

Aisthesis



Citation: Macri, S. (2024). Feeling Data: New Perspectives for the Aesthetic Experience. *Aisthesis* 18(2): 229-243. doi: 10.7413/2035-8466035

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Feeling Data: New Perspectives for the Aesthetic Experience

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Abstract. The production of unprecedented amounts of data across all sectors of society stands out as the defining feature of the present age. Thanks to an all-reaching net of pervasive technologies, it is now possible to draw out data from every entity or event on the planet. Artistic practice provides a suitable stage for the attempt to isolate specific expressive and signifying features out of the indistinct mass of data flowing through the digital realm. This article focuses on a relatively under-explored strand of research, where technology interacts with abstract data in order to extract their “aesthetic sense”. Such an expression addresses the peculiar dynamics enabling art to move beyond the purely informative function of data, towards a different goal – designing experiences that turn the audience into perceptive participants, engaged in the otherwise imperceptible events and relations that are recorded and communicated by data. This kind of aesthetic experience presents interesting implications for philosophical enquiry. Through expressive means that are constantly reshaped by the interaction with digital technologies, contemporary art provides fertile ground for a philosophy of events and relations. This framework is analysed in the present essay by comparing the perspective of three philosophers: Alfred N. Whitehead, Gilbert Simondon, and Gilles Deleuze.

Keywords. Data, digital art, events, relations, interactivity.

There is a togetherness of the component elements in individual experience. This “togetherness” has that special peculiar meaning of “togetherness in experience”. It is a togetherness of its own kind, explicable by reference to nothing else.

A.N. Whitehead, *Process and Reality*

1. *Cleopatra's needle*

In his influential work *The Concept of Nature*, Alfred North Whitehead introduces the notions of *object* and *event* through an unusual and evocative example: Cleopatra's Needle, the well-known obelisk transported from Egypt to London in 1878 and erected in the area that is known today as Victoria Embankment, overlooking the Thames. Should we attempt to examine its nature, argues Whitehead, we would hardly be inclined to consider it as an event rather than an object. Indeed, its monumental immobility seems to shield it from any change, giving it an almost timeless appearance. However, is this really the case? A physicist, for instance, might object that such an imposing stability is in fact underpinned by an invisible dance of electrons; that every day, its constitutive pink granite loses some molecules and aggregates others; that its surface changes when covered with soot or when reacting with London's acid fog. From this standpoint, any reality that on a macroscopic level we judge to be always identical to itself, actually turns out to be made up of a set of *events* in flux. The word *object*, then, is merely the term we habitually use to indicate the lasting and concretely recognisable “thickness” that these events acquire in their reciprocal relating. So, he concludes, «we all know that if we go to the Embankment near Charing Cross we shall observe an event having the character which we recognise as Cleopatra's Needle. Things which we thus recognise I call objects. An object is situated in those events or in that stream of events of which it expresses the character» (Whitehead [1920]: 169).

Today, it would not be difficult to turn a passer-by's distracted gaze at Cleopatra's Needle into a conscious perception of its ever-changing nature, as intended by Whitehead. It would suffice, for instance, to apply a system of sensors to the monument, regularly recording its oscillations; to verify if and whether these micro-alterations are caused by natural agents (e.g. wind speed, the Thames' flow) or by strictly human factors (e.g. traffic in the adjacent streets); or to monitor, finally, the link between surface deterioration and the concentration of pollutants in the atmosphere. In fact, the absolutely unprecedented character of contemporary reality, pervaded by digital technologies and extremely widespread computer networks, is determined by the production of a huge amount of *data*¹. Sensing and geo-localising devices, together with interactive screens, smartphones, smart watches, social media, and all sorts of

applications are capable of extracting information from every single presence in the ecosystem, as well as from the events occurring in it. Human beings, biological organisms, climate phenomena, rivers, oceans, urban spaces: these are all potential producers of data, which are in turn analysed by artificial intelligence programs deputed to identify trends and correlations from which to deduce probabilities and make forecasts².

