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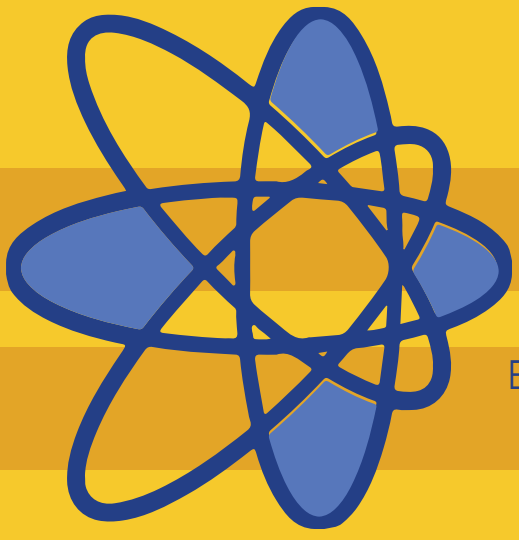

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Contents

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Reviews in Science, Religion and Theology publishes academic style book-reviews and article-reviews, or articles describing the current developments in a sector of science-and-theology through the analysis of recent publications.

The fields covered are:

- general developments in science-and-theology;
- philosophical and epistemological issues;
- cosmological and physical (quantum) issues;
- evolutionary and biological questions;
- anthropological areas;
- the scientific study of religion;
- historical studies in the field of science-and-theology
- practical or ethical issues.

Book reviews should normally be of 700-1500 words. Review-articles should be kept between 4000 and 5000 words. In both cases contributors are asked to bear in mind that the majority of readers will not be specialists in the same field, and will not have English as their first language.

This publication will favour the Chicago Style Citation format.

Submissions and all correspondence should be sent to the Editor, Lluis Oviedo: *loviedo@antonianum.eu*

Are Sustainability and Governance grounded in any World?

Philippe Gagnon

Abstract

The need to act in networks and to function in a society where we relate in complex fashions has fostered the use of data in accordance with distributed models. In a big data context, the individual is often overcome with the sentiment that one's life does not matter, nor does it make a difference. What are sought are trends, and since there is no detached observer, those change things as much as they measure them. Where can we find a vantage point, a 'topsight' necessary before the conception of any program? One could seek it in the direction of a collective figure, somewhat like the Leviathan of Hobbes, made up in its gigantism of smaller figures. Those that have been schooled in the classical tradition, or *philosophia perennis*, might think that we are abandoning solid realism, which seeks a conformation of statements, propositions, and language to what there is. They might criticize the reign of opinion. But what we entered into is not, upon closer inspection, some overarching paradigm of truth as success. It is rather a rationality of the likely, and it requires assessing the truths that can seem distributed between alternating or competing positions. But then, to seek decisions despite this, is to erase from our world this '*esprit de finesse*' which Pascal deemed necessary to balance the illusions of a procedural mathematical rationality claiming that its end-products are simply in correspondence with reality. When we gather information, we frame it within an ontology for classification purposes, but this does not import with itself the immanence of this information as endogenous power to harmonise and give form. Feeling, as Whitehead construed it, seeks to take within it a receptivity to the world in order to turn it into an internalised representation. For this, it needs to be possible for a part of the world to reflect in itself the whole. Yet, this reflection is not a totalisation in an immaterial data range, it is rather a grounding in the mystery of the flesh, which is found here as a signpost on the way, if we are to heal dreams of complete mastery.

Keywords: governance; big data; simulation; modeling; algorithm; algorithmic information theory.

1. One-dimensionalisation

The need to act in networks and to function in a society that is relating in complex fashions has fostered the use of data in accordance with distributed models. One of the striking things when all has been made measurable in terms of presence in a pre-given statistical lot, is that there is no place for

silence, for non-response, or—to use more of a classical term—for 'interiority.'

