From stage to brain: Montage as a new principle of scientific narrative

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Abstract. German Dadaists, Italian and Russian Futurists and Constructivists created in their experiments multi-medial orthopedic bodies as products of collage and montage. Sergei Eisenstein, who was influenced by these experiments, organized his theatrical productions as a chain of independent fragments capable of entering any possible combination/recombination and labelled this method "montage of attractions". He used the same montage principle not only for a new theatrical or cinematic narrative but also to conceptualize the expressive movement of the theatrical or cinematic body created on stage and on screen. Finally he conceptualized montage not only as a means of conveying movement, but also of conveying a way of thinking. This inspired him to create a new form of scientific narrative in his two unfinished books. The subject to be analysed in the first book from 1929 – montage – inspired him to look for a new structure by organizing different texts in the form of a sphere. This form defined the method of writing his second project on the theory of the arts as a hypertext. Eisenstein gave this book the title *Method* (1932–1948).

Keywords: montage, collage, expressive movement, forms of nonlinear scientific narrative, spherical book

Montage could be seen as a new episteme at the end of the 19th and the beginning of the 20th centuries. The ideas of segmentation and combination/recombination of elements defined the mode of studying and conceptualizing visual perception (Helmholtz), the perception of time (Bergson), movement (Marey, Muybridde)

and psyche (Herbart, Freud). The method of montage was introduced as a new mode of production and used in the different arts and media: literature, painting, architecture, music, theatre, and film. Cubists, Futurists, Dadaists, Constructivists, and Surrealists followed different logics in combining the fragments. The time/space structures – and in this way the narration in theatre, literature, and film – were conceptualized in a new way.

This principle was applied to the theatrical body as well, a new "orthopedic body" created on canvas and on stage as a product of collage and montage. Then the movement of this body was understood as a free combination of independent kinetic entities. Finally Sergei Eisenstein, who conceptualized the expressive movement on stage and on the screen in this way, extended the principle to another dimension and developed a new scientific narrative based on montage.

1. Prosthetic bodies

Fantasies about prosthetic bodies in the Russian avant-garde produced strange pictures. It was not the functional extremities and work instruments – like hands and legs – that were replaced by perfect mechanized prostheses, but the head, eyes, stomach and genital organs; thus, those parts of the body which are connected to thinking, perception and desire. In El Lissitzky's self-portrait from 1924 the eye is partially replaced by a compass. On a 1924 collage by Umbo that represents the famous reporter Egon Erwin Kisch, a photo camera is pasted instead of an eye and the legs are replaced with bicycle wheels. The brothers Sternberg used exactly this part of the collage in their poster for the Russian release of Walter Ruttman's *Berlin. The Symphony of a City* (1929) without referring to the source. The camera lens triumphed, and Dziga Vertov's "Kinoki", Cine-Eyes, freed it from the enslavement by the imperfect human eye.[1]

The measuring and optical instruments replaced the eyes, the head became an empty container to be filled with calculating machines and telephones, and pleasure did not rely on organic energy sources but was displaced by a machine. These motifs circulate in Russian plays, films, and short stories and transform the human beings into joyful apparatuses that move freely between inorganic and organic. Similar fantasies can be discovered in some German plays, films and texts. German artists were inspired by Russian pictures and the Russians by the similar images in Germany, even if they knew of each other only through hearsay.

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[1]   Vertov (1988: 91) made the suggestion "to emancipate the camera which has been pitifully enslaved and subjugated to the imperfect and none too clever human eye".

In 1920, John Heartfield and George Grosz presented an "electro-mechanical doll" or, as they named it, a "mechanical artwork": the statue "The Middle-Class Philistine Heartfield Gone Wild", which was dedicated to Tatlin. The concept of a "mechanical artwork" appears here for the first time, and its origin is connected to Soviet Russia, although the artists "constructed" a German citizen. Tatlin's electro-mechanical sculpture consists of a tailor's dummy, whose head, knee, genitals and arms are amputated and replaced with spare parts: a light bulb, a bell, a revolver, a fork, screws, nails, a letter and a number on the breast, and a Prussian decoration on the bottom: a human being as a complete prosthesis. Raoul Hausmann's photomontage (actually a watercolour with pieces pasted on it), "Tatlin at Home", also from 1920, displays a "*homo orthopedicus*" stressing similar motifs: some "machine-art" – a measuring instrument, a ship-stern and a propeller – originates from the brain of Tatlin.[2]

Two years later, the Russian writer Il'ja Ehrenburg published in Berlin *Shest' povestei o legkich kontsakh* (*Six Stories with Easy Endings*; Ehrenburg 1922). In the first story, titled "Vitrion", he portrayed Vladimir Tatlin as the artist Belov. Belov creates an artificial human being Vitrion from wheels, iron, triangles and cylinders; it appears as an attraction in the circus and begets a son with Belov's beloved. El Lissitzky provided the book with illustrations. A collage completed in 1917 accompanied "Vitrion"; it portrayed an artist with a compass instead of eyes. El Lissitzky used a photo of Vladimir Tatlin for it. Later the collage was dated 1921/22 and captioned "Tatlin at work on the Monument to the Third International" (Nisbet 1993).