The progressive intertwining of computer technologies with the fabric of everyday life, to the point of becoming completely enmeshed, was first prospected in the early 1990s by US computer scientist Mark Weiser. He foresaw the possibility for computers to emerge out of their “electronic shell” and innervate their surroundings, transforming everyday objects (e.g. household appliances) into sensors capable of detecting, processing and transmitting information³. *Embodied virtuality* is the expression employed by Weiser to define the new model of ubiquitous computing, differentiating it from *virtual reality*. Projecting users, by means of prosthetic tools, into artificial universes where the external reality and its inhabitants cease to exist, the latter cuts off «desks, offices, other people not wearing goggles and bodysuits, weather, trees, walks, chance encounters and, in general, the infinite richness of the universe» (Weiser [1991]: 94). On the contrary, the potential of embodied virtuality lies precisely in increasing interactions between real-world agents, thus reversing the «centripetal forces that conventional personal computers have introduced into life and the workplace» (Weiser [1991]: 104). The purpose of computation, here conceived of as a force that imperceptibly pervades our small everyday universe, is therefore to enrich the experience of the real world.

In the wake of Weiser’s prediction, an article published in 1999 in *Business Week* by journalist Neil Gross speculated that, by the end 21st century, the entire planet would become enveloped in a kind of «electronic skin»⁴, made up of millions of sensing instruments designed to observe people and their behaviour, infrastructures and natural phenomena. Such a scenario is already occurring daily in urban spaces, criss-crossed by a wide range of automated and interconnected sensors wedged in the skeletons of buildings, attached to vehicles, embedded in smartphones, that track and monitor almost every available parameter – from air quality to traffic flows, from seismic activity to rain-fall, from radioactivity concentration to fine dust levels. This data collection can be broken down to minuscule scale, as in the case of the so-called “smart dust”, a system of microscopic sensors connected by wireless networks that can disperse and camouflage within the environment⁵. Thus, the virtual dimension collapses. Computation abandons the desk and spills out onto the street, forming the backbone of future “sentient” cities, that can monitor the conditions of the environment and of human behaviour within it, directly impacting on the organisation of life in the public space.

Recalling the incisive snapshot offered by artists Salvatore Iaconesi and Oriana Persico,

Data, information, and knowledge are ubiquitous. They are in the shapes of buildings, in streets, and in urban furniture; in the forms of the paths chosen by city dwellers to traverse spaces and places; in signs, symbols, images, and icons; in colours; in the smells and sound we feel while we are in the city; in the skyline; in objects which are near, and in those we see at the horizon; in the memories which we associate to places, objects, and contexts; and in those memories which other people described to us, as we remember them, in precise ways, or not (Iaconesi, Persico [2017]: 30-31).

These considerations induce us to cast a renewed look upon Cleopatra's Needle, the starting point of this discussion. Along the Embankment, a pulsating cloud of data thickens at every moment, embodying the flow of events that, according to Whitehead, shapes the "life" of the obelisk. It is precisely in this regard that a key issue arises, deserving further examination: how can the multiplicity of data and information be transformed into articulated and meaningful structures, through which the invisible flow captured by computation becomes perceivable?

To observe such a process at work, this article suggests turning our attention to the field of contemporary art, increasingly characterised by practices involving data and ubiquitous computing. To this end, Whitehead's conceptual categories will form useful analytical tools to interpret the aesthetic experience enabled by a specific employment of data. Eventually, the discussion will highlight a particularly fruitful outcome of the relationship between *art* and *philosophy*. Through contact with artistic practices, philosophy widens its own categories, expanding their meaning; in doing so, it provides art theory with distinctive frameworks that, nevertheless, do not purport to restrict the meaning of artworks within rigid conceptual boundaries.