In a big data context, the individual is often overcome with the sentiment that one's life does not matter, nor does it make a difference. Indeed, to the extent that causation and correlation have been decoupled, with correlation mapping trends and tendencies, one can protest situations, and attempt to bring back sanity in a world-as-number (aptly quipped in the title of Olivier Rey's essay of 2016 *Quand le monde s'est fait nombre,* or *When the World Became Number*), but one's voice is not going to be qualitatively recognized as anything that matters more than other voices. If one does not set a trend, then one has not achieved making noise, uttering a signal, and as such one will also be faced with the seemingly opposite phenomenon: trying to replicate the trends abolishes its very qualitative significance, as we get to a situation where everyone having to be 'in,' nobody quite has any access to a true, genuine, existential affirmation of Self (see Gagnon 2015). To redraw the logic of the terms we used in this last sentence, we wound up in a situation wherein the attempt at signaling is bound to fail as it is, precisely, turned immediately into noise, by which we mean that the rarity of a highly original signal ought to come from somewhere else than the repetition of what has already lost its uniqueness. This was theorised in Gunther Stent's essay *The Coming of the Golden Age*, expanding on the 'immanentisation' of transcendence, but mostly showing that, in information-theoretic terms, the Beatnik generation had nothing in sight other than entropic dissolution of the 'masterpieces' of the past into what was the fate of—to borrow Nietzsche's horrified vision in his *Zarathustra*—the flies of the market!

2. The case for topsight

In our mode of knowing and interacting with reality, there is a constant need to overview that which we aim at understanding, as there should be a moment of understanding that precedes the will to control. If we were to let integrated components and units have their own degree of freedom, we would still need to know how to counteract disruptions if they were to happen. Where can we find a vantage point, this 'topsight' that David Gelernter deemed necessary before the conception of any program? (Gelernter 1992, 52-53). In other words, all of the operations to be carried have to be pre-envisioned, as they cannot be left to chance. One could seek it in the direction of a collective figure, somewhat like the one pictured on the frontispiece of the *Leviathan* of Hobbes, where the anamorphic baroque art figure is made up in its gigantism of smaller figures. What is remarkable however is that, when the 'common body,' in the sense of the body politic, is symbolically charged with this image, the smaller figures, making up the larger one, are *all similar* (see Rey 2016, 83).

Figure 1. Frontispiece of Leviathan *(1651), attributed to Abraham Bosse.*

There is therefore a status of the individual that has *shrunk* that same individual, while we thought such progress would have allowed us to take in the measure of a larger whole. Extending and universalising, we have at best *generalised*, making more of the same. All the actors of the social body have become interchangeable; they are the same and do not represent qualitative differences as we have of different organs in a qualitatively apprehended self-directing organism.[1]

There is a problem that raises its head as we discuss governance, and bring it in line with sustainability. Indeed, if we are to talk about sustainability, we cannot aim at implementing the last procedures obtained from knowledge of component parts that would inscribe in them a complete obedience to rules that do not amount to knowing how things behave in their very capacity for said sustainability. We have before our eyes the example of a capacity to take into account cues that are fed back as a mechanism producing homeostasis, while we also need to keep in mind that this process relies on a capacity for choice and self-adjustment. As we study the conditions for sustainability, we ought not to forget that we have in many natural conditions for stability an

[1] Self-organisation and self-repair were emphasised by Aristotle as traits of a nature springing from an immanent center of direction, see *Physics* II, 8 (199b 26-33).

example of dynamic, self-regulated, and *autonomous* behaviour. If we look at our failure to reproduce such sustainable behaviour in our human-engineered development plans, what we find is a distance to be acknowledged between that *autonomy* and *detailed programming* (see De Rosnay 1984, 171-173). Our mindset resting on the excluded middle (*tertium non datur*) leads us to think that societies and communities under emergent self-organisation would fare better than they would under detailed programming. Self-organisation does not instruct us any more when we cope with a mass of details in need of directionality. If we oppose the program that aims at identifying a fixed and constant value behind the stability of homeostasis, we implicitly recognise that mechanical programming has to readjust passively to a given value. If we make the organism capable of readjustment according to what looks more like a *norm* than the following of passive cues, then we have to take more seriously a model where freedom to choose would proceed from the bottom of things and rise up as if it is lured.