George Grosz drafted three "orthopaedic bodies" as illustrations to Ivan Goll's play *Methuselem, or the Eternal Citizen*, published by Gustav Kiepenheuer in 1922 and staged in 1924 in Berlin with Grosz's sets. The human machines and automated people moved on stage as electro-mechanical artworks; one of them was Felix, "the modern human being made of ciphers. Instead of a mouth, he carries a copper sound-tube, instead of a nose, a telephone receiver, instead of a forehead, he had a typewriter, and over it antennas that transmit every time he speaks" (Goll 1966: 21).

Why do the German Dadaists link their creation of mechanical statues to Russians, whom they hardly know (Züchner 1995: 119), if the idea of the worker as a part of the machine was realized in the United States, in the automated conveyor belt system installed in Chicago's slaughterhouses and improved by Henry Ford at the beginning of the century, and the prosthetic industry boomed precisely in Germany during and after World War I? Perhaps the achievements of American and West European industry were functional, but Soviet Russia worked on utopian projects that were hardly realizable, such as Tatlin's monument to the Third

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2   These screws might refer to Velemir Khlebnikov's "Ode to Tatlin", written in May 1916 and portraying Tatlin as a "clairvoyant of winged screws" (Khlebnikov 1986: 104).

International (1920). This tower was actually the most perfect new human being: a living machine with an interior existence in which a radio station, a cinema and a telegraph were providing the organism with the rhythms of time. El Lissitzky's collage, made for the poster of the International Hygiene Exhibition in Dresden in 1930, can be seen as a realization of this vision of a new human body with the breast replaced by a radio-tower.

The metaphysical spirit of Grosz's doll, Hausmann's image of the artist's head filled with screws and a lens instead of an eye, recall the figures of mechanical theatre. Electro-mechanical dolls or electro-mechanical prosthetic bodies can be connected to the older ideas about puppets and dancing automatons. Filippo T. Marinetti was the first who displayed interaction between actors and electric dolls in his play *Poupées Electriques* (*Electric Puppets*, 1905), staged in 1909 under the title *La donna è mobile*, in 1913 under the title *Elettricità sessuale* (*Sexual Electricity*), and in 1925 as *Fantocci elettrici* (*Electric Puppets*). The electric dolls were seen as an erotic stimulant. That could be attributed to a new invention: the electrical production of pleasure though a new apparatus, an electric vibrator. This new invention was praised at the Parisian World Fair in 1902. The electric vibrator was provided with a battery and meant for use by both sexes. Some doctors even opened electric "operating theatres", featuring the new appliances (cf. Maines 2000). Later, the sad post-war necessity of replacing lost body parts began to affect peace-time life and especially pleasure: Magnus Hirschfeld displayed his collection of masturbation machines after opening his Institute for Sexology in July 1919, and Wilhelm Reich started to work on his orgasm machines. In 1926, Andrei Platonov wrote the story "Antisexus", in which he reported the invention of a new apparatus that can improve sexual pleasure with the help of a mechanical device and set an end to the irrationality of sex. "An unregulated sex life is like an unregulated soul – unprofitable, suffering and ill [...] intolerable in the age of the scientific organization of work. The new appliance helps the human being to remove sexual excitement, to measure his pleasure rationally and to reach mental harmony so the organism is not exhausted [...] our goal is the mental and physiological fate of our consumer, who controls his sexual satisfaction by himself and holds everything in his own hands, manipulating the corresponding regulators. We have reached that" (Platonov 1989: 170).

Not only was the production of sexual pleasure transferred to machines. The theatre, searching for new forms of movement, replaced the organic with the mechanical. The theatre of Russian Symbolists revived an odd puppet theatre with living actors.[3] In addition, the new choreographers, who worked with the segmentation of

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[3]   The concepts of Russian symbolists were influenced by Gordon Craig's idea of the actor as the super-marionette, by Heinrich Kleist's essay about the puppet, and the new philosophy of Schopenhauer that turns the human being into the marionette of history; this concept was absorbed by Vsevolod Meyerhold (Meyerhold 1969).

bodies and of movement, enlivened the idea of the human being as made up of apparatuses. Alexandre Benois, who wrote the libretto and made the stage design for the production of Stravinsky's ballet *Petrushka* (staged by Diaghilev's Ballets Russes in Paris in 1911), speaks about his hero as an "animate machine" (Benois 1990: 522). In December 1913 Aleksei Kruchonykh, Mikhail Matiushin and Kazimir Malevich presented in Petrograd the first futuristic opera *Victory over the Sun*, for which Velemir Khlebnikov wrote a prologue. The opera displayed life after death (of the sun, of the old understanding of the world) as well as a new concept of the human being, equipped with a new language, new movement and new perception of time and space. The human being was transformed into a prosthetic body driven by elementary needs and unifying some organic parts with mechanical ones, for which the only source of energy was important, and this source was detached from the sun. The heroes were not conceived as machines, but Malevich's outfits transformed them into a kind of machines, knights in Futurist armours. The limbs, the torso and the head were detached from one another through costumes made from stiff cardboard. This encasement was stressed by asymmetrically distributed geometrical shapes and colours. The limelight dismembered the figures in the darkness even more and cut apart their movements, making them appear abruptly disintegrated. The actors wore masks that resembled gas masks, as Kruchonykh noted: "*Likari* (actors)" worked, he said, "like machines", and the globe-trotter moved on the wheels of an airplane (Bauermeister 1983: 51). The influence of these costumes could be traced in two Soviet films produced in 1925: in *Aelita*, Aleksandra Ekster copied the costumes of "likari" for the slaves on Mars, and in *The Adventures of Oktiabrina* two clowns moved on the wheels of an airplane.

