On Architecture

**LEARNING
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PREFACE

The theme of the 8th International Conference ON ARCHITECTURE, entitled LEARNING ARCHITECTURE follows the basic concept realized and developed at previous conferences of a multidisciplinary approach to the topic of architecture. Whilst extending research and the importance of understanding architecture the Conference theme is exploring UNESCO Learning City platform. Starting from the seventeen sustainable development goals, in particular making cities and human settlements inclusive, secure, resilient and sustainable, the role of architecture is considered as the basic artifact of urban structure. In all important aspects to understand the contemporary city and the processes that determine it, to consider the position and role of architecture and urban design, as well as the contribution of art and science, through the analysis of best practice that advance the life of the city.

Some key themes that interest the organisers and Programme Committees are:

• Best practices - learning city revitalizes learning in communities, extends the use
of modern learning technologies and fosters a culture of learning throughout life
• Modeling the Future - modeling future architecture and design with environmental
and social implications,
• Smart Design - in architecture, urban design, street and home furniture, lighting
• Technology and Architecture - how the use of digital technologies transforms
the work process (BIM)
• Scientific research and architectural practice
• Innovative solutions in methodological approach and design in the use of materials
• Art as inspiration
• Playing City - gamification in urban design and town planning,
• Innovation in art, architecture, science, and technology in the digital age
• Innovation in information technology - improved use and user experience
• Challenges in Architecture and Urban Design - Facing the Climate Crisis,
Sustainable Practices

Editor

SPECIFIC INCOMPLETNESS: UNLEASHING THE POTENTIAL

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ABSTRACT

The conceptual shift in architecture to fragmentary spatial and formal flows emphasizes the existence of a void based on these internal relations. Architecture is a dynamic process, one that is open to possibility and amplified capacities. The goal is to make the visible invisible and invisible visible, through reflection and the virtual. In the virtual, the openness of form outlines its own shape through code – through the abstraction of natural and generative processes. This means that the unpredictability of design intends to approach to nature itself by pointing out the complex intricacies intertwined within its being, leading to a flexible view of its own material and a flexible concept of material itself. In this sequence, a new natural can be understood as the diversity of an open unpredictable world and as the constant disintegration of materiality in time. Within the limitless creative openness of the digital process, the natural is understood as contingent and turning towards the unexpected, impulsive or accidental. The fragmented nature of virtual relations in its disharmony creates a new (de)coded reality, simultaneously bringing us back to the imaginary that is always in motion, in disharmony and in asymmetry in order to release its creative nature. Change is found within intensified potentials – in all its specificity in relation to everything else, as well as itself.

Keywords: fragmentation, incompleteness, impermanence, alteration of form, potential

INTRODUCTION
BETWEEN VANISHING AND EMERGING

If we look at fragmentation as a specific model of reality that outlines the potential of the digital, then we can look at the digital, not as a representation of what will occur after a change, but what it is at a given moment - including all its potentials that develop gradually in relation to circumstances. In such a system, the virtual is not contained in any specific exiting thing or state, but is instead initiated in a transition from one state to another - formally and/or metaphorically. This literally means that if we understand virtual space, in the context of Deleuze and Guattari, as a model for reality characterized by an openness to create new potential, the reality of the virtual space becomes the reality of change and events. Thus, if the virtual is a change in itself, then it can only be seen as a path to abstraction (Massumi 1998, p. 16-24). Abandoning possibilities, as a safe haven for design, by turning to potentials means opening architecture to the new and unexpected. By placing the concepts of incompleteness and insufficiency on the same plane, as something that eludes precise definition, we remain grasping for the possible. As a result, they remain in an ambivalent relationship to their totality and the inability to fulfill it. The dual nature of all things raises the question of exceeding one's own reality, taking for one's object the *process* itself and the production of new conditions. Between disappearing and becoming, the impermanence of form leads to the possibility of a dual existence of form and the capacity for something new. This sort of meta-stability in which every moment of stability and equilibrium is, simultaneously, the cause of tension- excludes one another, creating only temporary synergy.