This might recall a Whiteheadian metaphysics, but other meritorious endeavours are worth mentioning. French physician, statistician and cyberneticist Pierre Vendryès has shown that if one studies brownian motion in animals and human action, one observes early on the need for an anti-chance reservoir. As physiological autonomy is acquired, Claude Bernard—on whom Vendryès' dissertation dwelt—was able to show how external variations were countered by a constancy of values, in the blood in particular. From this, Vendryès inferred in a fascinating way that as one approaches the diversity of objects of thought, one finds an anti-aleatory framing and 'putting in reserve' that can equivalently be framed as a Plato-inspired theory of the overcoming of chance that would proceed from the very realm of physiology, all the way to the free creation of significance. In this, André Pichot suggested that Walter Cannon's approach (see Cannon 1963), which he compares to Vendryès' seeking to understand stability among variations, is led in the end to postulate an equilibrium-restoring mechanism that remains mechanistic, and as such does not problematise the *origin* of this information: it is swept under the rug, or declared to be part of extra-scientific initial conditions (Pichot 2004, 43-48).

2.1 Control in ecology

In the midst of his study of natural ecosystems and foundational work in ecology, Canadian ecologist Pierre Dansereau came to the realisation that it was not possible to follow the set example at the time and bypass human ecosystems (see Dansereau 1957). This was the first treatise on the subject to change the situation to one where mentioning human beings meant that one was not doing natural science. And this is where we find out that human decisions, following measurement and data-gathering, exert control but of a different

kind. A kind that does not leverage from within, from some immersion, but rather one that can order circulation of matter and energy not only *within* an ecosystem, but *between* different ecosystems. A decision made by some urban-dwelling civil servant will have consequences on, e.g., marine ecosystems of the Arctic, or one who has never milked a cow will decide from a tower in a large city that *x* many liters of milk will not be bought. In the model he developed, which contains his trophic 'ball of arrows' integrative node (see Wynn 2019, 13), Dansereau identified a control level, also named cybernigenic (*cybernigène*), as a condition leading to the potential increase in rational planning and universal territory planning (Dansereau 1990, 18).

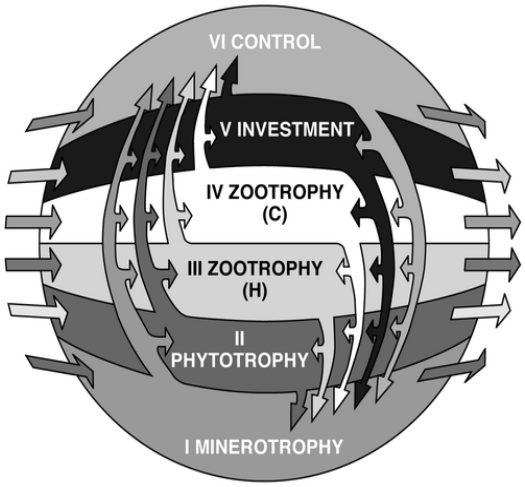

Figure 2. 'Ball of arrows'

If we reach this level, we'll have to reconsider our representations, values, and, in a larger sense, the symbolic dimension of social life. Yet this might not work, since human rationality expressed in sociological ideas might rest on a false universal, on data stemming from human needs in an overly artificialised context.

If we look at the social construction of nature, we head in a direction that might require the strong divide introduced by Saussure and others—and philosophically by Kantianism—between intentionality and nature, as something softer than we admit, in the direction of the biosemiotic school (consider Ostdiek 2015). Yet another complementary direction is simply the recognition that the 'solidity' of our knowledge might not be an advantage; the mathematical univocity we pursue might make it misleading. We might have to recognise that an elusive knowledge, a 'construing has'—Max Black's take

on what metaphor is—if not an outright statement, might lead us to a better place.

It is at this very point that Dansereau remembered Hopkins and thought it justified to steer toward rational and scientific ecology using the image of an 'inscape' that comes *prior* even to the description of the landscape. In the same semantic realm as this, we also find the 'instress' as that depth of integration that seemingly only minds can achieve (Dansereau 1975, 91). Whitehead's metaphysics tried to grasp the question better by speaking of 'prehension:' in other words many natural systems will be found to know how to do things, but will not know that they know, or express it reflectively. Whitehead was to characterise what he called his 'philosophy of organism' as a theory of the acquisition of conditions for a prehension to rise to a superject through feeling or oneness with the world: 'The philosophies of substance presuppose a subject which then encounters a datum and reacts to the datum. The philosophy of organism presupposes a datum which is met with feelings and progressively attains the unity of a subject.' (Whitehead 1978, 155)

3. What comes of the world with a probabilistic rationality?

There were main metaphors such as the organismic one, and the systems metaphor, that dominated the scene when the problem of ecology and ecological relationships were first addressed and took shape. Arthur George Tansley suggested getting rid of the notion of organism and focusing on the totality of a system, including not only its organic elements but also all its physical factors, and this new unit of analysis was named 'eco-system.' Many elements which were adduced in the years following could be seen as working together to constitute new traits in this paradigm:

1. cybernetic self-organization;

2. a linkage between systems and environment in general systems theory;

3. the stochastic character of the relationship between random mutations in a population and the evolution of species.

