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Affected Data: Understanding Knowledge Production in Algorithmic Events

Maude Bonenfant
Université du Québec à Montréal (UQAM), Canada

Laura Iseut Lafrance St-Martin
Université du Québec à Montréal (UQAM), Canada

Lucile Crémier
Université du Québec à Montréal (UQAM), Canada

Résumé:

Dans le cadre de cet article, il s'agira de discuter des modes de production du savoir à partir de la numérisation du monde. Plus précisément, nous visons à identifier quel mode de production de la connaissance n'est pas pris en compte dans les méthodologies actuelles en science des données. Pour ce faire, certains postulats de la philosophie des affects, telle que définie par Spinoza, seront identifiés à partir desquels seront présentées trois conséquences à l'adoption de la théorie des affects sur la production du savoir en lien avec la numérisation des phénomènes humains. Seront par la suite explicités les trois modes spinozistes de connaissance, en s'attardant sur le troisième mode puisqu'il est celui qui est exclu des méthodologies actuelles en science des données. Relevant des affects, ce troisième mode fait état de ce qui est laissé de côté dans le traitement informatique. Nous conclurons avec un exemple où seront distingués affects et émotions pour démontrer la confusion parfois existante entre les deux et les limites de la science des données pour nous informer sur nos rapports affectifs au monde.

Mots-clés: savoir; modes de connaissance; données numériques; science des données; affects

According to C.S. Peirce (1873-1913) semiotic approach, “translating” the world into data is a symbolic process: data are signs that refer to their object according to specific conventions. Information is encoded and decoded as computer language, that is to say, as a series of zeros and ones. Such digitalization of the world may be beneficial, as it allows analyzing bigger datasets and increases the speed of data processing beyond human abilities. Proponents of Big Data argue that algorithmically processing big datasets generates new knowledge, and can indicate new avenues for data science research. This article critically examines how computing, however “efficient” it may be, affects knowledge production, as well as the nature of knowledge itself. Indeed, if changing knowledge means changing the value of knowledge, then manipulating meaning-making and our modes of knowledge production is anything but a neutral process.

Human activities’ transition towards digital technologies no longer necessitates “translation,” as knowledge is entirely constructed within the framework of digital technologies’ symbolic mode. The “Big Data” phenomenon, now encapsulated by “artificial intelligence,” seeks a comprehensive rendering of the world in quantitative and computable data. It relies on the promise of scientific methods free from human subjectivity, the results of which could yield unmediated, unaltered representations of the world. However, to quote one famous example, today the (digital) map does not simply account for (experiential) territories, but also produces territories (Baudrillard, 1981). Moreover, the map now stretches beyond the territory itself: digital symbolization produces the territory and exceeds it, which rules out the possibility for unmediated representations of the world.

The concept of hypersymbolisation (Bonenfant & al., 2015) describes a semiotic phenomenon: digital symbolization now happens through the production of vast quantities of data on a level that far exceeds worldly, human symbolization. In this sense, digitalization is not so much “hyperactive,” but rather “hyperproductive,” as the process allows symbolization beyond materiality. Data no longer act as working representations of the world, and their semiotic function changes as they participate in the production of the world itself. In other words, data seem to simply display the world rather than mediate it. Therefore, data-based knowledge production must be addressed within this hypersymbolic context. Applying algorithmic results without taking it into account generates numerous ethical and epistemological issues, some of which critical data studies have convincingly examined (Boyd & Crawford, 2012; Floridi, 2012; Gitelman, 2013; Kitchin, 2014, 2017; etc.).

Following the same rhetoric, not only do digital datasets now outreach human experience, which, in itself, has significant epistemological implications (Crémier & al. 2019), but data also outline an entirely symbolic landscape. Non-symbolic signs are excluded from the picture, that is to say that digital symbolization discounts modes of knowing that rely on non-symbolic meaning-making. Building on Spinoza’s theory of affects, this article discusses how digitalization shapes our modes of knowing. Digitalization is a discretizing procedure because it atomizes the world as decontextualized data. In other words, the whole of relationships between agents is excluded from selected information. Spinoza’s philosophy of affects highlights that objects are first and foremost defined by the relation to other objects, which social data science tends to disregard.

