Research Article

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Chance, causality and necessity in social sciences methodology. An open research between *thesmos* and *nomos*

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Abstract: The main purpose of this paper is to identify lawlike regularities inside social sciences. This purpose rises from our will to contribute to the debate about the scientificity of such topics. After providing an overview of the most authoritative scholars who have broached the issue, an attempt will be made to propose an alternative answer through scientific computational research, that is neural networks.

Keywords: chance; Boudon; neural networks.

“Reality always outmatches rationality”¹. This is the initial acknowledgement to approach the study of social phenomena.

This awareness has to be separated from the breach with the Hegelo-historicist tradition, which, conversely, tends to equate these two words.

In the light of the individualistic approach as a methodology for social sciences it is impossible to grant the objectivity belonging to the *positum* to the social action.

In this regard, the question concerning the scientificity of social subjects rises. This issue dates back to the Cartesian distinction between *res cogitans* and *res extensa*, which is taken over and reworked, first by Kant and later by Dilthey, in the noumenon-phenomenon pair. It was only in the twentieth century that a solution is provided by Popper’s *principle of falsifiability*.

However, while considering the Humian theory concerning the limitation of human knowledge, this dichotomy is not to be set aside, but rather interpreted following John Stuart Mill: it is impossible to leave aside the unforeseen element, which is the essential component of every human action, that is liberty. Freedom is, therefore, the distinctive feature of social sciences. It is the *discrimen* compared to natural sciences, which are, instead, ruled by necessity.

As a matter of fact, among human sciences “perverse effects” take place. Quoting Raymond Boudon, these unintended consequences “are always present in social life and they represent one of the main causes of imbalances and social changes”². The “fatal presumption” of both historicists and holists makes it possible for them to hypostatize mental structures such as the concept of “society”. As concepts are presented as existing by themselves, the importance of unforeseen effects of conscious actions is underestimated.

Indeed, social sciences aim at tracing the actors’ interactions back to the emerging facts, starting from beliefs, arrangements and personal wishes that affect human actions. This produces unpredicted results “as far as it is possible to notice regularities produced by no patterns at all”³, as Hayek claims.

1 Boudon, R. (2009), *Il posto del Disordine*, Il Mulino, Bologna.

2 Boudon, R. (1981), *Effetti “perversi” dell’azione sociale*, Feltrinelli, Milano.

3 Hayek, F.A. (1988) *Nuovi studi di filosofia, politica, economia e storia delle idee*, Armando, Roma.

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All that being considered, what comes out when we try to make a synthesis of the large number of divergent views in this regard, is that for these kinds of sciences it is advisable to use an explicative model which is not universally applicable.

Albeit the “nomothetic” ambition in studying social changes is taken into account⁴ by most of action theorists, both Adam Smith, with his «invisible hand» theory, and Giambattista Vico, with the “Heterogenesis of intents”, brought innovative intuitions regarding the impossibility to limit human interactions in the reification of the concept of society. The conclusion is that the social phenomenon cannot be anything but the result of interactions among the agents.

Even though Robert K. Merton never studied Smith’s nor Vico’s works, he contributed to their studies in a revolutionary way by discrediting systemic postulates and consequently introducing the concepts of *disfunction* and *functional substitute*. Merton tried to reconcile the unforeseen consequences of intentional actions with the concept of “system” in its heuristic meaning only.

In “Economics and Society” Max Weber had already anticipated such an epistemic approach towards social sciences. He tried to transpose the logic paradigm of economic action in the sociological environment. By doing so it would be possible to connect causes and effects of human interaction by means of a mathematical equation and thus to identify rules of tendency. It has to be underlined that accidents - or “emergent effects”, *à la* Merton - can be such only for the agent, but not for an observer who wants to study them *post factum*.

By introducing variables such as M (the social phenomenon to be explained), function of m_i (the individual actions as a whole) and S_i (the structure of the “adaptative” situation in its Popperian meaning), Boudon gets $M=M\{m[S(M')]\}$. This function aims at explaining the social event in its unforeseen consequences, starting from the motivations that called the actors to action.