These experiments went further: on May 18, 1917, Diaghilev's troupe presented *Parade* in Paris, and in 1919 Oskar Schlemmer began to work on his *Triadic Ballet*, shown to the public in 1922. The costumes that Picasso and Schlemmer drafted enclosed the bodies of the actors in stiff boxes, altering not only the body but also its movement, and transformed the dancers into animate apparatuses (Rothschild 1991: 51). Picasso's costumes were copied immediately by Grigori Kozintsev for *Marriage* (1922), the first production of the FEKS, the Factory of the Eccentric Actor, featuring machine-people. An American bride Miss Agatha, a music hall star, travels to Soviet Russia in order to find a man to marry. Three mechanical applicants appear before her: a steam-driven, an electricity-driven, and a radioactivity-driven bridegroom. The fourth is Charlie Chaplin who jumps off the screen. The bride chooses him (Kozintsev 1984).[4]

All the figures were "electric". Agatha was a beautiful machine-like revue girl, who combined efficiency, rhythm and precision. Her corporality was mechanized,

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[4]   See also Trauberg 1991: 119–122 and Bulgakowa 1996a: 83–99.

and her movements had the smoothness of transmission belt (this picture was developed by Siegfried Kracauer [1995] in *The Mass Ornament*). This machine-girl, "who ruled men at home precisely as machines ruled them at work", did not evoke the negative sides of sexuality nor the negative sides of mechanical production (Schütz 1988: 133). All three bridegrooms were half-human beings, with energy generated by different inorganic sources. They were perfect pleasure machines offering their love services. These erotic machine-men are outclassed by Charlie Chaplin, who lives in the empire of electric shadows. He is also a half-machine and a half-human. Since he exists only in connection with his picture produced by an electric ray of light, he is an embodiment of the dream-machine, like film itself. In the play, he is murdered and then experiences an electric resurrection.

While many Soviet magazines report on Čapek's play *R.U.R.* (1920, Russian translation 1924), the FEKS wrote *Edison's Woman* (another title *The Electric Woman*). The idea recalls some literary sources like Auguste Villiers de L'Isle-Adam's novel *L'Ève future* (1886, Russian edition 1911), a project of Vertov's, who declared in 1922/1923 in several manifestoes that he would create a new "electric Adam", or the poem of Vadim Shershenevich "The adventures of an electric Harlequin" (1921/22). The FEKS could not realize this project at the theatre and tried to adapt it for the screen. Their script describes the creation of an artificial human being and the transformation of a living being into a machine: Edison constructs an electric woman from different disparate elements. By chance, an excerpt of a Soviet newspaper falls into the retort, and the new homunculus is a convinced Communist who names herself Oktiabrina. She flees to Soviet Russia and travels to the construction of the first hydraulic power station. When Oktiabrina discovers that a caisson is missing, she transforms herself into the missing part.

In 1923–1924, human bodies connected to machines appeared as "theatrical apparatuses" and paraded across the Russian stage. In May 1923, Vladimir Tatlin staged Velimir Khlebnikov's *Zangezi* as an "electro-mechanical show". In the same year, the painter Yuri Annenkov designed the production of Georg Kaiser's play *Gas* (directed by Aleksandr Khokhlov), also called an "electro-mechanical show", in which bodies were equipped with telephone receivers and levers. El Lissitzky conceived a new production of *Victory over the Sun* as an "electro-mechanical show". He elaborated the figures and sets for this futuristic opera in Vitebsk in 1917–1918, then continued his work in Moscow in 1920–1921. The latter became known first, as he went to Germany, and his publisher in Kassel brought the drawings out (the "Kestner-folio"). Where Malevich used black cubes as a sign of the new space sensation, El Lissitzky installed a double spiral signifying an open future.[5] This theatrical machine is populated by electrical puppets. They move freely,

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[5]   Hubertus Gaßner (1999) compared Malevich' and Lissitzky's versions.

no longer needing the energy of the sun, because they have energy of their own. The globetrotter slides over spiral circles, the other anthropomorphic machine-bodies also move by means of electro-mechanical appliances. The engineer (El Lissitzky) manipulates the puppets, switches on the radio megaphone; he brings into theatrical space the sounds of railway stations, the roar of the Niagara Falls and the hammering of a rolling mill (Lissitzky 1978: 91). Thus, he is the master of the machinery including the dolls and the space.

Unlike Marinetti's electric erotic dolls or Čapek's android robots (the former connoting desire, the latter performing utilitarian functions), the electric beings of the FEKS and El Lissitzky are primarily energy machines with an ideological alignment. In Lissitzky's version, the source of energy is situated outside the body, the sun is replaced with a new electric energy; the machines and human beings are independent from it. The sexual energy of the FEKS's bridegrooms also comes from mechanical sources, an electric shadow is turned into a love object, and if a mechanical part of the machine for energy production is missing, an organic body (Oktiabrina) can return to the world of machines. The image of Oktiabrina was inspired by the mystified image of the conveyor belt producing something living out of dead parts. In the European, primarily German, imagination, Ford's factories were coded as a "birth clinic without pain", the birth of cars was seen as a symbol of resurrection (Schütz 1988: 127). With their female figure, the FEKS recall a mechanized, Americanized, and positively perceived Frankenstein, and with their resurrected Chaplin – an "electric Christ".