FORMAL UNCERTAINTY

The shift from stable architecture towards temporary and fragmentary structures of fluid, spatial and formal boundaries emphasizes gaps conditioned by relationships that become visible through the development of form (Allen 1997, p.24-31). The integral form obtained by combining elements remains unclear and flexible, as the internal laws of the elements remain consistent but not absolute in their mutual relations. The idea is to position architecture as a dynamic development process, and the field itself - as an environment open to possibility and flexibility. Therefore, the intersection and modification of differing elements implies an organizational structure from the individual towards the general. This is an open field of potential that enables each element to retain its own formal and/or spatial characteristics. The materialization of change presumes separation from static and fixed forms in which the *metaphysics of real matter* has been replaced by *the metaphysics of material* (Allen 1997, p.24-31). Spatial and temporal relations become relativized; recognizing fragmentation as a realistic possibility for structuring new space-time conceptions and forms within it. Objects are no longer defined by their essential shape, but by the relations between their elements. The unpredictability of design intends to come closer to nature by pointing out the complex intricacies intertwined within its being, leading to a flexible view of its own material and a flexible concept of material itself. In the virtual, the openness of form outlines its own shape through code – through the abstraction of natural and generative processes.

Fig.1 Fragment 000628561: Cavalli di San Marco,
M. Mojsilović, B. Martić, M. Luković, Digital model, 2020: 19.11: 14.56

Digital mapping of the fragmentary presumes manipulation in the margins between paradox and contradiction, control and autonomy. This sort of openness is enabled by encoding relationships and shapes in which the relative complexity of the whole as well as the parts enables morphogenesis. Algorithmically generated forms and structures, expand or transcend their own frameworks by including an alternate other; an unknown or unexpected other. Thus, coding introduces a degree of variability and unpredictability into architecture as integral parts in the articulation of forms. Variability and unpredictability are the limits of intricacy driven by their own internal structures that, with minimal (encoding) variation, have great formal potential. The conceptualization of open forms takes place in the virtual field, defining the outlines of their own forms with code – the abstraction of natural and generative processes. On a theoretical level, process enables a precise understanding of objective material behavior through uninterrupted feedback between form, force and matter, simultaneously including real constraints. In relation to its own structural behavior, digital morphogenesis implies a balance of form, force and matter. The fragmentary appearance of architecture is shaped by the forces of structural behaviors and altered relations. As pointed out by Oxman, turning to the process of form formation (morphogenesis) leads to a field in which "the form itself began to mark a static category, as opposed to the dynamic process of creation" (Oxman 2006, p.252). In that sense, the total contingency and unpredictability (of the world) can also be understood as the path of each individual fragmentation process. Its appearance emerges from itself, and is revealed through its own isolation. The plurality of fragmentation indicates a deliberate uncertainty and incompleteness as structures of the multiple models of becoming and of the life of form itself.

The coded origin of form is transformed into movement that structures it; while the idea of a complete form has been replaced by the process of becoming and exploring. In this respect, form is seen as simply one in a sequence (one of many possibilities). The abstract digital space (where the digital operates) is no longer a neutral screen for imagining and/or representing what was previously projected, but becomes a means of finding form, participating in its formal and intellectual conceptualization. This understanding of the digital originates in the idea of the performativity of architecture, which includes projecting the appearance of matter through the digital space, equally the subject as well as the context in which it appears. Therefore, the transition to the virtual structures form, although it is purely conceptual (but also formal) informal as a state in transition - as a moment of transition and materialization in the intersection of change. Although the virtual cannot be seen or felt, it also "cannot be seen or felt, as other than what it is" (Massumi 1998, p. 16-24). It is a cross-section of the concept of becoming, potential and uncertainty; this is anticipation which

manifests itself as the predominance of force over form; in Deleuzean terms, "the entopic arrow between tension and matter" (Deleuze 2004, p. 86-89). This means that in a world shaped by singularities and differences, the conceptualization of form takes place on (some) other level. Form is no longer the physical manifestation of matter, or the sheer outcome of realized forces, but is a temporary state of equilibrium. The algorithmic nature (of the world) becomes a design value in the sense in which the processes of becoming presume the visibility of changes, varieties and potentials.

