

# Communication between Nature and Nurture: a sociological perspective

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New developments in biotechnology and their implications for criminal justice have brought the nature vs. nurture debate into poignant relief in recent years. Poorly articulated and for many years biased towards the knowledge traditions of the hard sciences, however, the debate yearns for a basic dualistic reformulation to come up to speed with the contemporary needs of society. Four levels of contention – epistemology, mankind's place in the scale of life, singularity and the naturalistic fallacy - are traced through a review of the literature and theoretical thinking on this issue as it has developed over time. An unitary science that embraces both the biological and the social is required to match the pressing demands of biotechnological advances and handle their direct impact on the interpretation of deviant behavior in the courtroom.

**Ключевые слова:** biotechnology, epistemology, deviant behavior

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## Introduction: four levels of contention

There is a two-fold question underlying the debate addressed in this essay. One side of the question concerns whether the observations and developments that have been accumulating in the neurosciences have contributed - and if so, in what terms - to the discovery of new and unknown components of human behavior and the cognitive, affective and normative structures that are so characteristic of the human experience. On the other side, we have the social sciences and the issue of whether they have provided - and if so, in what terms - useful ways to frame the functional mechanisms of inter-subjectivity for the purpose of understanding recent developments in genetics, biotechnology and neurosciences, particularly within the context of the last 40 years of social, political and normative changes.

It is since the mid-19th century that discoveries and developments in the neurosciences have been fueling vehement polemics about the prospects for interdisciplinary study and the ways in which we conceptualize the process of understanding and explaining human behavior and more general social and normative phenomena (Guillo 2009, p.7).

While many 'naturalisms' have been fielded since the mid-1800s, the different variants have all lighted upon four primary levels of theoretical contention: 1) epistemology; 2) how humankind should be defined in terms of the scale of life; 3) the role of singularity and, last of all, 4) the category so dear to Moore - the risk of naturalistic fallacies (Da Re 2010, pp. 122-137).

The first level of contention is epistemological, and the nature of naturalism itself is inclined towards a form of epistemological reductionism that is coupled with a degree of ontological

reductionism. While there may be many potential ways of 'knowing,' in other words, the naturalistic perspective views the domain of knowledge as being dominated by one or at best a small handful of different frameworks of knowing. When taken to this extreme, the empirical science of human knowing and cognition, in terms of theories of knowledge, at least, takes on an exclusively biological guise. This standpoint reveals that the inherent limitation of naturalism lies in how it assigns a privileged priority to the natural sciences in terms of methods, experimentation and objectivization, and the absolute nature of this outlook makes it even more difficult to comprehend and address the fundamental problems inherent to complex realities (Ibid., p. 127). In other words, how can we ever test the units and foundations of and the preference for these limitations themselves? The epistemology itself is established in reference to the unitary characterization of the problem itself, with the underlying question being: how is true/false knowledge possible? Thanks to binary logic and the principle of falsifiability, however, this question has been reformulated as: how is false knowledge possible? In sociological terms we say that science was established as a partial social system that generates its own theory about itself, that presumes to circumscribe system theory within itself and, last of all, that attests to itself by means of internal differentiation, i.e., with the assistance of a partial/biased system (Luhmann 1985, pp. 5-6).