More specifically, this article aims to identify the type of knowledge production that social data science methodologies overlook. Peirce calls this type of knowledge production abductive: inferences based on some fact indicate a theoretical model, before it is empirically tested. In Peirce’s words, “(a)bduction consists in studying facts and devising a theory to explain them. Its only justification is that if we are ever to understand things at all, it must be in that way” (1902). In Spinoza’s writings, the concept of abduction designates intuitive knowledge based on his understanding of affect (Charles, 2002). Identifying what may not or will never be digitalized, we

question the totalizing pretense of "Big Data". It is important to note that this analysis applies to the digitalization of human activities, as opposed to datasets concerning machinic activity, for instance.

After a brief introduction to Spinoza's philosophy and its understanding of affects, stressing key premises to contextualize our argument, this article enumerates three implications of examining the digitalization of human activities through the lens of affect theory. Then, the authors explain Spinoza's three modes of knowing and closely analyze the third, which is not accounted for in the methodology of social data science. This third mode depends on affects and stands for what is "left behind" in data processing. In conclusion, a case study highlights a common confusion between affects and emotions, and makes it possible to question digitalization's ability to yield truthful information regarding our affective relationships with/in the world.

Spinoza's Philosophy of Affects: a Starting Point

Spinoza's cosmology conceptualizes God as the only possible substance, comprising all attributes. Humans, which he understands as attributes of God, may understand only a minute part of the whole of existing attributes. Spinoza establishes that the relation between humans and the world depends on two fundamental attributes, namely thought and extension, which may be understood on a human scale as mind and body. Against the hegemony of religious precepts in his time, Spinoza places the body and the mind on an equal footing, which leads him to radically rethink the relationship between the two. More specifically, body and mind are finite modes of God, that is to say that they are affections of substance. This does not establish any kind of superiority of the mind over the body, nor does it imply any causal link or value judgement about one or the other that would entail a hierarchy between the mind and the body. As Caillois remarks in his introduction to Spinoza's Ethics (2011, p. 24), body and mind are two sides of the same coin.

According to Spinoza, the body is an expression of substance rather than an autonomous entity; it is not distinct from other bodies. Bodies compose each other in a multitude of complex relationships, whether at rest or in movement. 'Individual' bodies stand out owing to their specific ability to affect and be affected by other bodies (Spinoza, 2017, p. 36). The body is fundamentally open and it is characterized by its capacity to interact with other bodies, rather than its material aspect. Thus, a body is always understood relatively, rather than absolutely: it is a whole of changing interrelations rather than a closed-up entity. Within this framework, affecting and being affected is an encounter between two or more bodies. According to Deleuze, the concept of affect refers to the transition from one experiential state to another (1981, p. 68). In addition, affection is a process that modifies a body's ability to act: a positive affect increases a body's ability to act, whereas a negative affect diminishes it.

Affects in the body and the ideas they produce are linked because the mind reflects upon the bodies it is connected with: "This idea of the mind is united to the mind in the same way as the mind is united to the body" (Spinoza, 2017, p. 39). Yet, any "emotion of a given individual differs from the emotion of another individual, only in so far as the essence of the one individual differs from the essence of the other" (Spinoza, 2017, p. 84). What may be positive according to one may be negative according to someone else. Following this line of argument, it appears that Spinoza's Ethics turn philosophical dogmas regarding behavior and judgement on their head. Indeed, effects determine the value of affects: there are no intrinsically Good or Evil deeds, only good or bad ways to act, depending on the way in which they affect a body's conservation and power to act (Spinoza, 2017, p. 100).

In a book that greatly contributed to Spinoza's affect theory, Deleuze (1981) theorizes the augmentation and diminution of a body or mind's power to act as processes that compose or decompose relationships. Composition, from the latin componere ("to put together"), creates a relationship that suits all affected bodies. Combining parts creates a whole, like notes may be harmoniously put together to make a musical composition. In this way, when a body affects and attunes to another body, and thus, to a world, its power to act augments. Conversely, relationships of decomposition are established if affection lacks harmony or bodies fail to attune to each other, which diminishes bodies' capacities to act. This reflects an immanentist position: drawing on the concept of pharmakon, what may heal a body may kill another depending on the context of the encounter.