SPECIFIC INCOMPLETNESS

Conceptualizing the virtual as one of the models of reality takes fragmentation as an essential openness - towards the creation of new potentials. Thus, its reality can become the reality of change and the reality of action. Creating a perceptual tension as a result of the real physical nature of the subject matter and the compositional structure, frames a project's position between reality and the imaginary depth of the digital. In this construction, architectural experience becomes a dynamic process, in which form is transformed, imparting in every additional, new, form a trace of the previous one. Digital coding, as a method in the systematization of reality, is defined by code constraints, structuring models of digital *emergence*, found between the logic of continuity and fragmentation. This is a process in which possibilities are positioned as a tool of the digital, as opposed to the virtual and the potential. The reality of the digital becomes the reality of codes that combines the fragmentary characteristics of digital notation (digits and pixels) and the precision of a mathematical set of programming operations. This metaposition, between continuity and discontinuity, transcends fragmentation and its own frameworks by structuring new models of reality. The reality of the digital is based on the possibility of finding complexity in formal abstraction. This means that the conditions of digital emergence are conceptualized as fragmentary and as the attraction of a constant movement that retreats into itself. For a moment, the frozen form is structured by its past and future, as it suddenly appears. This means that the attraction of the fragmentary can be found in the essential metastability in which all elements are unstable and unpredictable - retreating into themselves to reappear as an *other* - reflecting the possibilities of their presence in every other real entity (Whitehead 1987). In that sense, the unpredictable structuring of appearance (emergence) in its motion – corrupts and destabilizes the network of meaning. This means that the coding of insufficiency, as a matter of conceptual instability, is modelled as a conceptualization of unpredictability. The experience of the impossible is a specific unpredictability that comes from natural laws by structuring new relations that enable the definition of boundaries. For Masumi, an impossible phenomenon will always remain outside the reach of classical laws of nature, as unrepeatable, random or accidental (Massumi 2002, p.133). It cannot be predicted, or defined in the classical sense, because it represents an anomaly, a crack in the pattern, an error or essential opening to fragmentation, defined by potential that suddenly appears *in* and *within* itself. This sort of potential does not exist in real life and cannot be defined (or recognized) in advance, always appearing as unexpected and contingent, separate and external (as events that were not *already* present) - an essential uncertainty, the virtual that is impossible to measure.
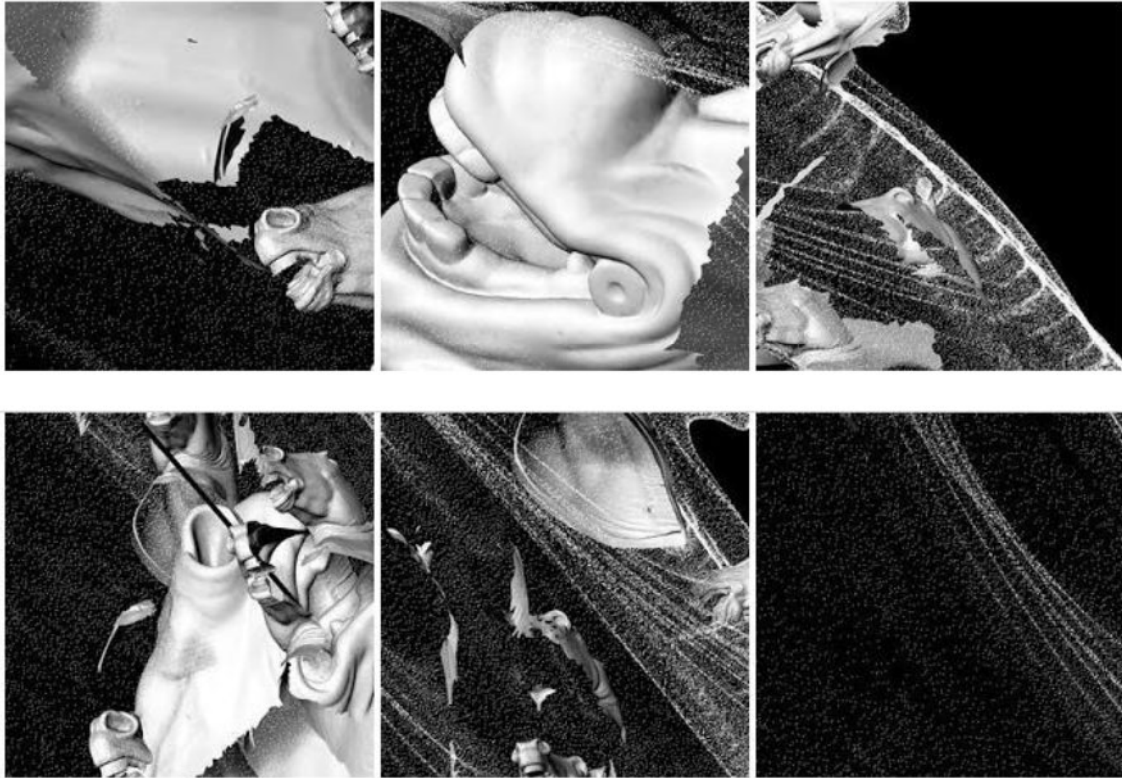
Fig.2 *Fragment 000419819 : Cavalli di San Marco*
M. Mojsilović, B. Martić, M. Luković, Digital model, 2020: 18.29.24.44