Epistemology, in other words, is incorporated within its own subject. The increasingly consequential result is that the history of science cannot be separated from the history of epistemology, because changes in any part of the system denote changes in the entire system. In other words, the sciences of Kant and his successors, including Popper and his own successors, cannot all be the same science. A hierarchically-regulated order with an epistemology that lays down the rules for any and all claims to scientific-ness comes into doubt the moment the question "how is X possible...?" exports this self-referential foundation into other disciplines. The only time the self-referential structure of a set of fundamental problems can be presumed is during its own application. Similar issues can be discerned in modern biology, for that matter, especially the biology of knowledge. In general theories of order (e.g., cybernetics) and the natural sciences, however, knowledge-related issues are only addressed as an aside most of the time, as relatively marginal concerns as opposed to primary facts. Epistemological disputes arise when the issue of knowledge itself is at stake, and therefore can be avoided altogether or marginalized as excessively abstract. The situation is different for sociology, which is more focused on large-scale effects than abstract principles. "How is social order possible?" is a question that touches on epistemology in a much more immediate and concrete way than general issues of theory and order because sociological analysis can be used to reformulate fundamental hypotheses about epistemology. It remains to be seen whether a pure science of epistemology could ever exist, whether it can only co-exist within other disciplines as part of the search for self-referential foundations or, at best, an exchange of interdisciplinary experiences. The issue is not about subjecting sociology to an epistemological checkup or posing it in contradiction to the natural sciences. What seems most important is to evaluate the prospects for giving epistemology a sociological foundation before proceeding to test out whether sociology itself should be associated with an epistemology of this nature (Ibid., pp. 6-8).

The second level of contention concerns the positioning of humankind on the scale of life. Darwinism with its notion of the evolutionary continuity of all forms of life undermined every form of anthropocentric claim by bringing into question the centrality and/or ontological superiority of human nature. He was still unable, however, to avoid the difficult question (which can in fact be found in Darwin's own work) concerning the meaning of human nature and its specificity, and heralded the beginning of a theoretical faction that had in essence already been determined by the previously-defined criteria for life-form analysis and classification. The discontinuity thesis is criticized as being excessively anthropocentric or touting an anthropocentric view of the universe that exploit natural resources and the animal world, while the continuity thesis is criticized for the opposite reasons - fears of naturalized and reductionist interpretations of human beings. In these terms, continuity and discontinuity bear a strong resemblance to the aporetic outcome reached by part of modern thought "in its dualistic declination and in the consequent reciprocal alienation

between external world and interior life, between body and spirit, biological and cultural (Da Re 2010, pp. 129-131)."

The third level of contention concerns gradualist logic and the dissolution of uniqueness. To presume continuity in the scale of life is to deny, to some extent, the specificity and uniqueness of single individuals by means of a form of reductionism that is traceable back to the species, entailing the dissolution of moral and ontological substance. The "gradualist" strategy is brought in to relativize the value of individual human interventions into their own nature and consists of two stages. The first stage draws a strong analogy between two types of individually-driven transformations that at first appear radically different – changes in external appearance vs. changes in internal nature. In the second stage, different types of intervention into human nature itself are framed as virtually equivalent (including both the cultural malleability of personal character and self-modification via therapy). The gradualist logic proposes that the difference between all of these different types of interventions is essentially one of degree, running a thread of continuity through all of them and equating manipulation of the external world to manipulation of the self. As a form of self-modification, the latter of the two is not actually located in the external reality of things. The element of reflexivity, which connotes the subjective dimension of the personal, seems to have been underestimated. (Ibid., pp. 131-133).

The fourth level of contention refers to programs of "naturalization of the moral" that delve into the biological, neurological and ethological foundations of moral behavior (Nichols 2011, pp. 1401 and thereafter). Whenever the starting point is specific biological (neuronal, etc.) requisites and "social instincts" and "altruistic behaviors" are in question (instead of "deviant behavior"), it is important to acknowledge the preexisting framework of morality (in terms of altruistic and non-egoistic behavior, more specifically). This means that "even if the so-called naturalization programs were to be put to use, we need to realize that they are not about "brute facts" (Anscombe), but rather the interpretation and construction of facts by an inevitably theoretical apparatus." This notion leads us to the unavoidably problematic character of the term "nature" and the expression "human nature." Somewhat paradoxically, human beings are not natural, if by this we mean a preexisting 'given,' but neither are they unnatural. To make this claim "means to accept the concept of man's naturalness in its full semantic and ontological valence, neither as static and definitive nor extrinsic, but more akin to a dynamo that is designed to create and realize itself through the exercise of liberty. Man, therefore, is a being called on to construct its own nature and manifest it" (Da Re 2010, pp. 134-137).

