The (Dis)Analogy Between Societal and Scientific Laws

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All considerations about laws of nature have a common root: the thought that there is higher order in the universe. This thought is expressed through three major forms namely, the divine, the societal, and the scientific. The divine is tied to a sense of absolute goodness, ultimate morality, cosmical sacredness, and all beings obeying the highest authority, the governor of the universe. The societal may derive from the divine and entails two aspects; the legal rules and regulations that allow the functioning of society, and individuals obeying institutional authorities and unwritten moral codes thanks to which social life becomes viable and obtains meaning. The scientific form of lawhood is the one used for scientific explanations and ultimately supposes that everything is obedient to necessities in the cosmos.

In this paper, I attempt to establish two claims: first, that all laws — societal and scientific — are shaped by social forces. Second, that there is continuity among the variations of the notion of lawhood; the origin of the law-governed world remains in its essence theological and moralistic. The consensus in the history of science proposes that Descartes changed the way laws are perceived: from laws as metaphors applying to inanimate objects (Suarez) to laws applying to everything, including human beings. The idea that "Nature is the system of eternal laws established by the creator" as Comte de Buffon writes (Wootton, 2016, p. 367)[1] became a widely recognized truth in the western part of the world in the seventeenth century, during the so-called 'scientific revolution'. Before that, it is safe to argue that a law immediately implied the obligation of a

[1] Quote in French: "*La Nature est le système des lois éternels etablies par le créateur, pour l'existence des choses et pour la succession des êtres*" (Stolleis, 2017, p. 13).

creature to exhibit a specific behavior by accepting or rejecting the obligation imposed upon it (Wootton, 2016, p. 368).

The term ‘natural law’ is the one associated with this conception of obligation and in contemporary discussions, it is suggested by the vast majority of thinkers that it has completely different connotations from what historians and metaphysicians of science understand as a ‘law of nature’. This distinction, while useful in increasing productivity when working in the subdisciplines of analytical philosophy, has led to the blind acceptance of a misconception, namely that natural laws and laws of nature are not strongly connected with one another and has created a disanalogy between the two. From that, some hardcore scientific realists who equate the laws of science with the ones of nature assert that while natural laws are socially constructed conventions, laws of nature provide higher truths that genuinely broaden and deepen our understanding of the physical world and are, as a result, superior.

When thinking genealogically about laws it seems that Thomas Aquinas offers a good point to start, writing that “the very notion of government of things in God, the ruler of the universe, has the nature of a law” (*ST*, I q.103 a.1, Aquinas, 1945). From this theological conception of laws, natural law moral theory is born, an extension of which is natural law legal theory. The idea of natural law makes an appearance in early political thought, expressed prominently by Thomas Hobbes in Leviathan where he suggests that there must be several laws that direct social behavior within the structure of the state. As he writes,

A law of nature, lex naturalis, is a precept, or general rule, found out by reason, by which a man is forbidden to do that which is destructive of his life, or taketh away the means of preserving the same, and to omit that by which he thinketh it may be best preserved (Hobbes, 2017, p. 189).

The law of nature here concerns human nature, not the universe. But human beings are an inseparable part of the cosmos; if their life is regular and harmonious it will be sustained and optimally perpetuated. Their interaction with the physical world will also be regulated and well-balanced. It could be that what governs human nature is the same as what governs the physical world and the distinction between humanity and nature is artificial.

It is still unclear when or who (strictly) separated laws of nature from natural laws and concluded that the first refers to the physical world and the endeavors of science and the second to natural law legal theory. Some contemporary philosophers of science still use the terms interchangeably, e.g., Chris Swoyer in "The Nature of Natural Laws" (Swoyer, 1982) and Yury V. Balashov in the paper "On the Evolution of Natural Laws" (Balashov, 1992) but this seems to be showing indifference towards the distinction rather than acceptance of the continuity I am pointing towards to. Conversely, some thinkers in the seventeenth century refer to jurisprudential laws as the laws of nature. Characteristically, in 1672 Richard Cumberland wrote a treatise on laws of nature called "De Legibus Naturae" that addresses questions about politics and the state being in direct conversation with Hobbes's Leviathan. In Cumberland's writing, the continuity between the different expressions of lawhood is evident: "We must of necessity lay the Foundation of the Laws of Nature, in those manifest Observations on the Powers of Men, by which duly regulated they are enabled to make each other happy, nay will certainly do so" (Cumberland, 2005, p. 300). The purpose of laws is to make human beings happy through regulation and the establishment of order.