2. *Art facing the challenge of data*

The attempt to derive expressive and meaningful characteristics from the heterogeneous mass of data that imperceptibly flows through the digital stream is chiefly observable in the realm of *art*. Data, in fact, provide the raw material feeding the creative process behind artistic practices that are currently developing in contact with new media, interactive technologies and the web. On a general level, this process entails the development of a code which regulates the interaction between an input and an output – i.e. defining the procedures according to which certain stimuli are processed by a computer system and transformed into audio-visual material. Artists can now draw on the most disparate data to construct a repertoire of inputs, and then connect them through potentially infi-

nite combinations by means of algorithms. The resulting works possess the feature of spontaneous evolution, while the viewer experience may in turn acquire unexpected, random and ever-new traits.

Data processing plays an especially significant role in those emerging art forms that rely on artificial intelligence as a means of production. These are based on the synergetic cooperation between a human agent and a computational agent that influence each other – competing, so to speak, for the very authorship of the work. Artists feed data to the artificial intelligence without being able to predict the resulting output; they then make subsequent interventions, in a reciprocal interaction that constitutes the very meaning of the work⁶. Currently, the primary tool for producing such artworks is the Generative Adversarial Network (GAN), a machine learning method that trains computers to generate realistic images autonomously, based on the competition between two neural networks. The first, known as the *discriminator*, is trained using a repertoire of data from the real world (*training set*), which may include, for example, images, sounds or texts; the latter, known as the *generator*, must produce data that resemble as closely as possible those which are used to train the discriminator, so as to “trick” it into believing that they too are real.

Data visualization is another rapidly-expanding phenomenon in the fields of art and design⁷. This technique visualises data by means of diagrams, infographics, cognitive maps and interactive animations. Generally consisting of nodes interconnected by lines, such representations aim to communicate in a concise and visually appealing manner the relationships existing between large volumes of data. In doing so, they prove to be an effective application of the well-known “systemic framework”, conceived of as the counterpart to the reductionist approach that is typical of classical science. The latter, considering analysis an indispensable requirement of evidence, prescribes a movement from complexity to simplicity, from totality to individual parts; the systemic model, on the contrary, conceives of individual parts only in terms of their reciprocal interactions. It is based on what is known as “organisation” – that is, phenomena that cannot be resolved into local events, dynamic interactions that surface among the parts when they are isolated or when they are embedded in some configuration.

Leaving aside these two trends, this essay is chiefly focused on a third and different strand in the widespread use of data in artistic practices. It is possible to identify a further research area, relatively neglected by both specialised critics and the art market, where the sophisticated and somewhat innovative employment of technology aims to draw out of the abstractness of data what might be termed its *aesthetic sense*. Such a term conveys the attempt, clearly visible within certain artistic practices, to go beyond the mere representative and informative function of data, in order to devise experiences that make the public sensitive to and engaged in the events and relationships that the data itself records and dis-

plays. Such an approach is eloquently exemplified by the artistic production of Thijs Biersteker, whose two recent projects – *Econtinuum* (2021) and *Econario* (2022) – both dedicated to the plant world and, more precisely, to the environmental cause, will now be examined in more detail⁸.

One of the most noteworthy findings of plant neurobiology concerns the ability of higher plants to receive signals from their environment, process the information obtained and devise solutions for their survival. Such a discovery challenges the common view of plants as passive entities, raising them instead to the level of organisms capable of calculation and choice, learning and memory. The activity of collecting and processing environmental information takes place in the roots, whose apexes explore the soil in search of nutrients, acting as sophisticated sense organs capable of recording multiple parameters and reacting accordingly. The information gathered by the roots is transmitted not only to the rest of the organism, but also to neighbouring plants, through the emission of chemical signals. These, in turn, enable plants to modify their growth strategy so as to better adapt to the needs imposed by the environment⁹. This phenomenon is precisely illustrated by *Econtinuum*. The installation features two roots, created with 3D printers out of transparent recycled plastic, hanging from the ceiling of a dark room. The “sculpture” is equipped with an artificial intelligence system that, by means of sensors, detects and monitors a series of parameters within the room: carbon dioxide, humidity, volatile organic compounds (i.e. substances with a low boiling point that evaporate from solids or liquids used in industrial processes), temperature and pressure. Responding to the collected data, the artificial intelligence generates light pulses that display how the roots cooperate by exchanging information, sending electrical warning signals and mutually sharing nutrients. What is more, they invite the visitor to take part in their “conversation”. Whenever someone approaches the roots, they react to their presence and movements, integrating human behaviour into their ongoing “electrochemical conversation”. As a result, visitors experience a powerful symbiotic relationship with nature, as well as the possibility of an ecosystem based on shared knowledge.