The new paradigm is summarized by Tessier in four ideas:

1. the attention to composite objects where the whole is not reducible to its parts, nor the parts reducible to the whole;

2. objects reveal their structure in evolving;

3. objects are self-organising: they select within random events those which will contribute to their development by keeping and by reinterpreting their own identity, and

4. While they have an ontological objective foundation, objects are sensitively affected by epistemological constructs prior to observation.

The shift in accent relative to the aprioricity of the paradigm leads to question things related to logic, since we will have to deal with new paradoxes, and issues related to the temporal context of phenomena under evolution, with such problems as recursivity, relativity of observation, and conceptualisation in reference to time (see Tessier 2005, 17).

Now if we go back to the question of general systems theory, let us notice how it generalised a paradigm that sought to bypass a gridlock where:

- on the one hand mechanical and analytical understanding of the world had led some to hold a blind faith in a mode of thinking that has served us well, seeking to use and adapt the scientific method to all fields of inquiry in the hopes that it would inevitably enrich our lives and bring progress
- on the other hand, many others condemned rationality and its materialistic leanings, and turned towards spirituality, intuition, esotericism, calling for a 're-enchanted science.'

The whole attempt at a general systems theory originated when Von Bertalanffy was concerned by the problem of equifinality raised by biology and by steps toward a 'holon' theory (Koestler's expression) such as those made by Driesch or Spemann, and as such he was led to reject servo-mechanism as adequate explanation for the behavior of living organisms. We could say that his contribution was to point towards a needed reflection on a mode of causation of the whole (Hofkirchner & Rousseau in Bertalanffy 2015, XXII). Now, if we are led to distrust organicism either as an ungrounded metaphysics in terms of scientific analysis, or due to unrelenting methodological individualism (see Laurent 1994, 33-36), and if we reject mechanism because it is blind to questions such as those we just raised when a fine analysis leads to a decision that's axiological and value-driven, then what are we left with?

A number of interesting features stem from the synthesis put together by Jay Wright Forrester, a management of organisation specialist, and early theorist of information theory applied to management (and as such 'writ large') under the heading of 'world dynamics.' We could say first that there is a recognition that without a cause-effect understanding of past system behaviour, it follows that there can be no rational management of future behaviour.

Forrester looked at feedback loops as a structural setting within which all decisions were made. A decision would be based on the observed state of the system when it produces an action which alters its state, and the new state gives rise to new information as the input to further decisions. The feedback loop implies the circularity of cause and effect. From this, he concluded that there was no system without some pressures exerted on it and as such there were no real utopias, or no reaching of them.

Using the system dynamics method, it was possible to choose the pressures and time of their occurrence rather than have the system do the choosing and timing. The whole idea was to gain control over human agents' complex social systems, and by implication to gain control over human destiny. In the end however, Forrester would come to recognize that, as much as one could interview managers and evaluate managing decisions concerning the operations of a complex system, a great deal of the structure had to be based on educated guesswork. An example of the paradox of observation and measurement came when, for instance, one would have to ask how could the poor two thirds of the world be expected to agree voluntarily to foreclose the option of a quality of life enjoyed by the rich one third (Linstone 1972). In other words, if a nation controlled its urban processes so that it would achieve the equilibrium society that would have acquired a high standard of living, how could that nation be forced to share this with its neighbour that overloaded its resources and drove itself to a subsistence level of existence? (Bloom 1977).

One can only agree with Langsdorf in underscoring that ethics applies to the technoscientific decisions we ought to make, far from supporting a misconception that 'it's all a bunch of rules we could do without.' It rather shows, when one adduces examples, that very many of our daily choices have systemic effects that we need to bring to consciousness (Langsdorf 2020, 123-124).