The seemingly paradoxical use of the intangible properties of coding to understand the material properties of architecture negates the opposition between the highly material world and the intangible world of the digital. As a result, a new digital paradigm arises – *the tectonics of digital notation* (Leach 2009, p.32-37). It is based on the use of digital processes whose logic becomes an integral part of the design process, in that sense, the digital is what translates, designates and completes the flow of information and matter. However, although perfectly reproduced, the process of digitization loses the continuity of force that connects real and structural complexities. Abstract continuity, achieved through the virtual, as a mathematical algorithm or *code*, can never be found in physical reality (nature) - its existence is possible only through fragments which are translated in pixels (Carpo 2027, p. 70-71). Picon sees digitization as the separation of matter and information, that information is reduced to a series of zeros and ones which are then stored somewhere outside, in virtual space, in order to reappear. The use of information as material in the creation of algorithms, encodes processes; while digital technologies map process-driven architecture. Incompleteness and unpredictability enable openness by appearing not only in the virtual, but also in the computer logic of coding itself. Incalculability, as a formal and logical uncertainty, paradoxically, stabilizes the system - it is not a problem, error, randomness or coincidence, but precisely what enables its functioning - always leaving a part of the unknown. This means that uncertainty (insufficiency) always remains outside symbolic representation, although within (the computer) language (Fazi 2019, p. 3-26). Turning to abstract fragmentary models for structuring reality leads to the possibility of coding defect as the greatest digital value. The degree of diversity that develops in the process of *creating the new*, while natural uncertainty or ambiguity becomes the essence of innovation and *what is yet to come*. This kind of uncertainty cannot simple be seen as a lack of information, but is essential and *life itself*. What motivates is the desire to achieve a totality that always remains unfulfilled - and this is where its greatest value lies.

The conceptual integrity of an idea is realized, paradoxically, in the design of its incompleteness. This means that the uncertainty of fragmentation intertwines with the infinite possibilities of complex incalculability. This amalgamated complexity arises from an infinity that always remains hidden (Fazi 2019, p. 3-26). Therefore, fragmentation can be understood as a process and structuring of relations, as pure

potential of the unfinished and *the just* begun, in which the process is not visible (as a representation) but is the essence of origin (what enables *becoming*). The virtual structures tension, it is what frames the possible by inserting and merging the contingent into the very process of becoming new - the unpredictable nature of morphogenesis. Established on sequential negation, fragmentation gives primacy to process and its capacity to contextualize an event or *emergence*, revealing the layers and range of relationships that structure them. By coding the conditions for deficiency, we discover capacities which lead us to new possibilities and allow potentials to manifest and present themselves. The methodological capacity of this thesis lies in recognizing the desire for an endless number of multiple possibilities, unexplored capacities and (paradoxically) resistance to *becoming the others*. Fragmentation is a complex metastability that shapes relations, displacements and flows by instrumentalizing the specific dynamic capacities of the digital but also calculating their realistic limitations.