This sharing of knowledge becomes, in *Econario*, the basis for a true act of political ecology. A robotic plant is equipped with a self-propelled mechanical structure that simulates phases of growth or withering by folding inward or outward. These metamorphoses reflect the likely impact of current socio-political decisions on the state of biodiversity over the next thirty years. The artificial plant’s movements are determined by data from the Biodiversity Intactness Index (BII), developed by the Natural History Museum in London. Such index calculates the impact of human activities on the survival of tens of thousands of ecological communities comprising both animals and plants, that are monitored through a database covering more than one hundred countries. If the index indicates a high level in the preservation of biodiversity, *Econario* achieves peak

expansion, unfolding its structure until it reaches monumental dimensions. If, on the other hand, the forecast is negative, the robotic plant gradually reduces its height, thus reflecting environmental collapse. Designed to be itinerant, the artwork mirrors the specific biodiversity data of the country where it is temporarily exhibited. For example, if placed in a country where no measures are taken to reduce fossil fuel consumption, *Econario* will quickly “wither away”, foretelling the occurrence of an ominous scenario by 2050. Its very presence, therefore, holds both *existential* and *political* relevance: by emotionally involving visitors in the fate of a robotic plant, it simultaneously raises collective awareness regarding local politics, potentially mobilising public opinion.

No longer simply, or exclusively, an object to be contemplated, Biersteker’s installations are instead presented as a *network of presently-occurring events*. Far from being fixed and stable, the relational framework that generates the artworks is intrinsically dynamic, caught as it is in an incessant process of transition, activated by elements that are constantly integrating or emerging unplanned within the structure. Neither the development nor the outcomes of such a process are ever entirely predictable. In fact, while the general scheme is under the artist’s control, its evolution in a specific sense depends on the concrete contribution of all parties involved, which is all the more decisive the greater the degree of variability allowed by the technical system. What such an employment of data and computation captures is, essentially, the unfolding of a vital process, or, more broadly, a *fragment of becoming* presently taking place. In translating a series of logical contents, normally confined by their abstractness below the threshold of feeling, into concretely perceptible forms, artistic practice seeks to turn this becoming into a participatory event. It is precisely thus that the dimension of art emerges as a privileged field for that particular experience of reality described by Whitehead through the example of Cleopatra’s Needle: an experience that we will now explore from a philosophical standpoint.

3. *Events, individuations, haecceities*

The ultimate assumption to be elaborated in the course of this enquiry is that the ultimate facts of nature, in terms of which all physical and biological explanation must be expressed, are events connected by their spatio-temporal relations, and that these relations are in the main reducible to the property of events that they can contain (or extend over) other events which are parts of them (Whitehead [1919]: 4).

“Event” and “relation” are the two concepts grounding Whitehead’s philosophical reflection: everything that exists must be interpreted as something that happens

and such happening is determined in turn as a process of interaction. However, this interaction, instead of stemming from the terms it links, is the original operation through which the individual terms emerge.