When he summarized his own thought, Forrester insisted that the challenge for the next several decades would be to advance social systems in the same way that the 20th century advanced the understanding and transformation of the physical world. He reminded us that system dynamic projects were those that changed the way people think about a system, and to illustrate this he would differentiate between observed structure and policies, expectations about behaviour, and actual behaviour:

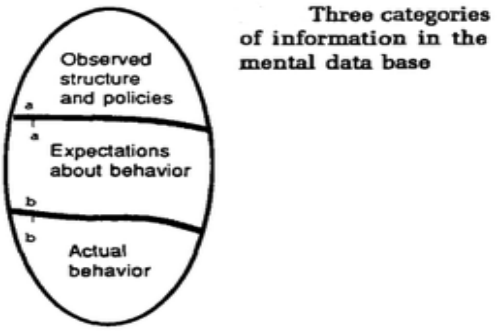

Figure 3. Information in the mental database

Perhaps in a way that could be said to be counterintuitive, system dynamics investigation ended up showing that the discrepancy one finds for the most is not across a boundary such as b-b, which is the discrepancy between expectations of behaviour and the actual behaviour, but across boundaries such as a-a, in other words when the model is built from the observed agreed-upon structure and policies then it exhibits the actual behaviour of the real system. The existing knowledge about the parts of the system is shown to explain the actual behaviour but the dissidence in this diagram arises because the intuitively expected behaviour is inconsistent with the known structure and policies in the top section (Forrester 1987, 137).

4. Pursuing a desire to see through

Our big data setting is not analysable in exclusively information-theoretic terms, but it deals with the same overall problem: compression, safety, and least energy-expending response. Concerning persons reduced to information, from the person we only retain the information that stands for it, as if a reconstitution of the individual could be done with 'slices' as it were and could then be turned into this category or that, which we could then map, showing what results we obtain in common and thus inductively ascend to publicly exposed knowledge.

We will even at times hear that persons are transparent right through if one could capture them as information, which we could deem to constitute a 'common body.' To make something informational of personal identity, as was done by Luciano Floridi, is to miss the point (Floridi 2014, 77; 2011). In informational understanding, what has not been mapped has no reality, but as Gilles Gaston Granger noted, the signal does not contain everything. Indeed, in the Royaumont conference on the usefulness of information theory, the French comparative epistemologist elaborated on the fact that, even though there is no science of the individual, if one tried to use the methods of digital and informational analysis for situations of existential individualisation, one would run against systemic limits (Granger 1965, 389-393). If one has in front of one's view a literary sentence, it will not be an essential conveyor of information. This is because language creates its effects by being an index of lived-out situations (*Erlebnis*). Language can further its operation of indexicality only as the informational fabric remains open, which is strikingly not the case in logical apparatus that assumes a reduction of the individual and only starts to work once this is granted (confer the appreciation of B. Russell's 'axiom of reducibility' by Wittgenstein). If therefore the individual has to be analysed under the guise of different types of properties that are irreducible, it will end up being something other than an abstract point in the informational fabric, and if one does not get a unitary science of the individual, as we said, it is still useful to map the reasons why and refrain from

declaring analytical methods unfit, in the spirit of what was done at the onset of general systems theory. There will inevitably be a process of multiplying viewpoints, with levels of analysis and modes of structuration. As such, a singular phenomenon for science is a message but it only is one in virtue of a process of coding, and the code is dependent on a disposition of the subject relative to the world. The code makes its entrance under the form of an *a priori*: it defines its object transcendentally and makes the distinction between true and false something sovereign in this localised area. As such, the individual introduces itself as a *redundancy* of the phenomenal message.

This means that every element of the filter using coding is overdetermined. It is these over-determinations that the code neglects as they are redundant, that are lived out as significance and an intuition that cannot be singled-out. But significance of what? We will not reach, by refining the filter, an individual simple nature. In information theory such a notion would self-destruct because we would only grasp it under the guise of anonymity and repetition (for a discussion of H. Putnam's objection to the epistemological version of this conundrum due to Fred Dretske, see Putnam 1986; Gagnon 2018, 481-483). As the individual offers itself as a variety that cannot be completely inserted in the repertoire of phenomena, it is manifesting a non-unidimensional inexhaustibility. Such a variety that is not fitted in a repertoire is not grasped in any other way than through a multiplication of irreducible filters. One inevitably runs against the 'polysemic' character of things as a property of our objective relationship with the world.