Therefore, what is "good" and what is "bad," according to this view, are values that affect surrounding bodies according to their effects on each one. However, bodies are conceptualized within one and the same world. In affecting each other and initiating a collective movement to achieve a common goal, bodies become the social body. Society thus plays a role in determining values. While it could be said that it accommodates a diversity of worldviews, Spinoza's theory does not fall prey to pure relativism: intersubjectivity means that humans may objectivize thought (Husserl, 1931), share collective imaginaries (Castoriadis, 1975), or construct specific regimes of truth (Foucault, 1979-1980), etc.

What Affect Theory Tells Us About Digitalization as a Means to Knowledge Production

Affect theory provides insights into human phenomena that may not be digitalized or turned into viable knowledge through digital processing. The following section elaborates on three of them and explains how such exclusions impact meaning-making.

First of all, relations play a key role in producing meaning and value for each affected body. If relations are primordial in affect theory, they also precede bodies in relation. Indeed, modes of affection and individual components' properties are only defined through their interrelation: a body (1) meeting another body (2) could have displayed different properties, were it put in relation with a third body (3). This means that relations are experiential objects. If the value of an experience may be defined by its relation between bodies, its meaningfulness can be grasped in the same way. According to Spinoza, all knowledge takes root in the process of affection, and relationality itself defines our understanding of bodies in relation. Relations thus have organizational power over reality: "Relation takes autonomy from its terms. […] The relation determines the parts, not the other way around" (Massumi, 2002, p. 165). Relations, as affects' effects, constitute experience alongside objects and subjects. Massumi, a proponent of affect theory, considers relations as an integral part of reality: "the felt reality of relations" (Massumi, 2002, p. 16).

In this way, Spinozist affect theory stresses the role that affect plays in the elaboration of a general experience of the world, and bodies or elements involved in a relation may not possibly be digitalized before that combination occurs. In other words, while it is possible to digitalize several properties pertaining to an object and to include such properties into automated procedures, digitalizing relationships themselves is impossible so long as properties have not been digitalized. From the perspective of computer science, digital data produced through the capture of human phenomena loses its contextual meaning once collected, that is to say that the circumstances surrounding its production will be overlooked, as it cannot be stored in databases, even relational databases. Data is always-already stripped from its relational context of emergence, even if relationality defines the properties of data, if not its "realness."

In keeping with the primacy of relationality in affect theory, digitalization necessarily affects results' meaning and value, whether it is through tracking and "translation" upon collection, or the differed process of combining datasets to produce inferences. This leads to a possible series of misinterpretations of the results that one obtains through the combination and digital processing of datasets because data are decontextualized. After only some of their affective and signifying potential is digitalized, data are recontextualized in new combinations, which may greatly differ from original relations, if not change their potential meaning and affective charge.

Secondly, the processual aspect of affect theory also informs us about some events' untranslatability. This approach pertains to the philosophy of becoming, within a necessarily immanent and context-dependent, continuous process that depends on the bodies or elements in relation. Deleuze defines Spinoza's Ethics as a "typology of immanent modes of existence" and believes that this entails the spread of "a plane of immanence where all bodies, souls and individuals lay" rather than an affirmation that a "unique substance" exists (Deleuze, 1981, p. 164, Authors' translation). Within the framework of this immanentist philosophy of becoming, experience is part of a continuous, temporalized process of perception.

In computing, human experience is translated into procedures. As a series of rules (or conditions) fulfilled successively in order to obtain specific results, procedures are organized tasks oriented towards problem-solving or finding the answer to a question. Thus, procedures are discontinuous, as digital data processing not only follows clearly identified steps, but also selects pertinent data. Digital data are, therefore, a discrete entity because they remain unchanged once separated from their context. They represent an arbitrary cut-out of an experiential continuum. Additionally, as a symbol, data is an arbitrary sign, the signification of which depends on a certain number of decisions. The selection of digital data and the linguistic construction that oversees data processing partly pre-define its signification. Notwithstanding the power dynamics that determine what should be tracked and processed, be it in economic, ideological or other terms, digital data and algorithms cannot possibly account for processual, human experience in its entirety. Part of our understanding of bodies in relation escapes the distinguishing and discrete nature of the digitalization process.