Whitehead's position is articulated in contrast with Aristotelian substantialism, credited with positing the concept of an underlying, permanent subject-substratum upon which mutations flow continuously, thus reducing *becoming* to a predicate of substance, i.e. a mere alteration of states. Such a fallacy, in turn, is thought to have derived from the undue hypostatisation of an *ens rationis*. In sensory perception, in fact, nature manifests itself not so much as the sum of distinct individualities, but rather as a complex of entities that stand in reciprocal relation. The supposed independence of each entity from the whole is nothing more than the result of an abstraction of thought, which in its proceeding cannot help but refer to individual entities. The problem arises when the procedure of translating sense perception into rational knowledge is mistaken for a fundamental character of nature. In contrast with such an approach, which postulates a concretely-existing substratum underneath anything that can be perceived through the senses – «the red of the rose and the smell of the jasmine and the noise of cannon» (Whitehead [1920]: 21) –, Whitehead argues that «if we are to look for substance anywhere, I should find it in events which are in some sense the ultimate substance of nature» (Whitehead [1920]: 19).

And yet events, in their uniqueness and unrepeatability, cannot be grasped in isolation: it is impossible to break down the incessant flow of nature into individual moments to be contemplated. Therefore, the components of our habitual experience are interpreted, instead, as single objects. Despite being considered by common sense as independent substances, each endowed with an immutable identity, these are rather the manifestation of subterranean interactions between events. Such events are defined by Whitehead as «the field of two-termed relation» (Whitehead [1920]: 75). The ability to encompass and permeate each other is, in fact, a distinctive feature of events; they become involved in a process of reciprocal shaping, to the point that, for instance, «the duration which is all nature during a certain minute extends over the duration which is all nature during the 30th second of that minute» (Whitehead [1920]: 58). Whenever such interaction generates a relatively stable, and thus clearly identifiable structure, we then call it an object. Consequently, «objects are entities recognised as appertaining to events» and «events are named after the objects involved in them and according to how they are involved» (Whitehead [1919]: 81)¹⁰. Going back to the case of Cleopatra's Needle, the object will thus coincide with the unitary entity, devoid of becoming, always identical to itself; whereas the event will result from the relation of all those elements that determine its very occurrence and permanence.

Were we to compare Whitehead's ideas with other similar positions, it would not be out of place to refer to the philosophy of Gilbert Simondon and, in particu-

lar, to his concept of *individuation*. Through this concept, in fact, independently from Whitehead and nevertheless with surprising analogies, Simondon has tried to explain the constitutive function of relation. In opposition to the classic paradigm of ontology, according to which individuals with their properties come before relations, Simondon's thesis, instead, attributes to relations the very potential to generate individuals¹¹.

The concept of individuation is not Simondon's own invention. The term already belonged to the vocabulary of philosophy in the Middle Ages, when it was used with regards to the problem of the constitution of individuality starting from a common essence existing independently of concrete individuals. Instead of moving from an *already-individuated* individual to then retrace the conditions of his singularity, i.e. of his being intrinsically one and distinct from others, Simondon's proceeds from the very emergence of the individual, i.e. his *ontogenesis*. This implies questioning any privilege accorded to the individual when understood as substance, and shifting the attention towards the system of reality where his genesis takes place. The idea that the individual, far from being presupposed, corresponds to the process of his constitution raises a further problem, concerning the relationship between *being* and *becoming*. Here Simondon essentially mirrors Whitehead's perspective: does becoming imply a stable reality upon which mutations fluctuate or, on the contrary, does each entity coincide with its own coming-into- and remaining-in-being, that is, with its individuation? And if so, how does this process take place?

To answer these questions, we need to take a quick look at the dimension from which, according to Simondon, the individual acquires his existence: i.e. the *pre-individual*. In illustrating its main features, he creates a montage out of terms and concepts belonging to fields of knowledge that are fairly distant from philosophy. *Potential energy, metastable equilibrium, disparity, supersaturation*: these are the conditions for the genesis of the individual. They allude to an original incompatibility rich with potential, standing as a premise for individuation. Such a stage of incompatibility is constituted by forces in reciprocal tension, by extreme terms incapable of interaction, which are mediated by the individual at the moment of its emergence. Individuation is thus the resolution taking place within a system of potentials, corresponding in turn to the *interactive communication* between initially incompatible orders of magnitude. In this perspective, «what is generally considered as *relation* due to the improper hypothesis of the substantialization of individual reality is in fact a dimension of individuation through which the individual becomes» (Simondon [2020]: 10). No longer a mere connection between well-distinguished elements, relation comes now to warrant their very individual existence, by acting as «*constitutive, energetic and structural condition that is extended in the existence of constituted beings*» (Simondon [2020]: 76).