The progress that has been made in defining different behaviors in terms of reciprocal social and cerebral influences is urging a form of dualism in the explanatory models of both the natural and social sciences, one that is animated by the prospect of emancipation from the "Cartesian tradition's" oppressive façade of indestructibility. This concerns much more than methodology alone, it would also entail an outright structural metamorphosis of the disciplines in question.

To accept this approach would mean to expose it to the risk of falling back into the truth falsification cycle that inspired this research in the first place. To reject it, alternatively, would lead to a naturalized view of the real that might miss the real issue that this dualism in some way addresses - how do we explain the multiplicity of relational processes in terms of the criteria of liberty and responsibility? How are we to discern the individual's uniqueness and specificity within the regularity of natural processes (Ibid., p. 123)? How do we "manage" the practical consequences of new and stimulating discoveries in the neurosciences that could at the same time be destabilizing, at least in some contexts?1 And most importantly, how should we make sense of the relationship between the personality system and the institutionalized structure of role expectations, the nexus where the critical relationship between deviance and social control emerges in full force?

The present stage of development in the neural sciences seems fascinating and knows no limits, but at the same time it is characterized by a degree of fragmentation that makes it impossible to formulate any theories or general models that would be on par with the questions addressed

here. Circumstances like these make it worthwhile to revisit the classic scientific sociological literature while wearing a pair of methodologically open-minded lenses in order to focus in on the sciences and social order as the product of a co-generative process that is mutually constituted by biology, genetics, politics, sociology, economy and law (Conte 2010, p. 17).

#### Traditional social science models

The 19th century was the era when sociological thought embraced cultural phenomena as the foundation for its own epistemological mandate, although a few instances of paradigmatic non-separation from the natural sciences could still be perceived within the highly-differentiated interpretative panorama.

To make reference to the cultural domain entailed the acceptance of an epistemological and theoretical way of thinking that posed itself in stark contrast to anything defined in terms of innate, instinctive or derivable from the laws of genetics. This holds true for all of the primary classic models of reference: the paradigm of Émile Durkheim; the ecological model of the "Chicago School"; the General Action Theory of Talcott Parsons and, last of all, the "middle-range" theories of Robert Merton.

The work of Émile Durkheim is the root-source of what is probably the most comprehensive critical revision of biologically-oriented theories on the interpretation of social phenomena. It spawned the most famous of all sociological alternatives to the theoretical interpretations of deviant behavior based on bio-psychological nexuses. This theory, the Chicago School's subsequent research on social disorganization in urban areas and other fundamentally structuralist interpretations are commonly identified as the most significant theoretical and research on the social paradigm of deviance.

As we know, Durkheim's perspective revolves around a rejection of the assumption that characterizes both Hobbesian (of the social order) and Freudian (on the innate individual impulses, on the organic and hereditary determination of behavior) theorizing - the irreducible contraposition of the individual and society as being the most elementary element in pathological conceptions of deviance. According to the principle of separating the cause of a phenomenon from the roles it could play, if the disharmony between social expectations and individual behavior serves to explain behavior that is deviant in some way, then it also takes on significance for the maintenance of social cohesion by reinforcing collective disapproval of transgressions of the norms and for stimulating the definition of the canons of morality. By virtue of the principles of social determinism and the historical relativism that characterize the phenomenologies in question here, the very limits that define this behavior are inseparable from the context of their realization and, even more importantly, they cannot be derived from individual bio-anthropological factors (Durkheim 1967, pp. 81 and thereafter). Normality/pathology and conformity/deviance are relativized as a function of the historical evolution of a particular society, being derived from the constitution of a social species that cannot be classified on the basis of characteristics that are traceable back to the biological or psychological background of single individuals (Stedman 2001, pp. 130 and thereafter). While the relationship between determinism and freedom of action could be defined as a disharmony between personal attitudes (heredity?) and social expectations by using this theoretical framework to associate the genesis of this discord with transcendent incidents that are independent of social conditioning, the organic and psychological constitutions would still lack any precise limits to the extension of this branch.<sup>2</sup>