However, while leading to significant epistemological conclusions such as a possible *a-priori* analysis where explaining and understanding are organically bound together, thus refusing a deterministic interpretation *à la* Durkheim, this kind of approach shows some ambiguities. According to Weber’s analysis, the outcome of the interactions should be explained by starting mainly with the motivations, whether or not rational, that led the social actors to their choice. In this way the theory cannot always be applicable, as shown by Marx’s “false consciousness” as a false representation of reality, or even by the Paretian concept of “derivation”.

Hence, the typical questions of social sciences can be expressed as: “why M ?”. The objects of social sciences, as questions themselves, are necessarily “constructed” and they belong to the *Third World*⁵, as Popper would define it. In such a world, if Kant’s transcendental schemes are not taken into account, the value-thing synthesis necessarily requires the subjective element inside the phenomenological analysis.

The *Verstehen* inherent into the avoidable subjective opinion cannot solve the Paretian *ambiguous cases*, where the *homo oeconomicus*’ rationality is not enough to explain what moved the social actor’s action. The “illogical actions”, that might be confirmed in the Weberian affectional and traditional irrationality in human behaviour, cannot be bound to a mathematical function merely, since its structure makes it useful as a model, but reductive as a law. Nonetheless, as a scheme able to provide only tendential lines, this might be excessively simplistic.

Certain schools of thought, which tend to include psychology in social sciences, could claim that, while solving the first methodologic issue, that is the existence of congruence between actions and their consequences, Weber does not tackle the second issue: assessing the real intentions of those actions which are defined by Pareto as “non-logical actions”, the “residues”.

From this point of view, the human action would often be influenced by impulse and instincts which are “re-painted” by a Freudian *superego*⁶ with ethical “over structures”, the *derivations*. For this reason, Weber’s experiment should be defined as not sufficient for a synoptic analysis of the social phenomenon.

Even less acceptable is the Marxian vision of the “Paretian sentiments”, which makes only the superficial reflection of material relations between those who control the means of material production and those who are unprovided with

4 Consider the Comte’s “social physics”, the Radcliffe-Brown’s functional solution or the Marxian laws of “bronze necessity”.

5 Inside which the gnoseological synthesis between idea and physical object takes place.

6 According to Freud, it is one of the three components of human *psyche*. It is made up of a heterogeneous complex of behavioural paradigms and it describes an ideal model which is pursuit by people through their attitudes.

them; moreover, Marx's view is a typical example of an endogenous model which provides the achievement of the systemic homeostasis as inner to mutation itself⁷.

These examples are the first, essential reason why a deterministic representation of social mutation, if universally applied, has to be considered as wrong.

A further reason is that action does not necessarily take the shape of a choice among predetermined acts, as it happens in the Marxian dialectic process, since it could foster innovation. As claimed earlier, it is not true that *omnis determinatio est negatio*: indeed, it is clear that the Marxian perspective too has proved not to be enough to investigate social change as it does not consider the imponderable as an element.

It is crystal clear that the search for the *primum mobile*, which enlivens the development of human interactions, stays an open issue.

Nevertheless, it is helpful to accept the intuition of Friedrich A. von Hayek about the distinction between spontaneous order, *kosmos*, and organisation, *taxis*. The latter, which “could be considered as a construction, an artificial order or especially [...] a direct order from above”⁸ and has to be read as a derivative of human intention and will, could be understood in its both unpredictable and unintentional developments only basing on the former, which affects and intersects it following a non-finalistic rational order.

The interpretation given by the Austrian economist is undoubtedly enlightening when the “addenda” at our disposal are taken into account: since the possibility of voluntary organisation is given to everybody, it has to be said that spontaneous order interferes in a largely unpredictable way in human projects.