Russian Futurists and Constructivists understood the connection between men and machines as not merely functional. If the Italian futurists introduced electric dolls as a perfect erotic stimulant that promises an exciting electric sexuality, the Russian Futurists with their electro-mechanical inventions moved into areas that seemed to be reserved for religion, mysticism, philosophy and psychology: into life-energy, resurrection and perception by eliminating the fear connected to visions of the dismantled body. The theatrical fantasies of Kruchenykh, El Lissitzky or the FEKS liberate mechanization and modernization from being perceived as demonic. Machines triumph as a sterile, eternal force without negative human side effects like death and frightening sexuality. Mechanization means isolation and elimination of all negative human sensations, perceived as faulty, imperfect, transient. Consequently, the body can overcome death. The opera *Victory over the Sun* deals with the motif of resurrection in a tragic way, the FEKS's *Marriage* and *Edison's Woman* do so comically.

These figures recall also the biomechanics of Vsevolod Meyerhold and his idea of the actor as machine. Marinetti saw a greater stimulant in the electric Eros. According to Meyerhold, the mechanical movement frees Eros from the

animalistic drives: previously the body was our enemy, our erotic desire and our impotence to resist it were painful. Now the body is disciplined and transformed into a machine. This machine eliminates corporeal individual feeling, yet it secures an undreamt of potential for energy in life and love.

2. Movement

Not only the body was envisaged as a montage of mechanical and organic parts: the movement of this body was born from the idea of montage. Vsevolod Meyerhold, Sergei Eisenstein, Boris Ferdinandov used the montage principle when elaborating their schools of expressive movement (biomechanics, bimechanics, metro-rhythm).[6] They all saw rhythm as a mediator between nature and art that safeguards the aesthetic perception and helps to overcome fragmentation.

Meyerhold's theatre develops a radical program of utopian transformation and modernization of body language and defines itself as the "laboratory of the new gesture". This body language was to be tested experimentally in the theatre and then carried over from stage to everyday life. Meyerhold insisted that his new system for training actors was a *science* and called it biomechanics. He recognized the widespread national inability to utilize legs and arms both in art and in everyday life. The solution to this problem was the modernization of gesture. He instructed actors in American dynamism – the opposite of Russian sluggishness – and adapted the lessons of industrial labour to the theatre. Friedrich Winslow Taylor had elaborated a perfect system of avoiding unnecessary movement for the workers on the conveyor belt in Ford's factory. He broke each job down into its constituent motions, analysed these to determine which were essential, and timed the workers with a stopwatch. With superfluous motion eliminated, the worker, following a machinelike routine, became more productive. Meyerhold declared that he was the Taylor of the theatre. He dismantled the movement of the body into small parts and created a system of exercises for these kinetic elements. The work of the actor was the work of a mechanism. Its virtues were precision, conciseness, repetition, and synchronism. Meyerhold's programme is oriented towards a precise rhythm dictated not by the biological body, but by the mechanism. With special training this rhythm helps the actor master his own body as a machine. The human body should compete with the machine in terms of speed and precision.

Sergei Eisenstein went through Meyerhold's school of biomechanics and suggested his own concept of the expressive movement called bimechanics. He formulated the main ideas in the following way:

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6   See Bulgakowa 1996a.

4. *Breakdown of movement into its pseudo-primitive primary component elements* for the audience – a system of shocks, rises, falls, spins, pirouettes, etc. – for the director to convey to the performer the precise arrangement of the motor version and to train these inherently neutral expressive (not in terms of plot but in terms of production) motor units.

5. *Assembly (montage) and co-ordination into a temporal schema of these neutral elements of the movements in a combination that produces* action.

6. Obfuscation of the schema in the realisation of the difference in execution that exists between the play of a virtuoso with his own individual reordering of rhythm [pereritmovka] and the play of a pupil metrically tapping out the musical notation. (Eisenstein 1994: 50)

Walter Benjamin's (1999: 94) ideas about Chaplin's motion seemed to resonate with those of Eisenstein:

Chaplin's way of moving [Gestus] is not really that of an actor. He could not have made an impact on the stage. His unique significance lies in the fact that, in his work, the human being is integrated into the film image by way of his gestures – that is, his bodily and mental posture. The innovation of Chaplin's gestures is that he dissects the expressive movements of human beings into a series of minute innervations. Each single movement he makes is composed of a succession of staccato bits of movement. Whether it is his walk, the way he handles his cane, or the way he raises his hat – always the same jerky sequence of tiny movements applies the law of the cinematic image sequence to human motorial functions.

Exactly this principle was used by Fernand Léger. First he de-composed the figure of Chaplin in the illustrations for Goll's poem "Chapliniade" (1920), then he developed several versions of an animated cartoon *Charlot cubiste* and created a series of painted wood panels for it (1923); finally he realized a part of this animated cartoon with the disintegrated bits of Chaplin's puppet in the opening and closing sequence of *Le ballet mécanique* (1924). Chaplin's body falls apart as the kinetic entities, the "staccato bits" of its movement, do. The segments can be unified and animated only through montage.