But regulation and order have unavoidable connotations: subordination, control, and when the first two fail, punishment. Laws in the theological and societal sense are explicitly and undeniably connected with such terms. Paradoxically, human prosperity appears to be compatible

with them. In early modernity, the oppressive element of lawhood is justified through viewing societal laws as part of the laws of God. “Piety towards God and charity towards man” (Cumberland, 2005, p. 302) is embedded in the conception of lawhood. Regarding God as the author of laws of all kinds is the ultimate conclusion; unlike the contemporary distance between theological discourses and naturalistic investigations, for modern thinkers it is self-evident that the author of social laws is also the author of the cosmical ones. Cumberland continues: “all impressions upon our senses are made, according to the natural laws (as they are call’d) of motion; and that motion was first impress’d upon this corporeal system by God, and is by him preserv’d unchang’d” (*Ibid.).* In the text, the shift from theological and societal laws to scientific laws happens without trouble. Laws of all kinds serve the purpose of preservation of something important for the context to which they refer; whether that is a social code or a physical quantity like motion does not mark significant difference when examining the matter theoretically.

The discontinuity between the different senses of lawhood is a corollary of endorsing clear-cut distinctions between notions such as ‘the divine nature’, ‘the social nature’, and ‘the physical or scientific nature’. While they bear some idiosyncratic attributes, it is often attempted to impose value judgments upon them and as a result, to infer that one of them is superior or somehow ‘more real’ than the others. In particular, in many instances, the social element has been berated and underappreciated in the history of ideas. The term ‘socially constructed’ is misinterpreted as counterfeit, as meant to manipulate or mislead. Consequently, when the social interferes with another nature that is supposedly pristine, it adds a dose of deception that is inherent in its nature. In that sense, the divine ought not to have any social constituents; likewise, the physical or scientific ought not to be influenced by social factors.

Yet, nobody denies that science is a social activity and therefore, it is impossible to be value-free. It is constitutive of the scientific practice to include normative judgments. Scientists have to respect a set of moral and legal rules and norms depending on the socially constructed and institutionally established context within which their activity is practiced (Mantzavinos, 2020). Because experience cannot be fragmented, it is central to realize that there is only one nature that happens to be perceived by human beings through the various qualities it obtains. The implication of this is evident: the divine, the social, and the scientific are interconnected. It does not make sense then to suggest that science is concerned with a nature of higher essence or value than the one of society and that is simply because science takes place within society.

The assumption that physical nature is superior compared to other natures is usually held within the framework of scientism that involves an "exaggerated kind of deference towards science, an excessive readiness to accept as authoritative any claim made by the sciences, and to dismiss every kind of criticism of science or its practitioners as anti-scientific prejudice" (Haack, 2007). The Weberian 'disenchantment of the world' through the scientific examination of nature gained superiority in the post-modern times and in many cases performs the role of some sort of secular religion. But even physical nature was not always viewed as a single nature. Nature becomes a single entity mostly under the influence of Christianity during modernity. The individual natures, before being understood as parts of a single comprehensive one, obey particular laws that function in a dispositionist manner. The idea that, for instance, it is in the nature of water to dissolve sugar can be parallelized with the thought that it is in the nature of the king to rule his kingdom and they both stem from the ultimate nature of God.

Evidently, the way we choose to view nature affects our understanding of lawhood. In the history of science, we observe that the different approaches to nature essentially shaped the

respective philosophical traditions that metaphysically back up the science of the historical era of reference. If the way we regard nature changes and so do the philosophical and scientific frameworks, it makes sense to conclude that there are no ultimate laws of nature but rather laws of individual sciences belonging to Kuhnian paradigms. Demanding that nature conforms with absolute laws was often exaggerated in the history of science and philosophy. Descartes, for example, thought that his three laws of motion were the only laws governing nature. It would had been bewildering for him to see how contemporary sciences incorporate lists of laws that keep multiplying as scientific tools (Wootton, 2016, p. 371).

It seems trivial to suggest that the most evident disanalogy between societal and scientific laws is that the former are normative while the latter are descriptive. This is a misleading assumption; it presupposes that science has a privileged access to the world that guarantees the ability to accurately describe the entities in it and their interactions. It also presupposes a notion of objectivity and independence between empirical research and theoretical expectations. But science is a largely theory-laden undertaking (Hanson, 1958). The scientific descriptions are loaded with the pre-theoretical proclivities of scientists and the theoretical views that shape their specific activity and make it meaningful. If scientists aimed at 'pure descriptions' they would never produce results of any sort because they would not be focusing on anything in particular.