To summarise, according to Whitehead, every entity exists only during its occurrence and nothing exists beyond such occurring. In the same way, for Simondon the individual coincides with his formation, and exists for as long as this process lasts; all that remains afterwards is «a result that will begin to degrade and not a veritable individual» (Simondon [2020]:49). Moreover, Whitehead interprets becoming as generated by the mutual relations between events; similarly, Simondon describes individuation as a relational event, i.e. the occurrence of a relationship between dissimilar terms, dimensions and levels of reality. For both Whitehead and Simondon, the relationship is no longer an inessential category, a non-defining property of an autonomous and perfectly subsistent substance; rather, it comes to establish the conditions and mode of existence of substantial individualities¹².

Following in Simondon's footsteps, all the while resonating with Whitehead's thought, Gilles Deleuze would later argue that the act of connecting heterogeneous dimensions can produce «a mode of individuation very different from that of a person, subject, thing, or substance. We reserve the name *ecceity* for it» (Deleuze, Guattari [1987]: 261)¹³. The concept of *haecceity* is first formulated in the philosophy of Duns Scotus as a principle of individuation of substance, deputed to make individuals different from each other. While referring to Scotus's position, Deleuze nevertheless declares that he is interested in a different meaning of the concept of haecceity, one resulting from the incorrect French transcription of the Latin *haecceitas*. He observes in this regard: «This is sometimes written "ecceity", deriving the world from *ecce*, "here is". This is an error since Duns Scotus created the word and the concept from *haec*, "this thing". But it is a fruitful error because it suggests a mode of individuation that is distinct from that of a thing or a subject» (Deleuze, Guattari [1987]: 540-541)¹⁴.

Individuation by haecceity captures a becoming-in-progress. The protagonists of this becoming, however, are not persons, things or substances, but «relations of movement and rest, of speed and slowness, between unformed, or relatively unformed, elements, molecules or particles borne away by fluxes» (Deleuze, Parnet [2007]: 92). «An hour, a day, a season, a climate, one or several years – a degree of heat, an intensity, very different intensities which combine» (Deleuze, Parnet [2007]: 92) possess perfect individuality, of a kind not to be confused with that of a substance or a subject. Rather, these occurrences are equivalent to those variables of different orders which, in a manner entirely analogous to Simondon's pre-individual potentialities, acquire consistency and individuality only through mutual interaction: «a degree, an intensity, is an individual, a *Haecceity* that enters into composition with other degrees, other intensities, to form another individual» (Deleuze, Guattari [1987]: 253). It may happen, for instance, that «a degree of heat can combine with an intensity of white, as in certain white skies of a hot sum-

mer» (Deleuze, Guattari [1987]: 261). Now, the point is not to counterpose momentary and ephemeral individualities with others endowed with a specific duration; on the contrary, in Deleuze's perspective, individuals themselves are inseparable from the whole they are part of, thus ceasing to be subjects «to become events, in assemblages that are inseparable from an hour, a season, an atmosphere, an air, a life» (Deleuze, Guattari [1987]: 262). Factors such as «climate, wind, season, hour are not of another nature than the things, animals, or people that populate them, follow them, sleep and awaken within them» (Deleuze, Guattari [1987]: 263). Space-time coordinates do not therefore act as mere background for individuals, but rather join them to form shared *dimensions of multiplicity*. These are produced by the interaction between completely heterogeneous terms, which, unlike determined entities – i.e. endowed with a stable and permanent essence, with the predicates that qualify it and the relations inherent to it – achieve their individuation only within the concatenation they become part of.