5. What is left to measure that's outside our grasp?

Probabilistic rationality is a rationality of the likely, and it requires assessing truths that can seem distributed between alternating or competing positions. This is another way to say that truths are to be found on both side of a potential dichotomy. But to seek decisions despite this is to erase from our world this '*esprit de finesse*' which Pascal deemed necessary to balance the illusions of a procedural mathematical rationality claiming that its end-products are simply in correspondence with reality (Pascal 1999, 150; Sellier's ed §670).

When we gather information we frame it within an ontology for classification purposes but this does not import with itself the immanence of this information as endogenous power to harmonise and give form. There are limits to mathematical models. Mathematics is a powerful instrument but it needs to start with a complete knowledge of the phenomenon under study and with that it generates a univocal answer. Yet it does not have intuition and we now know that without intuition we can't even carry demonstrations to their end (Ekeland 2021, 25).

Some will hedge their bet on the NBIC technological convergence, as was presented in the 2002 NSF report (Roco & Bainbridge 2002). Yet there is a convergence beyond the NBIC; ever since the Manhattan project we have seen a convergence of technologies. As stated, we also know the world to not be entirely digital: we know this to be an oversimplification.

When we look at equilibrium and balances in ecology, do we have self-sustaining systems? All that surrounds us has been affected by the presence and the hand of human beings. We cannot expect the 'harmony' of nature just to carry on since we have disrupted it. Hence years ago, at a conference of the French Réseau Blaise Pascal, when bringing up the question of a grounding in an harmonious vision of nature that seemed to be presupposed by Aldo Leopold—and even more so by Rachel Carson of whose *œuvre* it is a pivotal idea, and discussed by Daniel Botkin (Botkin 1990)—I had to cope with the rebuttal that nothing is ever stable like this in nature. Evidently nature is in transformation and evolution but it is also rhythmic and cyclical. It is simply not possible for there to be no hierarchical control, it is rather that the way nature does it is 'downhill' as Janine Benyus pointed out (Benyus 2002, 213).

Our hope is to steer by knowing ultimately and we cannot fully know about modes of life we don't experience. Existential know-how is distributed according to a logic that is not only not formal, it has little to do even with what we call informal, it is immanent. We can draw a plan of action for our technologies but we also need to recognise that, as Don Ihde noted, technologies virtually always exceed or veer away from intended design (Ihde 2002, 104). Do they do it as they would resist our detailed programming, or because what we mapped is, in terms of depth of functional control, still superficial?

This existential know-how is not kept in our measures, it is not grasped by the informational filters we talked about. To be faithful to it, and to do it justice, would require, as we said, that we multiply the perspectives, and this would mean that our concept of individuality would be stripped from its direct hæcceitic character. What we project before ourselves is a disfigured image of ourselves. How can we re-glue the filters when our image of man is in shambles? The 'broken image' about which Floyd Matson wrote, has not been reglued together. Indeed, the scientific successes of the 20th century are in reality a testimony to alternate modes of thinking having to be reconciled exactly where they cannot. We need to uphold a polemical mutually distorting image of rationality.

Our initial statement referred to a freedom that, should we value it, probably would not be measurable and would amount to silence. Now that we have stated that the recognition of the individual's value requires the multiplication of perspectives and filters to mean anything for formal instruments, or logical machinery turned inductive, we would like to conclude with

something more than a Wittgensteinian or mystical pointer to silence. Can we proceed any further? We might, provided we claim for this know-how that's practical and seemingly left out of measurement, a reality *worth* valuing.

Here the universal, a condition of knowledge, has to be apprehended as *concrete*. If we were, as Michael Polanyi and others did, to try to instill respect for 'tacit' knowledge, we would want it to have effects and ultimately to have this tacitness lifted. One way out could be to value a metaphysics of actuality, prehension, and lines of becoming, recognising that the by-product would be this statistical and trend-making knowledge. This is as low a degree of knowledge as epistemology could credit: opinion—*πιστις* as Plato would have it—but then we would have to counter immediate objections by methodological individualists, opposing the threat that the power of the collective could be said to have on the individual.

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