Knowledge of theory is essential for scientific practices; that is why people are trained as scientists and it is not enough to simply perceive the exterior world to extrapolate scientific conclusions. Characteristic of this is Duhem's passage quoted by Hanson:

Enter a laboratory; approach the table crowded with an assortment of apparatus, an electric cell, silk-covered copper wire, small cups of mercury, spools, a mirror mounted on an iron bar; the experimenter is inserting into small openings the metal ends of ebony-headed pins; the iron

oscillates, and the mirror attached to it throws a luminous band upon a celluloid scale; the forward-backward motion of this spot enables the physicist to observe the minute oscillations of the iron bar. But ask him what he is doing. Will he answer 'I am studying the oscillations of an iron bar which carries a mirror'? No, he will say that he is measuring the electric resistance of the spools. If you are astonished, if you ask him what his words mean, what relation they have with the phenomena he has been observing and which you have noted at the same time as he, he will answer that your question requires a long explanation and that you should take a course in electricity (Hanson, 1958, pp. 16-17).[2]

'Biases' of this kind allow scientists to set goals and achieve them by isolating the different aspects of the physical world and meticulously examining them.

Having made clear that the normative element is present in scientific laws just as much as it is in the societal ones, I will identify four analogies between the two kinds of laws. The first analogy concerns idealizations. In many cases, scientific theories examine nature in an idealized form. Chang Liu notes that "idealization is a method of theory construction which, if used properly, produces approximately true theories; thereby the adequacy of an idealization depends on how approximate it makes the corresponding theories or laws" (Liu, 1999, p. 229). For example, the study of thermodynamics involves ideal gases; the same happens in the study of mechanics where we usually assume that frictional forces are negligible. The idealization serves the purpose of simplification that enables a better understanding of the phenomenon under conditions that are manageable for human agents granting that their intellectual capabilities are constrained. Science and scientific laws tend to treat nature in an ideal form; analogously, society and societal laws,

[2] Originally found in (Duhem & Brouzeng, 2007).

especially laws that derive form natural law legal theory, idealize human nature, disregard the frictions in interpersonal relationships and other details that are constitutive of what it means to be a citizen and take action in a social environment.

Laws, both in society and science, address the natures they refer to employing generalized imperatives without considering the specific qualities of the particular person, system, etc. After all, generalization, universality and duty are at the core of lawhood. A characteristic idealization in the social context is made by Kant when he formulates the categorical imperative. The way Kant views human agents as rational beings with their own will is nothing but a moral idealization.[3] He does not consider that one can be a rational being in other ways because that would defeat the purpose of the idealization. He also does not think of any divergences from the rational norm. Another famous idealization that is found at the crossroad between science and society is the one made in economics, game theory, and decision theory. Again, the theoretical model suggests how agents ought to behave, constructing an ideal of rationality. The behavior of the rational agent roughly corresponds to an approximation of actual, real life behaviors.

The second analogy involves a comparison between classifications in society and demarcation in the sciences. The social classifications concern categorizing individuals into groups based on characteristics that are judged and determined more or less arbitrarily, e.g., gender, race, social class, and so on (Haslanger, 2012). Demarcation occurs similarly in the different sciences; in astronomy, a standard example is determining the criteria required for a solar body to count as a planet. Such criteria are placed at the normative level showing the interference of values in the scientific enterprise. Just like with social classification, demarcation in science can be arbitrary.

[3] "Everything in nature works according to laws. Only a rational being has the power to act according to his conception of laws, i.e., according to principles and thereby as has he a will." (Kant, 1993, p. 24).

Viewing a solar body as a planet or not is a consequence of trying to describe and organize the world (Schwartz, 1986, p. 435). A general comment is that some classifications might be benign (e.g., whether Pluto is a planet or not) while others require our caution (e.g., categorizing individuals based on social class or gender).

A question to ask is whether the various classifications are metaphysically interesting. The answer depends on whether one finds realism appealing or not. In the case of society, we are often willing to agree without much hesitation that laws are agreements related to the broader social contract. At the same time, it is accepted that a law being the product of social construction does not mean that it is to be respected any less: "truth is no less objective because we may have a role to play in making it so that things are as they are" (Schwartz, 1986). On the contrary, viewing laws as social constructs reflects the values of our civilization and in many cases, it might even inspire admiration or pride.

Why would we not accept the same for scientific laws then? When it comes to science and nature it seems that there is a demand to ground laws metaphysically and speak in terms of necessary connections or dispositions. The proneness to ontological inflation observed when talking about science is explained through the history of western science where laws always maintained an important position. The narrative about laws has been strongly suggesting the necessitarian element that is also commonly supported in contemporary philosophy of science.[4]

The last analogy to point out is that between the notion of control in society and science. In particular, societal laws are meant to establish and maintain social order through regulation of civil behavior. Laws and regularities are required for the making and preservation of society but

[4] For necessitarian views see (Armstrong, 2016) and (Tooley, 1977).

at the same time, we observe that societies produce laws through their institutions that perpetuate their existence. Thus, there is a circularity regarding the nature of laws. Analogously, in science laws serve as causal explanations of physical phenomena and allow the making of predictions. However, scientific experiments are often set up in such a way that leads to the formulation of laws; if the experiment does not yield a law-like regularity it is not considered successful.