In the early decades of the 20th century, the work of the "Chicago School" approached deviance and pathology even more directly in a variation on the Social Behavior analysis from the American tradition of sociology.<sup>3</sup> This change in perspective led other authors to voice a strong bias towards the value of empirical research and direct observation during the study of social facts, not to mention an aversion to grand theories.<sup>4</sup> More specifically, this was manifested in the omission of abstract speculative considerations of human nature from the incidence of the pathological aspects of urban life, in the greater trust invested in the operational indications of a practical sociology that focused on the demographic-ecological dimensions of social problems and

conditions, i.e., the effects of urban-industrial development in Chicago during those times.<sup>5</sup> This ecological research model is full of analogies between this level of symbiotic-competitive relationships and more or less complex biological aggregates in the context of organic life. It also assigns innate dispositions a degree of significance to explain specific styles of deviant conduct, such as the convergence of individual dispositions and talents that Park postulates in the configuration of different moral regions of the cities. The bio-evolutionary orientation to the explanation of these phenomenologies, however, remains marginal in this context as well. By highlighting transition zones and the role of social disorganization, the relative absence of shared cultural models and their significance in terms of normative impact, the interpretive assumptions underlying this work are largely traceable to Durkheimian sociology.

Empiricist research programs like these mounted vehement attacks against Eugenic theses and the re-association of the origins of slum dwellers' pathological behavioral traits to "inborn legacies from their defective ancestors (Faris 1967, p. 62)." On the other hand, the general theories of deviant behavior in both Shaw's work (on juvenile delinquents in Chicago) and Sutherland's (on normative conflict in social organization and differential association) attribute only secondary significance to biological or psychological traits of inferiority in the context of primary group communications and learning processes.

In the 1950s and 1960s, however, the University of Chicago gathered together some of the most famous biologists, paleontologists, psychologists and anthropologists in the world. This group also included Alfred Emerson, one of the reference points for an author who was outlining the cardinal points of his Evolutionary Universals during these same years: Talcott Parsons. Drawing on a few insights that were fundamentally Durkheimian, however, this Harvard theoretician formulated the famous General Theory of Action as an interpretive model that as much more articulate with respect to the organism, the personality system, the social system and culture (Toby 2005, pp. 349-364). He theorized the famous (isomorphic?) personality system/social system relationship on the basis of specific mechanisms for identifying dominant values in the latter. Rejecting all attempts to resolve social order by assuming the spontaneous convergence of individual and social interests as a main premise, Parsons instead emphasizes the conformity of social control and a definition of deviant behavior that refers to the internalization of normative cultural criteria and their integration into a system of action. In his system the notions of deviance and social control represent two sides of the same coin and are considered critical dimensions of any structured system of social action. Parsons' definition of deviance is based on a distinction between the symbolic criteria of legitimacy and illegitimacy, posing cultural values in opposition to deviance through the use of a heuristic dimension.<sup>6</sup>

Parsons points out the need for a clear distinction between the physical-biological nature of individuals and their moral nature, which is expressed through social relations. Habits of thought and action are what are actually internalized during a socialization process that, as the cultural plane of reference, conditions behavior through an ongoing process of redefinition that remains unaffected by innate psychological or biologically-inherited factors (Prandini 1988, pp. 9-10, 23). At a more general level, the relationship between the personality system and the social system is founded on constituent elements derived from the role concept, which defines the interrelationship and interdependence of the two dimensions as a system of action based on a cybernetic hierarchy between the mental sphere and organic individual, the culture and the social system.

In reference to a more mature development of culture, of course, Parsons himself presents the concept of Evolutionary Universal, convinced that clear-cut distinctions between problems concerning lifestyles that were specifically human in relation to its continuity with the rest of the organic world are no longer admissible in the context of sociological analysis, and he develops an interest in an analytical plane in which the main protagonists are man and his biological potential for social and cultural evolution and the organic foundation of culture itself - the brain, which the notion of evolutionary universal treats as the reference point for the very concept of adaptation that has been so critical to the theory of evolution from Darwin on, especially for defining the

capacity to address unstable relationships between the system and the environment (1971, pp. 207-209).