Thirdly, affect theory highlights the undefined and infinite nature of relations between bodies. This points to another implication of digital, data-based knowledge production of human phenomena. Some virtual properties of worldly phenomena will always escape digitalization, hence undermining the promise of Big data. Indeed, if digitalization fails to harness the totality of worldly phenomena, then a digital map of the territory cannot possibly stand for the territory or replace it. According to Spinoza, what a body can do has not been determined yet (Spinoza, 2017, p. 58): leaving accusations of determinism levelled against him aside, it is useful to highlight the infinitude of potential relationships with the world, which symbols – language or digital data – cannot completely account for. Digital data, as a selection of some of a body's properties, is necessarily restrictive compared to what a body can do. The virtuality of affect illustrates the world's openness to emergence and the continued creation of new experiences, that is to say, the infinite process through which relations evolve, and its effects on bodies.

> Affectare virtual synesthetic perspectives anchored in (functionally limited by) the actually existing, particular things that embody them. The autonomy of affect is its participation in the virtual. Its autonomy is its openness. Affect is autonomous to the

> degree to which it escapes confinement in the particular body whose vitality, or potential for interaction, it is.
>
> (Massumi, 2002, p. 35)

Within a Massumian perspective, the autonomy of relationship-building and the concrete reality of relations' effects as they actualize in bodies both characterize affect. Thus, the ability to affect and to be affected may not be limited to digitalization's version of possibility. The body's fundamental virtuality makes any attempt to define the effect that affection will have impossible until bodies actually come into contact within a necessarily always changing context: there is always a potential for emergence. Individuals' feelings differ because they differ in essence (Spinoza, 2017, p. 84). Therefore, comparing the ways in which two bodies relate to the same object is difficult, if not impossible, and perhaps futile. Conceptualizing the body from the lens of its relational becoming allows broadening interpretations of our horizon of possibility and letting as-of-yet virtual elements define relations. Indeed, from this perspective, the range of possibility is not defined by a specific moment during processing. The virtuality of the relational process will never be "contained" nor exhaustively expressed through digital processing.

Spinoza's Three Kinds of Knowledge

Taking affect theory as a starting point, this article has identified three reasons why not all human phenomena may be digitalized. The primacy of relations over bodies' properties, the processual nature of human experience, which contrasts with computing's atomizing procedure, and the undefined and infinite virtuality of affects understood as the effects a relation has on affected bodies. On the basis of these three arguments, the following section introduces Spinoza's three kinds of knowledge in order to identify the type of knowledge production that social data science methodologies overlook.

If the essence of the mind is an idea and if this idea is about the body, then, according to Spinoza, all knowledge originates in the body and its affects. Spinoza defines three kinds of knowledge, ranging from inadequate ideas to the knowledge of essences. The first kind of knowledge is called an inadequate idea, which "always has to do with a mixture of things, and only retains the effect of one body on another: it lacks an 'understanding' that would concern the causes" (Deleuze, 1981, p. 104, Authors' translation). An inadequate idea observes the body's affections and its effects, but stops itself before accessing a broader picture of its affective movements. This kind of knowledge includes imagination, an idea that considers the presentness of some thing and that "indicate rather the constitution of our own body than the nature of external bodies" (Spinoza, 2017, p. 36).

This kind of knowledge could be likened to perception, as well as inductive means of knowledge production based on information about bodies in relation. Digital sensors and the digitalization of human activities more generally perfectly mirror this inductive mode, in which procedurally processed data determine signification. Collecting considerable quantities of information about the body's affects and its effects, computing produces results without a theoretical framework (Anderson, 2008). In more simple terms, results produced according to this kind of knowledge do not depend on prior hypotheses, which significantly increases the potential for discoveries. The greatest strength of "Big Data" technologies lies precisely in large-scale inductive data processing. Such methods and their tools produce results that may not have been anticipated.

According to Marvin Minsky, renowned researcher in the field of cognitive science and artificial intelligence, "bottom-up connectionist research" is a good example of this approach. This

research area "has shown considerable promise in mimicking some of what we admire in the behavior of lower animals, particularly in the areas of pattern recognition, automatic optimization, clustering, and knowledge retrieval" (Minsky, 1990, p. 37). Moreover, induction also promotes data analytics' predictive capabilities, for instance, the identification of correlations between effects of one body on another.