The segmentation of the body and the montage of the kinetic entities of its movement create a new body on stage. The value of the movement does not lie in the mimicry of everyday gestures, but rather in the degree of its infectious capabilities regarding the audience. In his bimechanics Eisenstein relied on an effect discovered by the English physician William Carpenter. If you observe somebody falling down or performing a physical effort, your muscles repeat the same contractions, naturally much more weakly. The most interesting case would be an

expressive movement realized in the motor conflict between the tendency of the whole body (which responds to instincts and exposes reflectory movements) and the retarding hands or legs (corresponding to the conscious volitional retardation that is realized through the preserved inertia of the extremities).[7]

Eisenstein used Rudolf Bode's system of training (*Ausdrucksgymnastik*) and Ludwig Klages' theory of the expressive movement that he understood as a conflict between the movements of the will and the reflex movements. In this theory Eisenstein rediscovered an opposition of the Schopenhauerian body (a body of the will) and the Kleistian puppet (a body without will) that had fascinated him some years earlier. In his concept of the expressive movement (understood as a montage and co-ordination of the neutral kinetic elements) Eisenstein brought together many mutually exclusive ideas: the ideas of Taylor, Meyerhold, Pavlov, Carpenter, Schopenhauer, Klages, and Kleist were pushed toward a utopian synthesis. In Eisenstein, montage is always a synthesizer.

Film allows to operate and to combine the kinetic entities even more freely. In *Strike* (1924), Eisenstein developed a highly unusual montage of the phases of movements. In *The Battleship Potemkin* (1925), Eisenstein forced immobile objects like statues to move, demonstrating the montage nature of cinematic motion. He included a montage sequence of three stone figures – one sleeping lion, one lion who has just woken up, one lion ready to pounce. The images follow each other so closely that it produces an illusion of motion and triggers a slew of associations. In *October* (1927), Eisenstein mastered the film medium itself: he had gone beyond the basic phenomenon of film, namely the illusion of movement. He no longer needed that illusion, since he could create movement in a different manner. To this end he used montage of extremely short, static shots of statues and things. Montage made these static objects dynamic and triggered the movement of *thought*. This discovery gave him a sense of total freedom. He could now control not only reflexes and emotions, but even dialectical thinking. He had invented a new language that visualized thought and called his new theory "intellectual film". Not the mechanical illusion such as the movement of the film strip through the projector with a certain speed, but a combination of static images brings the fragments to life, animates them in a montage sequence. In Eisenstein's book *Montage* (1937) the connection of montage, body, motion and animation acquires a mystical and mythical status. Here, Eisenstein discovers deep mythological roots in the montage principle: Osiris, torn to pieces that were found and re-assembled by Isis, resurrects and becomes a life-death-rebirth deity. The same ritual is celebrated

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[7]   On Eisenstein's expressive movement see Bulgakowa 1996b. In this book I analyse the emergence of Eisenstein's theory from the different sources, including the starting point of his career: the theatre.

during the bacchanalia when the ecstatic women tear a goat, a totem of Dionysus, to pieces celebrating his death and the annual resurrection. In this book, Eisenstein looks for correspondences between various arts, and between art, the individual, and the cosmic in the metaphysical global totality. He assumes that the latter is based on an isomorphism between the human body and the cosmos. This isomorphism could be experienced ecstatically and metaphysically thanks to works of art, isomorphic with both, and in this way the duality of consciousness and existence can be overcome.

3. Montage and the way of thinking

The montage principle explored and conceptualized by Eisenstein in theatre and transferred to the new medium of film (capable of visualizing the development of human thought) enabled him to create a new form of scientific narrative. I mean Eisenstein's two theoretical projects, *The Spherical Book* (1929) and *Method* (1932–1948). In one of the projects, Eisenstein explores montage within different theoretical frames (reflexology, linguistics, music, dialectic) and offers a total framework for these discourses by taking the model of a rotating sphere, which enables transitions and guarantees multiple perspectives. In the second project, he examines modernity in its relation to archaic structures and analyses artworks as reified imprints of different mental structures, as collective dream images.

Eisenstein planned his first book in the late 1920s; he wanted to offer a comprehensive concept that attempted to break up the forms of fixing a theory usual in the 1920s, that is, a manifesto, an article or even a book. He did not want to provide a technical classification of montage devices, or the usual "my experiences in art", or a well-produced manual of how to write scripts and make films:

> It is very hard to write a book. Because each book is two-dimensional. I wanted this book to be characterized by a feature that does not fit under any circumstances into the two-dimensionality of a printing element. This demand has two sides. First it supposes that the bundle of these essays is not to be regarded successively. In any case I wished that one could perceive them all at the same time, simultaneously, because they finally represent a set of sectors, which are arranged around a general, determining point of view and aligned to different areas. On the other hand I wanted to create a spatial form that would make it possible to step from each contribution directly into another and to make apparent their interconnection [...]. Such a synchronic manner of circulation and mutual penetration of the essays could be carried out only in the form [...] of a sphere. But unfortunately books were not written as spheres [...]. I can only

hope that they will be read after the method of mutual reversibility, according to a spherical method – in expectation that we will learn to write books like rotating balls. Now we have only books like soap-bubbles. Particularly on art. (Eisenstein 1988: 344)

Some sections of the book were published as separate articles. What then was lost? In this 'cluster' of essays, montage is analysed in the framework of different systems: music, Japanese theatre, Japanese hieroglyphics, linguistics, reflexology, dialectic. As a consequence of the linear process of publishing and reading these texts, however, we can no longer perceive the permanent change in points of view and frame of discussion-and-analysis that seemed to be so important to Eisenstein at the end of the 1920s – which means, the most essential characteristic of the project that sets it off against the background of theory formation then and even today.