4. *Sensitive to data*

«Whether your Needle change or be permanent» Whitehead observes, «all you mean by stating that it is situated on the Charing Cross Embankment, is that amid the structures of events you know of a certain continuous limited stream of events, such that any chunk of that stream, during an hour, or any day, or any second, has the character of being the situation of Cleopatra's Needle» (Whitehead [1920]: 167). In a similar vein, Deleuze states that «a season, a winter, a summer, an hour, a date have a perfect individuality lacking nothing, even though this individuality is different from that of a thing or a subject» (Deleuze, Guattari [1987]: 261). Applying such premises to the current ever-shifting panorama of digital art, we can identify a particular line of research that specifically aims to intercept the same *continuous flow of events* in the moment it acquires thickness, by capturing the concatenation of micro-phenomena – haecceities, degrees of power, intensity, accidents – that feed the process of individuation¹⁵.

As previously illustrated, such phenomena can now be recorded thanks to the capillary network of technologies spread throughout the ecosystem, and subsequently translated into data. By integrating an unrelated and heterogeneous multiplicity of data, each potentially representing a fragment of the world, and giving them concrete shape out of lights, colours, sounds, tactile features, artistic practices aim to render *perceptible* the *imperceptible* “becoming” encapsulated by data. Moreover, by virtue of its interactive character, they also offer viewers the possibility of personally taking part in this becoming, influencing – through their own direct intervention or through the generation of data – the very evo-

lution of the work, to the point of modifying its outcome in a way that is not entirely predictable.

The interactive dynamic thus develops by weaving unexpected relationships between entities that are in themselves dissimilar and extraneous to one another: not only people or things, but also, as previously exemplified, plants, animals, museums, institutions, factors both atmospheric – e.g. the concentration of carbon dioxide inside a room, the temperature at a certain time of day – and environmental – e.g. the flourishing or perishing of an ecological community. In doing so, the artwork configures itself both as an *object* and as an *event*; it stands as a system that *individuates*¹⁶, i.e. it exists and evolves thanks to the multiple relationships that take place within and throughout it. Thus, it foreshadows an increasingly plural and dislocated type of interactivity, where each component, through the mediation of data, is the bearer of a difference that generates meaning.

As a result, through expressive means that are constantly redefined by the interaction with digital technologies, art can engender and develop the same understanding of *events* and *relations* that has been examined so far. Essentially, this type of art becomes *awareness of a relationship*; it captures and reproduces the fundamental relational structures tying together the entities of the world. Furthermore, art expresses these interrelations as the core feature of experience. In doing so, it proves that it is entirely misleading to put the knowledge of things-as-unrelated before the knowledge of their reciprocal relations. In fact, our first and most immediate experience is not of objects, but rather of relations between objects; relations that, in turn, are to be understood not in a static or abstract sense, but rather as the very event of “entering into a relationship”. The contemporary field of artistic production displays the emergence of a new way of experiencing the constitutive relationality of things. The translation of data into *forms of feeling* opens up our concrete experience to the web of organically connected events that constitute the ultimate substance of reality. In other words, it allows us to perceive the relationship linking the “event” that we are with other events that are simultaneous with us, in the very moment of their occurrence: such as here and now, on the Victoria Embankment, under Cleopatra’s Needle.