However, if these reciprocal relationships between bodies may vary according to how each change owes to the existence of some causal link, the first kind of knowledge cannot explain causality. Understandings of causality and variations in the power to affect and be affected are only addressed through "adequate thoughts." Spinoza identifies two kinds of adequate thoughts: common notions and the comprehension of essences. Common notions refer to what is shared by several bodies. They have to be adequate ideas, as they go beyond the mere observation of affection's effects on one body. Comparing affections allows understanding causal links that underpin affective dynamics and affection's effects on one body. As they group ideas together, common notions promote the mind's ability to outgrow the body and reach its reasoning faculties. This means that particularisms of any kind must be ruled out in order to identify what is common and shared: in other words, the properties of affected bodies objectivate relations.

This second type of knowledge thus refers to cognitions, that is to say knowledge articulated as language following, for instance, the rigor of scientific reasoning. Proceeding deductively – prospectively formulating the rules governing phenomena (hypotheses, theories, etc.) – this kind of knowledge reflects an understanding of the world, of the causes and effects of encounters between bodies, in formulating applicable rules that may actually be observed. This makes general inferences about past and present, if not future, occurrences possible, insofar as some effects of certain bodies' relations are withheld.

Computing is based on procedural principles, and so, it embraces this form of knowledge production as well, in which all rules and properties to test through diverse experiments are digitalized. The symbolic translation of knowledge into language perfectly operates within a computing framework, as computing itself is symbolically formalized. As it depends on technologies' ever-growing functionalities, computing now performs extremely well at the simultaneous processing of rules and massive quantities of information, executing complex calculations well beyond humanity's physical and intellectual capacities. One may liken this to what Minsky called "top-down procedures" which "have important advantages in being able to perform efficient, systematic search procedures, manipulate and rearrange the elements of complex situations, and supervise the management of intricately interacting subgoals" in computing (1990, p. 36).

In this way, Minsky showed that combining top-down procedures with bottom-up connectionism could be beneficial to both approaches and help them both address their shortcomings: "we must develop systems that combine the expressiveness and procedural versatility of symbolic systems with the fuzziness and adaptiveness of connectionist representations" (1990, p. 38). He also adds that several types of representation (rule-based systems, predicate calculus, semantics networks, conceptual dependency, etc.) are fundamental to the emulation of "common sense." Nevertheless, in his article from 1990, he also takes up one famous affirmation he formulated in *The Society of Mind* (1987) to stress that: "[t]he secret of what anything means to us depends on how we've connected it to all the other things we know. That's why it's almost always wrong to seek the "real meaning" of anything. A thing with just one meaning has scarcely any meaning at all" (1987, p. 64). Therefore, "a mind must have at least several different kinds of knowledge" (1990, p. 38); additionally, we propose that it must summon different modes of knowledge production.

If such combinations between deductive and inductive modes of knowledge have always been fertile for science, Spinoza elaborates a third mode that is presented as intuitive knowledge. While percepts and concepts pertain to the first and second types respectively, this third type is the realm of affect and, contrary to the first two types, it cannot be digitalized – which is at the core of the present demonstration. Indeed, beyond the three aforementioned justifications, this third kind of knowledge escapes digitalization because it presupposes an understanding of the essence of things and their necessity. "This kind of knowledge proceeds from an adequate idea of the absolute essence of certain attributes of God to the adequate knowledge of the essence of things" (Spinoza, 2017, p. 46).

An understanding of causality and comprehension of the intrinsic necessity of the world frees humanity from the "tyranny of passions" that typifies one's dwelling in passive affections and confused ideas, led by the external world instead of one's own will, and failing to understand the world. This third type of knowledge, which is grounded in "will," promotes abductive knowledge production. Intuition here fosters the articulation of explanations that do not necessarily have truth value – the logical status of being true or false – but rather are truthful according to bodies in relation.

This third kind of knowledge is the most difficult to understand because abduction has not been formalized by science as much as induction and deduction have. Additionally, this kind of knowledge does not necessarily rely on language, which is the dominant organizational principle of which conditioned minds struggle to let go. Moreover, the abductive mode of knowledge production generates results that do not necessarily need representing, and that can be *unrepresentable*.

To clarify, we may borrow the example of the red glow of a sunset from Whitehead's works. According to the philosopher and mathematician, "language habitually sets before the mind a misleading abstract of the indefinite complexity of the fact of sense-awareness" (1920, p. 108). If science can explain the natural fact of redness (waves, molecules), the experience of such qualia lies outside of language: science describes a series of relations that account for the reason why we see the color red, but it says nothing about what it is that makes us see red, that is, in terms of the comprehension of essences. Part of human experience is not symbolized as language, yet contributes to the conceptualisation of reality nonetheless, putting observers into contact with sunsets.