This perspective, though, does not balance the need for scientificity in studying social events. Despite it being undoubtedly both original and innovative, this kind of approach makes it hard to define the social subject as a science in a Popperian meaning. Since the epistemological accuracy concerning the existence of the two orders cannot pragmatically be ascertained, it would be impossible to apply the *criterion of falsifiability*.

A less thorough solution is the one proposed by Raymond Boudon. Unlikely the other theories, this one states an approach that aims at a limited, accurate study of the social event *per se* rather than at enunciating generally as much as basically valid rules. By considering the variables *x* and *y* as cause and effect, in order to obtain a relation by which the legitimate causal matrix of the phenomenic product can be understood, a third element has to be introduced, that is *k*, which is the imponderability of unforeseen consequences for the agent.

According to the French sociologist, the integration of the third dimension would enable a scientific and both effective and efficient analysis to be carried out, provided that it is applied to local and partial circumstances. It is just the nature of the latter that allows a gnoseological approach to the accidental factor. In this way, it is undoubtedly easier to relate the effect generated by the event to a ponderable and recognisable source. But how could this happen?

Some scholars advocate the plausibility of the existence of a *tertium genus* in addition to the methodological dichotomy of collectivism-individualism, thanks to which “the reconstruction of the macro-social theory and methodology based on a micro-sociological foundation”⁹ would be possible. The “situationist” approach adopted by these researchers was first theorized by Karl Popper, who used a scheme in which the actor's “fitness” to the social phenomenon gets pondered to the way in which his motivations interact with the external environment. Popper's theory was later advocated by Knorr-Cetina and Cicourel, who developed it along three main axes: “aggregative”, where macro-phenomena are the results of similar micro ones; “consequences”, where the characteristics of the macro phenomenon are such since they are a product of micro events; “representation”, which sees the macro level as a sum of individual intents and objectives.

Popper's situational analysis can also sum up what Robin George Collingwood has conceptually defined as “internal aspect” and “external aspect”. The former would incorporate the ways in which the action takes place and the intentionality that moves it while the latter would identify the logical concatenation inside which the action itself takes place. It is therefore possible to assert that micro-events are the resultant of a set of constants which can be summarized by Collingwood's *process of action*:

⁷ This approach excludes any kind of chances for open processes to exist; conversely, within them exogenous variables take part in the social chances. In fact, their addition involves an incontrovertible abandonment of dialectics as key for analysing the social phenomenon, since external elements to the process might not be predictable in the thesis-antithesis-synthesis framework.

⁸ Hayek, F.A. (1986) *Market Standards for Money*.

⁹ De Mucci, R. (2018) *Metodi di analisi empirica in scienze sociali*, Rubbettino.

Inspired by the Popper, James S. Coleman contributed to the systematization of unforeseen consequences of intentional actions. He conceived a “boat” scheme drawn as an upside-down trapezoid with *Initial institution*, *Final institution*, *Actions and Preferences* at its vertices. By doing so, he managed to graphically explain the study of the Austrian philosopher.

It can be boldly stated that a structure like “neural networks”, such as defined by contemporary scientific research, can be recognized in Coleman’s model. These are computational networks which are inspired by a simplified biological neural network and their distinguished feature is the fact of being capable of learning, both autonomously and heteronomously guided. They are also able to recognize *patterns* as they are provided with a widely teachable inferential engine as well as with a “basic knowledge”. Operatively speaking, these characteristics make it possible to assign a “weight” to each neuron of the network.

This last aspect is pivotal since the system enables not only a complete knowledge of its components, but also the attribution to each variable of the weight of its influence inside the process.

Therefore, if the computational research allowed Collingwood’s “process of action” to be part of its analytical framework, it would be possible to even “tame” the events since the inference engine of these networks works more accurately and in a more sophisticated way than humans.

If, on the one hand, the Kantian teaching according to which “trying to reach objectivity implies the identification and abandonment of non-answerable questions”¹⁰ cannot but be accepted, on the other hand, the contemporary technological borders leave open the possibility to solve once and for all the issue regarding the scientificity of social sciences.

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