, physical intuitions such as scrolling inertia are used), because a person controls hardware through direct manipulation of interface elements.

If we understand communication as an information exchange and interaction as an action exchange they become indistinguishable in the gesture interface, synthesizing the interface control and information output, merging the input device and output device, *making communication tangible*.

It should be noted that voice and gesture interfaces are more like add-ons above the graphical or text interface, but these input systems are completely changing the style of interaction with the machine.

The disciplines studying communication of the person and the machine:

ergonomics — a science about psychological and physiological principles of designing of products, processes and systems which purpose is reduction of human error and increase in productivity at interaction with them;

usability — ergonomics of software; a set of methods for more effective communication between man and machine;

interaction design — a discipline about designing and planning of interactions of the user and any technical essence;

user experience (UX) — is the perception and response of the user resulting from the use of the technical subject.

All of these disciplines aim to synchronize human and machine language by making user friendly techniques.

Speaking of semiotics of intra-machine communications, each specific interpretation of specific 0 and 1 is conditioned by a specific switch topology. In other words, machine instructions are not conditional, but a set of 0 and 1 which inevitably causes an avalanche of switches with a certain result. If the sign is an agreement on attributing to the signifier signified, then we can speak about semiotics not quite in the sense when we speak about semiotics of culture or any more complex phenomena. Semiotics manifests itself in its purest form at higher levels of abstraction, for example, in programming languages starting with assembler and above, where the connection of the signified and meaning is absolutely conditional and is a constructed agreement. Therefore, we can say that semiotics manifests itself the more strongly the less we can trace all the switching operations and take into account the entire switch topology, considering the functional block or the whole computer as a black box. Hardly there is a possibility to describe all avalanche of intermachine interactions and communications when we simply ask a question to the search system in the Internet. The Internet is a highly organized society of machines that speak many languages, and the result of their work is the result of this communication and translations from language to language.

It is necessary to include a human being in the semiosis of the computer network, considering him an active part of the system. If language is a system of agreements on interpretation of signs, then the protocol/interface is also a language. If each functional block speaks its own language, then each one has its own semiotics. Interaction of the machine with the human being can be considered as multiple translation of human language into intra-machine and inter-machine languages, and then back into the human language. On an example of scheme TCP/IP, it is possible to build up additional level of human-machine communication:

Human—Machine—Net—Machine—Human
or
User—UI—HTTP—TCP—IP—Ethernet—IP—TCP—HTTP—UI—User
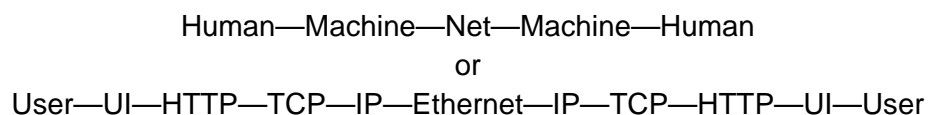
The human-machine communication scheme and the machine with network interfaces are the most interesting, as the machine without the Internet becomes a highly specialized one. What will be left of the functionality of your computer or smartphone, if you turn off the Internet?

The user interface acts as a translator from the machine language to human language; the style of interaction, defined by the type of user interface, depends on how well they understand each other.

The user, seen here as a network node, can be imagined as a kind of computer with its own functional blocks (e.g. organs) and internal and external interfaces. Actually, it is now absolutely obvious that all human senses are interfaces, translators from the language of the environment to the language of nerve impulses, allowing to interact and communicate, in particular, with other people and machines.

A separate cell is not a human being, a separate human being is not a society, a separate transistor is not a computer system, a separate computer system is not the Internet. By uniting people into a society, we can also unite machines into a society of machines (despite the fact that the word "social" usually refers to the human, we will understand this

word as "common", something that aggregates something with all internal connections). The Internet can be understood as an implant connecting human systems (neural networking, human interfaces — eyes, ears) with a system of machines. Each request to the Internet network can be considered as a continuation of the human neural network operation, connection of a chain of neurons with a chain of computers.

There is a thesis that a computer does not store information, information is stored by a human being, and a computer only gives out a set of signs, which a human being perceives as information and interprets it; information as such does not exist without regard to living organisms; the carrier of information is a living organism itself. It can be counterbalanced by the fact that in the absence of a human observer everything displayed on the screen is meaningless (at least for the machine), but everything behind the screen (inside the machine) makes sense for the machine. If by information we understand some signal influencing the system, then even without the presence of a person inside the machine there are a lot of semiotic processes which influence the work of the machine, forcing to react different nodes of the machine, so to assert that the computer does not store information is wrong.

If you take a simple microcontroller fire alarm system, it will consist of temperature sensors, the speakers and the microcontroller itself. The microcontroller has a program that interprets the data from the sensors. If the normal temperature set in the program is exceeded, the sensor gives a signal to the speaker. Then we can say that this machine has an umwelt, it "sees" some temperature range through the sensor, acting as a sense organ, and can interpret and respond to it. If you put this machine on the network so that it can transmit a signal to other machines and notify them of a fire, then the communication between them will take place within some interface that allows different machines to interpret the data in the same way, and here we can talk about the *semiosphere of the machines*. Further, if the fire alarm reaches the final firefighter's vehicle, it translates the alarm into the language of the user interface (accordingly, entering the information into the human semiosphere) and represents it on the monitor screen of the firefighter on duty; here the user interface plays the role of a junction between the semiospheres.

In gesture interfaces, it can be said that the screen is an organ of sense, reacting to pressure and gestures in certain areas of the screen. When looking at the screen, we can see the boundary between the semiospheres.

Since computers are now mainly used for the production and consumption of cultural content (texts, images, videos, audio, websites), they act as a cultural interface, i.e. we can speak human—computer—culture interaction when computers represent and allow interaction with cultural information. In the same vein, for example, we can understand a book as an interface to texts and a gallery as an interface to works of art. In accordance with this, the scheme can be finalized:

Human—Machine—Network—Culture—Network—Machine—Human
or
User—UI—HTTP—TCP—IP—Ethernet—Culture—Ethernet—TCP—HTTP—UI—User

Culture can be seen as an interface between people, an impressive stack of protocols governing languages of communication, including all legal or ethical standards of conduct.

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