In the essays for *The Spherical Book*, which Eisenstein wrote in fast succession from 1928–1929, montage is explained according to various models. Montage is understood as (1) a conditioning method to create a chain of conditioned reflexes – as understood by reflexology ("Montage of film attractions"); (2) as a collage, a combination and recombination of different materials – as understood by constructivism ("Montage of attractions"); (3) as a system of oppositions, which produce meaning – as understood by linguistics ("Perspectives") and exemplified by Japanese characters ("Beyond the shot"); (4) as a hierarchical system with changing dominants – influenced by experiments with new music and Yuri Tynianov's verse theory ("The fourth dimension in cinema"); (5) in terms of the law of unity and the struggle between opposites – "The dialectical approach to film form", or as a synaesthetic procedure that forces the various senses – seeing, hearing, smelling, tasting – to communicate with each other ("An unexpected juncture").[8] According to the law of transition of quantities to a new quality or the fusion of opposites, montage is seen as a conflict between two pictures, which give rise to an invisible image. The dialectic jump at the interface of two material pictures must result in something non-material. Filmic dynamics is understood as the process of constant dialectic resolution (from photogram to photogram, from frame to frame). Nearly all concepts that Eisenstein introduces in this text (attraction, dominant, overtone, interval) are associated with different models of analysis and interpretation. In this book, the metaphysical symbolist, the vulgar Marxist, and the dialectician that are Eisenstein, all co-exist, side by side. Parallel to *The Spherical Book*, Eisenstein planned to write a psychoanalytical book about himself and the origins of his

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[8]   On *The Spherical Book* see Bulgakowa 1996b: 31–86. The German translation of Eisenstein's texts is available in Eisenstein 1989: 4–7, 29–42; the translations into English can be found in Eisenstein 1994: 33–59, 115–122, 138–194.

theory, *My Art in Life* – a further possible sector. The polarity of the positions sketched here, constant changes of points of view and dimensions, create a tension between the sectors for the principle of simultaneity was not to be abandoned.

It is the only project in which such polarity is admitted. This approach lifts *The Spherical Book* out of the traditional development of theory and impressively demonstrates the new theoretical mentality of the 20th century. At the beginning of the 20th century the world of closed holistic systems suffered a breakdown. A multitude of different types of discourse appeared that treated the work of art in its various aspects without aspiring to cover the whole. Totality as a utopia was passé, but one adopted the results of a single science as the worldview – according to old habits – and thus two modes of thought, the new and the old, were mixed together. *The Spherical Book* is a product of this approach. The first model is the most radical attempt at finding a unity that does not exist and can only be achieved in permanent change from one level to another, based on reinterpretation and a variable use of the incompatible sectors. Eisenstein offers a total framework for these different discourses by proposing the model of a rotating sphere, which enables transitions and guarantees multiple perspectives.

In *Method* he explores how consciousness functions via the imprints it leaves on art forms and art techniques. Eisenstein suggests that during ecstatic perception of a work, art will activate and provoke within the observer a shift to pre-logical, sensual thought, which breaks through rational consciousness like a jolt, as the unconscious does in Freud's model. Thus the structure of an artwork is perceived as a form that is equal to multi-layered consciousness, and the entire diversity of forms is viewed as an endless chain of invariants that stem from the basic trauma that consciousness experienced in the course of evolution, in transition from pre-logical to logical thought. Whereas in *The Spherical Book* the effect of art is explained with the help of Pavlov's conditioning, in this book the return to the basic (evolutionary) trauma secures the co-participation. Eisenstein notices a structural analogy between his concept and those of Marx and Freud: Freud seeks a basic substance to explain the human psyche and discovers a simple and universal conflict; Marx does this with the structure of society. Eisenstein also looks for a similar, basic, primary conflict in art, which he calls the "basic problem" (*Grundproblem*), and at first uses this as the title of the book. Starting from the assumption that there is a basic conflict between the layers of consciousness, the traces of which are captured in art forms, Eisenstein then proceeds to new conceptions of isomorphic structures and, finally, to a universal model of analysis through which heterogeneous phenomena can be described, structured, and investigated: cave paintings, Cubism, and 17th-century Japanese engravings, Hollywood films and the circus, ornament and musical counterpoint, Disney and Andrei Rublev, Joyce and the Elizabethans,

various acting techniques and the construction of plot in literature and film – by Shakespeare, Dostoyevsky, Dumas the Elder, Tolstoy and himself.

Eisenstein used the concepts of sensuality and rationality to describe different mental structures; sometimes he referred to Lévy-Bruhl's term of mythical "pre-logical thinking", but when Lévy-Bruhl was criticized, he exchanged it for "sensual thinking", which he found from Marx. Eisenstein studied the forms of this early thinking; he cited from books and accounts written by linguists, anthropologists, missionaries, ethnographers, psychologists: Lévy-Bruhl (*La mentalité primitive*, 1922; in Russian 1930), Heinz Werner (*Einführung in die Entwicklungspsychologie*, 1926), Ernst Kretschmer (*Medizinische Psychologie*, 1922; in Russian 1927), Johann Winthuis (*Das Zweigeschlechtswesen*, 1930), Marcel Granet (*La pensée chinoise*, 1934), Miguel Covarrubias (*The Island of Bali*, 1937), Rudolf Bilz (*Pars pro toto*, 1940). These studies analysed a diversity of rituals, practices, grammatical and morphological structures, symbols, myths, and folk tales. Their traces in language and behaviour are interpreted as distinguishing features of a specific mentality which does not differentiate between the internal and the external, the subjective and the objective, yet in which spatial relations and mimetic analogies have more meanings than time and causality. Similar traces and symptoms – slips of the tongue, mistakes, dream images – are used by psychoanalysts to explore the unconscious. Eisenstein follows the traces of this special type of thinking in behaviour, in creative processes and in the works of art. With his interest in archaic structures, Eisenstein is part of a general contemporary trend (following the same path as T. S. Eliot, D. H. Lawrence, Ezra Pound, Aby Warburg); however, it is neither the archaic *per se* nor the mythological practices of Stalin's and Hitler's regimes that interest him (although he does collect examples), but rather the modernist experiments in the arts, which he compares with examples from classical antiquity, the Renaissance, and the Enlightenment. Eisenstein regards the formalized structures of sensual thinking as a reservoir for the artistic devices. As a scientific frame of reference Eisenstein uses palaeontology, which investigates life in bygone periods through analysing fossils. Georges Cuvier, whose name appears in the very first notes for *Method*, played an important role in establishing the discipline of palaeontology and became famous for his reconstructions of extinct animals from fossil remains.