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Notes

- 1 In computer science, the term *data* is used to refer to any information acquired, processed, stored or released by a computer in the form of a sequence of bits. For a history of the term's multiple meanings, from its Latin origins to the present day, see Rosenberg [2018].
- 2 For an introductory approach to the technological process of *datafication*, see Mayer-Schönberger, Cuckier [2013].
- 3 Such is the principle behind the so-called *Internet of Things*, an expression used in computer science to refer to a vast collection of objects equipped with sensors and software that enable them to interact, with minimal human intervention, by collecting and exchanging data via wireless networks. For a more in-depth discussion of the framework of *ubiquitous computing*, i.e. the integration of the ability to process information in classes of objects not usually counted within the scope of technology, see Greenfield [2016].
- 4 See Gross [1999].
- 5 See Gabrys [2010; 2016].
- 6 With regards to this topic, the lines of the debate have been drawn by Miller [2019]. A rigorous and thorough introduction to the relationship between aesthetics, digital art and the latest developments in artificial intelligence is also offered by Barale [2020, 2021], analyzing numerous case studies of artworks based on the interaction between human and artificial intelligence.
- 7 For a more in-depth analysis, see Lima [2011].
- 8 Thijs Biersteker's work is renowned for its fluid mixture of data, sensors, plants, and artificial intelligence. He creates interactive and immersive art installations, often described as *eco* or *awareness art*, with the aim of making visible the unseen impact of humans on the planet. Topics like climate change, air pollution, ocean plastic pollution, and biodiversity loss are thus converted into tangible experiences offering an unsettling insight into the ecological challenges ahead.
- 9 For a detailed explanation of the issues briefly mentioned here, see Baluška, Mancuso, Volkmann [2006].
- 10 In a 1956-1957 note on Whitehead's concept of nature, Merleau-Ponty summarises the notion of object as follows: «The object is the focal property to which we can relate the variations subjected to a field of forces. [...] The object is only an abbreviated way to note that there has been an ensemble of relationships» (Merleau-Ponty [1995]: 158).
- 11 "Realism of relations" is the expression used by Simondon to describe the traits of his ontology, aimed at demonstrating the priority of relational processes over the individual entities involved. In this regard, see Barthélémy [2005: 99-104; 2008: 9-34; 2014].
- 12 The primacy of process and relation was further explored by Whitehead in *Process and Reality*, through the concept of "actual entity". Refuting the notion of substance as an immutable subject of change, Whitehead in fact states that «how an actual entity *becomes* constitutes what that actual entity *is*», so that «its "being" is constituted by its "becoming"» (Whitehead [1978]: 23); Furthermore, challenging the Aristotelian tenet that substance is neither predicated of a subject nor present in a subject, he argues that every actual entity is related to the others or, even more radically, that «every actual entity *is* present in other actual entities» (Whitehead [1978]: 50).
- 13 For more details on the concept of haecceity in Deleuze's philosophy, see Sauvagnargues' analysis of *Heccéité* in Sasso, Villani [2003]. A further examination is offered by Zourabichvili [1998].
- 14 This quotation reveals an implicit reference to Simondon. It was Simondon, in fact, who first made such a spelling "mistake" and who also conceived of individuation not in a narrow sense, i.e. relating to substance alone, but more generally as the becoming of being. See Simondon [2005]: 55-66.
- 15 Anne Sauvagnargues reflects thus upon the potential implications of the "individuation by haecceity" paradigm developed by Deleuze on the realm of aesthetics: «Haecceity – which

does not define a class of individuals or of preformed beings, but which captures becomings as they are happening – already implies a new philosophy of image-individuation. For its most direct and explosive consequence consists, with regards to the philosophy of art, in the movement from representation, from reproduction, in short, from all of the old ontologies of the image that separate and superimpose model and copy, to a philosophy of becoming, of individuation, and of metamorphosis» (Sauvagnargues [2016]: 50-51).

- 16 In his complementary doctoral thesis, dedicated to the modes of existence of technical objects [2017], Simondon calls for a re-thinking of the technical object from a *processual* perspective. The technical object, according to Simondon, supports the principles of the ontology of individuation and, in turn, this ontology grounds the existence of technical objects. In the case of the ontology of individuation, what is at stake is the issue of shifting the focus from the individual to the process of individuation. As for the philosophy of technology, the key issue is defining the technical object not on the basis its individuality (i.e. from the fixity of its structure for a predefined use), but rather on the basis of its *genesis*, interpreting technical reality according to the *temporal* sense of its *evolution*. Technical objects thus appear as processes of individuation.