THE CODE OF THE NEW NATURAL : The unattainable character of the incomplete

Within the infinite creative openness of the digital process, naturalness is understood as contingent and turning towards the unexpected, sudden or accidental. The definition of new naturalness relies on the use of digital tools to research the abstract properties of nature, thus a new coded naturalness is understood as a process model of becoming and morphogenesis. The conceptual fragmentation of naturalness becomes an operational model of coding and the production of natural laws and processes, in terms of the instrumentalization of morphogenetic and adaptive potentials and processes. Here, we can understand the new naturalness as the multiplicity of an open unpredictable world and the constant decomposition of the material in time. Within the openness of the digital process (Deleuze, Simondon), naturalness is a force and pure becoming - randomness and contingency. For Masumi, nature (naturalness) is not what is given *a priori*, but is the initiation of potential (Massumi 2002, p. 237-238). Naturalness, always keeping itself in reserve, becomes a sum of evolving relations, always returning to itself and its own inexhaustibility. Naturalness becomes a concept that is fundamentally open to transformations, unforeseen, unplanned and unfinished. The openness of the world can be seen as the multiplicity of various models of transformations articulated through the vanishing and emerging of the all-encompassing modality of the digital landscape. In a similar vein, Moussavi develops the concept of extended *super materiality* (Moussavi 2009, p. 8), which equally includes the material and the immaterial, allowing structure or fragments to develop simultaneously through layers of complexity in the digital. Therefore, matter develops as a pure physical element and material develops as a set of complex forces, relations and capacities of the process of morphogenesis. This morphogenesis founded on the concepts of biology, understanding material systems as the drivers of process, implies the development of morphological complexity, not necessarily separating the emergence of form and the process of materialization, including - *"all material properties in the conceptualization of form"* (Hensel, Menges, Weinstock 2013, p. 158-182). On the other hand, digital morphogenesis, as a generative process creating form through code, describes the tools and methods for creating patterns and their adjustment to a known environment (Leach 2009, p.32-37). Morphogenesis is a set of methods that use digital tools - not as a means of visualization, but as an instrument for producing form and its transformation. Designing with material characteristics and geometric behaviors develops the structural logic of the internal capacities of form – material and structure become a complex system drawn through the logic of digital production.

If nature is the main source of material production, the concept of the new natural upholds a dialectical relationship between the processes of digital coding and digital (morpho)genesis. Naturalness is no longer *a model of beauty*, an aesthetic category; rather, it serves to understand the nature of genesis, and in so doing, variability, impermanence and chance. The concept of nature becomes a matter of modification and not the essence of naturalness (Massumi 2002). Therefore, morphogenesis should not be viewed formally, but as a procedure in which the relationship of *"shape, structure and material calls into question the causes of differentiation between levels of abstraction"* (Hensel, Menges 2006, p. 16-17). Repetition (of patterns) does not include the similar or the general of any kind, but assumes the existence of a process structured by internal conditions that create ontological transformations. The interweaving of the digital, the virtual and the real, defines dynamic systems which exhibit new properties, characteristics and interactions by structuring multiple levels of morphogenetic organization. New materiality transforms the idea of completeness, abandoning the logic of order and aesthetics, in order to create new processes and models for *becoming* forms, structures and materials. Thus, form becomes the result of processes, relations and their structural manifestations – paving the way towards *ontology of fragmentation.* In that sense, we see fragmentation as a method and stylistic characteristic of a new post digital reality. This post digital form

is inseparable from its own coding. Form - structured by relations and processes – abandons fixed positions, ideas and concepts and appears as a moment in development - as what is *just* or *still emerging*. Unpredictable and unplanned appearances become places of the greatest interest to architecture – these uncontrolled situations unlock places of pure creativity, innovation and potential. This type of binary system, in its complex relations, offers the potential for the new and unforeseen in its unannounced appearance at different levels of coding. It is their exposure to large quantities of information that makes codes fragile, changeable, and adaptable in relation to new values and potentials coming from outside the system. The complex potential of virtual coding is accomplished in the plurality of digital time by overlapping multiple realities. Thus, coding reflects the digital infinity of constant *emergence*, shaping the world itself and its new meanings.
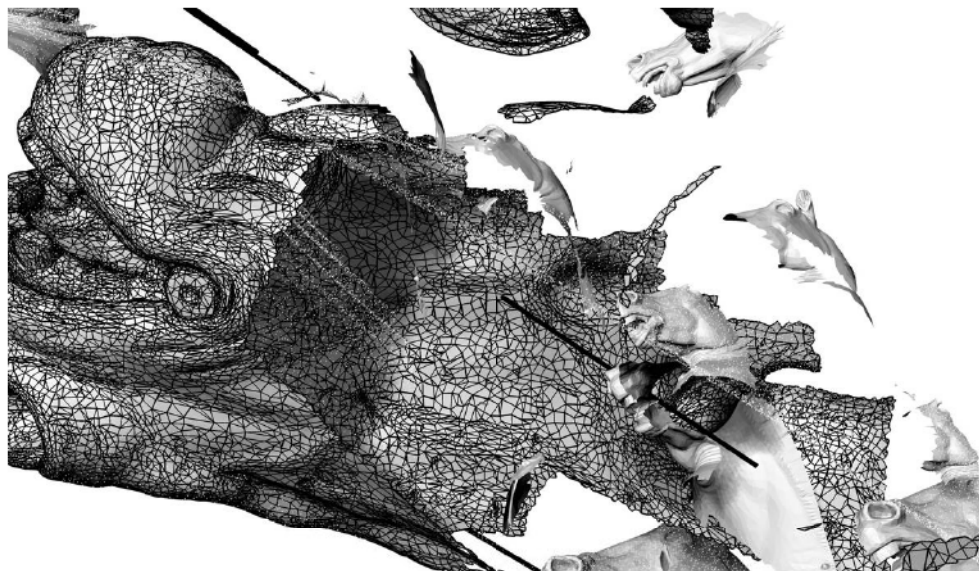