The Parsonian perspective conceives each level of organic evolution as a level of adaptational capacity that is capable of ensuring hierarchically-differentiated levels of survival, but that is incapable of excluding the existence of symbiotic interrelationships across them. In this way the problems to be solved are configured in a way that frees the logic of the evolutionary model from tautologies and non-disprovable statements (Leonardi 1986, p. 97). The work of Robert Merton agrees with some aspects of Parsons' work while sharply disagreeing with others. Merton's approach to deviant behavior is oriented towards more specific problems and phenomenologies than Parson's grand theory.<sup>7</sup> The different perspective on the relationship between conceptualization and empirics, in fact, patches over previous chinks in the potential interconnection of cultural and organic worlds (Sztompka 1986, p. 127).

By framing theory as an ongoing developmental process and touting the fundamental role of empirical research, Merton points out how fundamentally functionalist tendencies are discernable in every one of the human sciences, from biology to physiology, economics to law. This procedural characterization in itself does not guarantee scientific validity – it simply illustrates how an accumulation of experience testifies to the inevitability of this path for every proper study of man, understood as both biological organism and psychological actor (1966, pp. 78, 167).

This rejection of the uncritical transfer of conceptual baggage from the biological sciences to the social sciences is paralleled by the predominant role that Merton assigns to culture right inside his own theoretical explanation of deviant behavior (Martini 2009).

Revisiting Durkheim's original definition, Merton interprets anomie as a form of disharmony between the ends defined by the reference culture and the empirical conditions required for their realization (means). In his classic essay on Social Structure and Anomia, he frames this deviance-producing mechanism as a procedure that is technically more effective for achieving the ends associated with culturally-prescribed behaviors, aside from their cultural legitimation (Merton 1966, pp. 209-257).

Merton traces deviance to social structure, cultural structure and their interrelationships, asymmetries in which provoke the de-institutionalization of the means and reveal contradictions in the norms governing a given environment. This generates genuine social pressures that foster the types of adaptation that are considered deviant relative to these cultural means. This is in open contradiction, in other words, to the erroneous premise that is rooted in Freudian theory and the writings of his revisionists (Fromm), i.e., the idea that social structure is what represses the free expression of man's innate impulses, which liberate themselves periodically and explosively, and that in some cases are deemed unacceptable by conservative members of the same society, who inevitably define them as criminal, pathological and socially threatening (Ibid., p. 194).

In contrast to these anarchic doctrines, as Merton calls them, functional analysis conceives of social structure as being active and able to produce new motivations that cannot be predicted on the basis of our knowledge of innate individual needs. While structure represses certain inclinations to act, it also creates new ones that are even more effective for the realization of innate potentialities. This amounts to the functional approach's abandonment of a position maintained by certain individualist theories that maintain that different degrees of deviant behavior can be explained by random variations in the proportion of pathological personalities that characterize different social groups and strata. This is, in effect, precisely how Mertonian functionalism expresses its own credentials for the analysis of deviant behavior in order to determine how social and cultural structure can foster socially-deviant behavior by individuals positioned in different parts of the structure itself, and by trying to identify the conditions in which some deviations could also be interpreted as new models of emergent behavior in specific subgroups, in contrast to the institutional models sustained by other groups and by the law (Merton 1966, p. 194).

To summarize, the protagonists of sociological culture itself - representatives of the social paradigm on the interpretation of deviant behavior – are the very ones who are signaling a need to reach beyond their own epistemological, theoretical and methodological limits. Remember what happened in the paradigm of the classic school, where implications like these should have been expressed with greater emphasis, but which instead produced some of the most noteworthy theories of social control in recent decades (the modern theory of deterrence, first and foremost) by abandoning the original premises about the characteristics of human nature and hereditary constitution and defining their own line of reasoning around Gary Becker and Jon Elster's game theory and rational choice propositions, the market metaphor, the relationship between involvement and event decisions – in essence, the economic theory of criminality and the main corollaries on utility maximization, so as to shift the level of analysis to simple comparisons between criminality indexes and social control measures.