The double reading – a pre-logical, physiognomical one and a structural, logical one – of a fragment and of a trace (an image, a gesture, a metaphor, etc.) forms a base; it links the static image or subject to the (dynamic, evolving) story and combines two paradigms of thinking. These paradigms determine intuitive (irrational) and scientific (rational) knowledge, as Carlo Ginzburg pointed out in his concept of the trace and its interpretation.

The paradigms which determine intuitive and rational insights are foreground-ed by Carlo Ginzburg (1989). The first type includes the interpretation of a trail by a hunter, of symptoms by a psychoanalyst, and of clues by a detective. This type of knowledge is connected with a hypothetical paradigm of medicine, which always deals with symptoms and never with transparency. The exact, rational knowledge, worked out for science, excludes the individual view, for the latter makes mathematical classification impossible. In this case, what is interpreted is numbers and data, but not feelings produced by the senses, like smell or musical tone. This is why physiognomy and graphology, which belong to the first paradigm, lose their scientific status in the 20th century. However, when the statistical method fails and is unable to grasp the subject (in the case of criminology, Bertillon's measurements of criminals), a method of identification emerges that is based on traces (i.e., fingerprints), which reproduce the evidential paradigm. Semiotics, whose origins Ginzburg dates back to the 1870s, also belongs to this hypothetical world. Eisenstein follows this paradigm. He explores the sciences that do not provide exact descriptions – paleontology, psychoanalysis, graphology, physiognomy, ethnography, and anthropology – and with their aid he interprets gestures, intonation, and stories that are based on *pars pro toto*. Among the traces that Eisenstein attempts to decipher and classify are formal structures of language and thinking in images – pre-logical thought.

In one of the final chapters of *Method*, entitled "Circle", Eisenstein returns to his idea of a Spherical Book, and on September 17, 1947 he remarks,

> In 1932 I began to organize my theoretical notes on film (which I have been doing for fifteen years now), and I noticed that I dream of writing a Spherical Book, because for me everything is related to everything and everything passes over into everything. The only form that corresponds to this is the sphere. To [change] from one meridian to any other meridian. Since that time I have longed for this book, and now perhaps more than ever.[9]

The grounds for the amalgamation of Eisenstein's first and last project lie in the way he thinks and writes. He rejects linear logic and seeks new forms of text. The theory of pre-logical mental structures which are mediated by art forms emerges as a hybrid work.

Not only does Eisenstein analyse fragments, he produces text mainly in the form of fragments. The text consists of notes, diary entries, analyses and quotations

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[9]   Eisenstein Archive, RGALI (Russian State Archive for Art and Literature), Moscow. 1923-2-268, 37. The four numbers in the citation refer to the document's location. 1: Depository (*fond*); 2: Inventory (*opis*); 3: Administrative unit (*edinitsa khraneniia*); 4: page (*list*).

from scholarly literature and illustrated journals, pulp fiction, belletristic literature, and political commentaries. Text material by other authors in five different languages becomes a part of Eisenstein's own text, as do the glued-in pictures, photos, drawings, and pictograms. The fragmentary nature of the project even permeates the syntax, for parts of sentences are missing or marked with dots, brackets and dashes, which convey intonation and gestures. His text is also written in four languages (Russian, German, English and French) very often within one sentence: "*Приятно, однако, что this kind of stuff обычно входит ко мне par l'amour. That gives it a certain suavity, vigor, emphasis вместо академической сухости.*" The collage of the languages creates strange hybrids: the English words receive German endings like "high brow'ich."

As a gigantic collage of quotations and preliminary material, *Method* is very close to Benjamin's *Arcades*, a fragmentary encyclopedia of the 19th century. The similarity is based on the chosen subject of investigation and the new technique of montage of fragments, which results in a new quality and brings the work of theory closer to a work of art. Eisenstein and Benjamin both analyse modernity in its relation to archaic structures and the structures of dreams. Eisenstein sees artworks as reified imprints of collective dream images of pre-logical mentality; Benjamin sees the 19th-century world of objects, such as arcades, railway stations, world exhibitions, glass buildings, panoramas, department stores as a world of reified dreams. Benjamin sees himself as an interpreter of dreams, who attempts to decipher the language of 19th-century images.