Fig. 3 *Fragment 000628628 : Cavalli di San Marco*
M. Mojsilović, B. Martić, M. Luković, Digital model, 2020: 18.29.24.44

The digital logic of producing excess resolution, one that is invisible to the eye, reveals a surplus of data thus creating fragmentary (perceptual) experiences. By plunging into the digital, we inevitably come to a point where the fragmentation of the digital surface becomes visible. When we approach an object the information crystallizes, but simultaneously the resolution displayed on screen decreases - paradoxically, in approaching the object, it becomes fragmentary, abstract and naked. Operating in this digital collage reveals the connecting lines as errors or cracks (Young 2015). However, this type of fragmentation shapes the aesthetic character of the digital image and digital object; as a result the flexibility of the resolution becomes an aesthetic characteristic of the digital object which no longer obscures errors and cracks, but affirms fragmentation as a place where new meanings are created. Fragmentary coding becomes an internal dynamic movement principle (impermanence, variability) of the whole material world, using spontaneous and unplanned activities that it guides. New materiality has developed through multivalent materials (of the material) including structure, form and content into its own concept, which ultimately results in the possibility for the materialization of the immaterial (Picon 2019, p.223-238). This develops a complex relationship between extended materiality and coded naturalness in relation to the altered reality of the virtual. Thus, expanding and introducing the concepts of materiality and naturalness, by including their material characteristics and geometric behaviors, produces new models of organizational potentials and spatial possibilities that surpass established boundaries by framing the key moments of transformation - temporary phases during the limitless process of transformation. Understanding the emergence of form also implies understanding the complex relationships that structures form - these processes become the *raison d'être* of architecture, conceived as an open dynamic system. Nature becomes a network of relationships of deeper reality, placing the very objects that appear in it into the background. In this sense, the inconsistency, variability and unpredictability of the nature of the world becomes a design challenge and a *par excellence* problem.

Fig. 4 *Fragment 000628451: Cavalli di San Marco,*
M. Mojsilović, B. Martić, M. Luković, Digital model, 2020: 16.48.22.02

CONCLUSION : UNLEASHING THE POTENTIAL

Defining a problem is always about discovery and innovation, in contrast to finding solutions that already exist. It's about creating a space and environment where problems are projected, where they do not have an exact or precise solution, but generate these solutions through a process in which what did not exist and what has not yet happened is born. We can see nonlinear jumps and shifts in overlapping projected relations of the digital continuum, enveloped with variable potentials in the form of our own unpredictability. Following Masumi's ideas, each problem is again presented in a different way where the problem is taken for a specific evolution without a final solution (Massumi 2002, p. 133). This means that there are no clear solutions and that the same critical state becomes reproduced in multiple variations, and that the same potential is reused every time. Viewed through this philosophical lens, the production of the new is no longer transcendence or a mysterious and/or drastic break with the existing; rather, it is understood as *something* completely immanent that happens *in* and *with* time, as a specific type of virtualization. Therefore, the actual always takes place at the intersection of possibilities, of potential and of the virtual. The fragmented nature of virtual relations in its disharmony creates a new (de)coded reality, simultaneously bringing us back to the imaginary that is always in motion, in disharmony and in asymmetry in order to release its creative nature. Change is found within intensified potential – in all its specificity in relation to everything else, as well as itself.

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