Indeed, if waves and molecules may be translated into viable digital data, red itself, as an experiential relationship with the world, resists symbolization. According to Stengers, who comments that example found in Whitehead's writings, it is necessary to "recognize that our 'immediate, intuitive attitude' irrestibly surpasses the limitations established by one theory or another" (2002, p. 51). She adds that scientific discoveries, as verbal statements, should not diminish the different types of relationships to the world. Whitehead explains that the transition from experience to thought allows communicability, at the cost of content: "The transition from the 'red' of awareness to the red of thought is accompanied by a definite loss of content, namely by the transition from the factor 'red' to the entity 'red'" (1920, pp. 12-13). Because it escapes linguistic formulation, this content cannot be digitalized. Therefore, digital processing, as it is applied to datasets regarding human activities, leaves such content behind, that is, the relational, processual, and virtual aspect of human experience.

Data-driven Research Excludes the Abductive Mode of Knowledge Production

Intuition constitutes a form of knowledge in itself because we do not know "the limits to the powers of the body" (Spinoza, 2017, p. 58). This virtual aspect of the experience of affected bodies situates affect theory as a theory of experience outside language. The virtuality of relationality cannot

be exhausted or expedited through symbolization, be it linguistic or digital. If affect is only actualized through its effects, what remains perceptible and understandable after it has "gone," then affect is defined by indeterminacy and potentiality and it is, in this sense, virtual.

Therefore, it cannot be grasped: something always escapes understanding. Cognition may only access the effects of affect's coming and going through the body and attempt to intellectualize phenomena after the fact, for instance, by describing them with words. Yet, words cannot possibly describe all affects. Were words capable of describing all shades of affects, they would remain considerably vague.

The occasional confusion between affects and feelings (or emotions) is a compelling example. Affect concerns the body's modification upon contact with another body. In contrast, Spinoza considers feelings to be ideas. In the Ethics, a feeling necessarily is a confused or inadequate idea about some thing's presence, as it denotes a state of the body (Spinoza, 2017 p. 101). Similarly, Minsky defines emotions as "ways to think" (2006, p. 6) about worldly issues.

While psychology develops a theory of emotions that accounts for their biological aspect – as the works of Tomkins (1984) show, among others – affect theory explores a wider range of experiences and prioritizes non-verbal ones. If affects are inaccessible intensities, affecting bodies with tangible effects, then feelings and emotions are subjective snapshots of such effects, that is, they are efforts to rationalize and put such effects into words:

> Formed, qualified, situated perceptions and cognitions fulfilling functions of actual connection or blockage are the capture and closure of affect. Emotion is the most intense (most contracted) expression of that capture – and of the fact something has always and again escaped.
>
> (Massumi, 2002, p. 35)

Emotions, as a vocabulary, are interpretations of affects' coming and going, but a part of the "content" of human experience cannot be consciously grasped through symbolization and verbalization, which are necessary steps towards digitalization. Biometrics, for instance, studies a rather small range of human affects, as it seeks to digitalize human emotions by matching physiological reactions with a normative and explicative vocabulary. Following Whitehead, it is possible to claim that embodied affect belongs to both nature and the physiological reactions that scientists observe in order to explain affective phenomena (Whitehead, 1920, p. 29; Stengers, 2002, p. 47).

Confusing emotions and affects is misleading, not only from a semiotic standpoint, but also from an ethical perspective because value judgements about relations are immanent, processual, virtually infinite, and undefined until they actualize within affected bodies. Indeed, ethical knowledge depends on an affective relation with knowledge (Spinoza, 2017), that is, affects are judgements articulated about a signifying relationship ("assigning value" entails "assessing value"). If that relationship resists digitalization as long as the properties of affected bodies themselves have not been digitalized, judgements about the process of affection may not be digitalized at all: relational value is excluded from digital processing. Operationalizing ethical value by pre-attaching it to given data is possible, but it cannot be likened to ethical judgement. Conflating value and judgement would greatly undermine both rationality and morality.