Whoever controls the conditions that occur either in society or science, essentially controls the phenomena in the respective areas. Following this, there is a danger of ending up in a dogmatic state (Popper, 2002, p. 50) where whatever does not conform with the established system gets ostracized. The parallel here is between a dogmatic society within which dogmatic science takes place. This has obvious consequences for society; world history offers an abundance of examples of civil laws in a spectrum of various forms of injustice, oppression, exploitation, and the like. The problem with dogmatic science, as Popper notes, is expressed through "the tendency to verify our laws and schemata by seeking to apply them and to confirm them, even to the point of neglecting refutations" (*Ibid.).*

In conclusion, the contested analogies between societal and scientific laws are strong indications of the continuity among human activities. The notion of lawhood is entrenched in the intellectual, social, cultural, legal, moral, and scientific framework that developed after the fourteenth century in medieval Europe and spread around the world. Whether we hold a realist position about laws or not does not stand as an obstacle in admitting that the law-governed world narrative is a successful one. It is a narrative that allows the perpetuation of various standard power relations in the social context and maintains a relatively clear view of nature in the scientific or philosophical context. We cannot know whether laws really exist; asking such a question hardly affects the importance of lawhood in society and science.

Difficult questions still persist. Can we imagine a world without laws? After all, their appearance in different contexts was nothing but historically contingent. Is lawhood truly a concept to depend on or, at the end of the day, does scepticism towards induction prevails? Could there be laws that do not govern, and if yes, what would they be doing? And more generally, why is order so crucial for our lives and why does disorder carry so many negative connotations (Cartwright, 2019, p. 7)? Human beings tend to recognize linearity quickly and often project it where it does not exist; it is a virtue that we are very well acquainted with. Believing in a firm conception of lawhood provides peace and harmony: neither society, nor science would be as we know them without laws.

References

Aquinas, T. (1945). *Summa Theologicae in Basic Writings. Anton Pegis. New York: Random House.* New York: Random House.

Armstrong, D. M. (2016). *What is a Law of Nature?* (Reissue edition). Cambridge University Press.

Balashov, Y. V. (1992). On the Evolution of Natural Laws. *The British Journal for the Philosophy of Science*, *43*(3), 343–370.

Cartwright, N. (Ed.). (2019). *Rethinking Order: After the Laws of Nature*. Bloomsbury Academic.

Cumberland, R. (2005). *A Treatise of the Laws of Nature*. Liberty Fund.

Duhem, P., & Brouzeng, P. (2007). *La théorie physique: Son objet, sa structure*. Vrin.

Haack, S. (2007). *Defending Science-Within Reason: Between Scientism And Cynicism*. Prometheus.

Hanson, N. R. (1958). *Patterns of Discovery: An Inquiry into the Conceptual Foundations of Science* (1st edition). Cambridge University Press.

Haslanger, S. (2012). *Resisting Reality: Social Construction and Social Critique* (1st edition). Oxford University Press.

Hobbes, T. (2017). *Leviathan* (C. Brooke, Ed.; First Edition). Penguin Classics.

Kant, I. (1993). *Grounding for the Metaphysics of Morals: With On a Supposed Right to Lie because of Philanthropic Concerns* (J. W. Ellington, Trans.; Third Edition,3). Hackett Publishing Company, Inc.

Liu, C. (1999). Approximation, Idealization, and Laws of Nature. *Synthese*, *118*(2), 229–256. https://doi.org/10.1023/A:1005186322310

Mantzavinos, C. (2020). Science, institutions, and values. *European Journal of Philosophy*. https://doi.org/10.1111/ejop.12579

Popper, K. (2002). *Conjectures and Refutations: The Growth of Scientific Knowledge* (2nd edition). Routledge.

Schwartz, R. (1986). I'm Going to Make You a Star. *Midwest Studies In Philosophy*, *11*(1), 427–439. https://doi.org/10.1111/j.1475-4975.1986.tb00507.x

Stolleis, M. (2017). *Natural Law and Laws of Nature in Early Modern Europe: Jurisprudence, Theology, Moral and Natural Philosophy* (L. Daston, Ed.; 1st edition). Routledge.

Swoyer, C. (1982). The nature of natural laws. *Australasian Journal of Philosophy*, *60*(3), 203–223. https://doi.org/10.1080/00048408212340641

Tooley, M. (1977). The Nature of Laws. *Canadian Journal of Philosophy*, *7*(4), 667–698.

Wootton, D. (2016). *The Invention of Science: A New History of the Scientific Revolution* (Illustrated edition). Harper Perennial.