This analysis forces both to follow another logic. When Benjamin begins work on *Arcades*, he keeps a protocol of his dreams, and experiments with drugs (Tiedemann 1982: 17). For Eisenstein, too, the ecstatic state is an important starting point. He compares this state when induced by art with being high on drugs or alcohol, or with schizophrenia. He analyses this state and understands his role thereby not merely as an analyst of dreams or pre-logic, but as an analyst of the imagination and human culture in its entirety, in which the 19th century is but one stage and art but one area. The ecstatic state induced by art is an important starting point for his investigation. The subject under study (the dream images) and the method of the ecstatic "illumination" obliged Eisenstein to follow a visual logic instead of a linear one. He constructs his book according to the associative principles of montage, which replaces traditional scholarly narrative. He seeks new forms for a book that should be closer to the associative, spherical, and labyrinthine thought structures, which to date have only found expression in modernist art experiments. The theory emerges as a hybrid work of an artist who was able to conceptualize a new form – a hypertext – before the appearance of a new medium for it.

The project was the theory of a modern artist who postulated that the basic principles of modernist art – fragmentation, montage, visualization, and rhythmic recurrence – determined a new form of writing and thinking and in this way revolutionized the theory and the form of its rendition. Eisenstein's theory acquired the qualities of an aesthetic product inspired by experimental prose, Cubist painting, or filmic devices. However, the modernist character of the unfinished book fragment, whose meaning becomes apparent in conjunction with the other fragments, collided with the totality of Eisenstein's claim to offer a universal theory that was to include all arts and all artworks.

But Eisenstein, a master of dialectical montage in film, carried this principle over into theory without hesitation. The selected quotations taken from a variety of sources and disciplines are self-exclusive, like psychology and psychoanalysis or mysticism and Marxism, for which Eisenstein finds a new, surprising context and new references, and attributes these new forms of writing and thinking to film. For Eisenstein, the advent of film was the prerequisite for creating a new kind of theory of art, which takes new forms and can provoke the reader, thanks to the analytical nature of film itself. Film visualizes and thus reveals the structure that remains hidden in other arts, and enables one to manipulate the direction, the attention, and the meaning that makes the analysis so productive. Close-up, double exposure, and reverse movement are film tricks, but Eisenstein understands them as reifications of figures of thought. Above all, these figures determine the thinking of the author. *Method* is a product of the visualization and cinematographization of thought.

Understanding Eisenstein's text requires special skills. The reader must move through the pages as if through the labyrinth of a hypertext, follow unmotivated changes of perspective and associative jumps, read drawings and pictograms, and, instead of a causal logic, follow the argumentation of the pictorial logic of the author; that is, the reader must read a scholarly study according to rules that are otherwise only applied to poetic texts or films. Eisenstein does not see this as any kind of rupture. He does not write linearly or diachronically, but spirally, spherically, and simultaneously; he writes like thinking often functions. The ideal form of this publication would be a hypertext which would retain the virtual simultaneity of all the references, yet would also make it impossible simply to follow the flow of the text. The double nature of the old and the new forms threatens to break the book apart from within. This makes reading the work both a tortuous and a fascinating experience, just as the author intended: that the beginning and the end should be reversed, that the contradictions be united, and that there be a symbiosis of information and deformation.

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Со сцены в мозг: монтаж как новый принцип научного нарратива

Немецкие дадаисты, итальянские и русские футуристы в своих экспериментах создавали мультимедийные "ортопедические тела" с помощью коллажа и монтажа. Сергей Эйзенштейн под влиянием этих экспериментов организовал свои театральные постановки как ряд отдельных фрагментов, которые можно было комбинировать и рекомбинировать, и назвал это "монтажом аттракционов". Этот монтажный принцип он использовал не только в театре или кино, но и для концептуализации выразительного движения тела на сцене или экране. Принцип монтажа был для него и способом передачи движения мысли. В двух последних незавершенных книгах он попытался на этой основе создать новый научный нарратив. В первой, начатой в 1929 и посвященной монтажу, он придумал новую шарообразную структуру для книги. Эта форма определила своеобразие письма Эйзенштейна в его последней книге, названной "Метод" (1932–1948), в которой он изложил теорию искусства в виде гипертекста.

Lavalt ajusse: montaaž kui uus teadusliku narratiivi põhimõte

Saksa dadaistid, itaalia ja vene futuristid ning konstruktivistid lõid oma eksperimentides kollaaži ja montaaži tulemusena multimediaalseid ortopeedilisi kehasid. Sergei Eisenstein, keda need eksperimendid mõjutasid, organiseeris oma teatrilavastused iseseisvate fragmentide jadaks, mida oli võimalik igati kombineerida ning rekombineerida, ning nimetas selle meetodi "atraktsioonide montaažiks". Sedasama montaažipõhimõtet kasutas ta mitte üksnes uue teatri- või kinonarratiivi puhul, vaid ka mediaalse keha ekspressiivse liikumise kontseptualiseerimiseks laval ja ekraanil. Lõppeks ei kontseptualiseerinud ta montaaži mitte üksnes liikumise, vaid ka mõtlemisviisi edastamise vahendina. See inspireeris teda kahes lõpetamata jäänud raamatus looma uut teaduslikku narratiivi. Esimeses, 1929. aastast pärinevas raamatus õhutas analüüsitav teema – montaaž – teda uue struktuuri otsingutele, mis seisnes erinevate tekstide sfäärilisse vormi organiseerimises. See vorm määras ära Eisensteini kirjutamismeetodi tema teises projektis, mis käsitles kunstide teooriat hüpertekstina. Eisenstein pani selle raamatu pealkirjaks "Meetod" (1932–1948).