Conclusion: From Event to Algorithmic Event

According to Deleuze, Spinoza considers philosophy to be the "radical undertaking of demystification, or the science of 'effects'" (Deleuze, 1981, p. 18, Auhtors' translation). Indeed, in Spinoza's ethics, no object or body has any intrinsic value. One may only judge the contextual effects of the process through which a body or mind's power to act are affected. The virtuality of affect illustrates the world's openness to emergence and the continued creation of new modes of affection – in other words, to event.

Event, as a concept, should thus be linked with the world's liveliness, which owes to affect and virtuality: "Affect enlivens. Its vivacity, ever on the move form situation to situation, strings context-ordering together in eventfulness, holding them together from the angle of what new and unpredictable enters into them" (Massumi, 2002, p. 220). If it were to be closed, the world would be "dead," as potentiality would be ruled out (Massumi, 2002, p. 35). Events happen: bodies change from one state to another as they encounter other bodies. From a Spinozist perspective, events rely on unrepeatable, contextual modes of affection and take place within unique space-time parameters. Yet, if affect is constitutive of event and, as this article demonstrates, affect cannot be digitalized, then do events happen in computing?

In conclusion, we would like to suggest that events do happen within the framework of digital knowledge production, and that such events may be characterized as algorithmic events. Indeed, while inductively and deductively processing data collected from human activities helps shape representations of and informs us about the world, abductive processing generates results that display the world or, in Spinozist terms, that define attributes of the substance. While these results do not describe or define the world, as a mode of knowledge production, abductive results still produce the world because they have structuring effects, on the scale of experiential, human time, and on existing relations.

More specifically, abductive processing, using mixed methods, for instance, does not leave affected bodies intact. Upon coming into contact with humans, the outcome of abductive data processing acquires relational, processual and virtual value as new knowledge. Such results can, in turn, give way to subsequent algorithmic events, which form an undefined and virtually infinite chain. Here, characterizing events as "algorithmic" points to the machine-based nature of one of the "bodies" involved in the process. Ethical judgement can only be formulated about the human body or the social body, based on the relationship's effects on them.

Taking up Spinoza's theory of affects, we may assess what it means to put the machine-based body (or algorithmic data processing) together with the human or social body, in asking whether it helps or undermines our power of action, and whether it furthers or hinders the conservation for our being (Spinoza, 2017, p. 100). From this perspective, it is possible to evaluate how the social body interacts with and is affected by abductive knowledge production using digital data processing without reproducing Manichean postures, either demonizing or praising "Big data" and artificial intelligence. We must constantly improve our efforts to evaluate the practical consequences of digital data processing because results may be "useful or harmful to the conservation of our being," and sometimes "increase or diminish our power to act."

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About the Authors

Maude Bonenfant is Associate Professor at the Department of social and public communication, University of Quebec in Montreal (UQAM). She holds a Ph.D. in Semiotics and specializes in online social networks and communities, social web and online communication, Big Data and AI, gamification and videogames. She holds a Canada Research Chair on Big Data and Gamer Communities and she is also co-director of the Research Laboratory for Social Media and Gamification, director of the Homo Ludens research group on gaming practices and communication and she is an active member of the research group GRISQ, focusing on information and surveillance in everyday life. bonenfant.maude@uqam.ca

Laura Iseut Lafrance St-Martin is a Ph.D. student in Semiotics at the University of Quebec in Montreal (UQAM) for which she was awarded a scholarship from the Quebec Research fund – Society and Culture (FRQSC). Her thesis focuses on J. R. R. Tolkien's semiotic theory. She is a research assistant for the Research Chair on Big Data and Gamer Communities and an active member of the Homo Ludens research group and the Research Group on Information and Everyday Surveillance. She has written journal articles and book chapters about video games, gaming communities, and the semiotic analysis of Big Data. st-martin.laura_iseut@courrier.uqam.ca

Lucile Crémier is currently writing a Ph.D. thesis in Semiotics with Feminist and Gender Studies at the University of Quebec in Montreal. Their research focuses on sign-making and gender expression in contemporary French in Quebec. They actively contribute to community work surrounding gender diverse and trans issues in Montreal. Other research interests include metaphor, utopia, algorithmic governmentality, and the role of semiotics in queer and trans theories. cremier.lucile@courriel.uqam.ca

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