#### Theoretical stasis and the challenge of complexity

The same years in which the above theories were being developed witnessed major developments in the cognitive sciences, evolutionary sciences and experimental epistemology.<sup>8</sup> Starting after WWII, furthermore, the crisis in the classic philosophies of history came more and more sharply into focus, marked by the weakening of an epistemological model that viewed universal laws - physics, biology, social - as the key knowledge with which to control history as well as the future (Bocchi, Ceruti 2007, p. XXIV). For its part, the sociology of deviance and the criminological disciplines were becoming more and more wary of a sense of uneasiness permeating the entire internal debate. Joseph G. Weis, author of the Special Issue on Theory (which appeared in *Criminology* towards the end of the 1980s), proclaimed "[...] that the development of criminological theory over the past 20 years has lagged far behind its technical and analytical refinements. It might not be overstating the case to suggest that this period of theoretical stagnation reflects what philosophers of science refer to as the exhaustion of paradigms (Weis 1987, pp. 783-784)." In this framework, the most urgent of the many unresolved issues in sociological thought was still the possibility of a general theory.

The same volume includes summaries of several proposals (from those of Jack Gibbs to those of Cornish and Clarke), including a proposal by two acknowledged authors - Travis Hirshi and Michael Gottfredson – who draw on a conceptual analysis of white-collar crime to present their program "for a general theory of crime explicitly applicable to both ordinary and white-collar crime."<sup>9</sup> In parallel with some of Weis's observations, they indicate the path they believe would permit for the construction of a "general theory of crime capable of organizing the facts about [...] all forms of crime," capable of explaining the empirical distribution "of all forms of criminal behavior (Hirshi, Gottfredson 1987, pp. 949-958)." Having asserted, in fact, how the essential characteristics of criminal behavior cannot be based on factors like the search for money, success or approval from a peer group, and having reiterated how the any interpretive framework that relied on these kinds of explanatory elements would elicit major reservations, the only option left is to appeal to the only level of action conditioning that could still be acknowledged as an authentic general theory of criminal behavior: human nature, or in better words: "the concept of human nature [...] in the classical assumption that human behavior is motivated by the self-interested pursuit of pleasure and the avoidance of pain (Hirshi, Gottfredson 1987, p. 959)."

This is an extreme simplification, obviously, which is accompanied by the explanation of social behavior through the use of bio-evolutionary interpretive paradigms, which years before had already brought into question this common denominator of various interpretive models in the social sciences.

During these same years, as a matter of fact, naturalism began to resemble a genetic biologism more than a psychologism, feeling a strong influence from the so-called Grand Synthesis and the possibility (derived from new studies on genetics) of confirming Darwinian evolutionary theory (Da Re 2010, p. 124). An epistemological controversy concerning the foundation of human

behavioral sciences was sparked by the 1975 publication of a celebrated text by Edward Wilson *Sociobiology: the new synthesis*,<sup>10</sup> in which, in a truly original effort in open agreement with the theses of John Maynard-Smith and Robert Trivers, Wilson borrows a sociobiological model borrowed from the behavioral study of animals and applies it to the study of human social behavior. <sup>11</sup> In comparative terms, sociobiology is proposed as a way to integrate the data on ethology, genetics and evolutionary biology in order to come to a deeper understanding of the biological foundations and evolutionary mechanisms that underlie social behavior. In operational terms, however, it presents itself as an evidence-based form of empirical research that can unveil evolutionary mechanisms through the ways that biological makeup exerts an influence on behavioral models.<sup>12</sup> Wilson equates the moral good criterion with the species survival objective itself, formulating a "biology of ethics" in which man's being and acting morally are incorporated in a purely biological manner, as being a consequence of genetic determination (Da Re 2010, p. 125).

The bitterest controversies seem to stem from the notion of sociality as a product of the genetic-evolutionary process, as the result of a series of prior actions and decisions (unconscious in origin and encoded in the genetic heritage) that exert a pressure in favor of the selection of actions that are functional to reproduction. Not even the interpretive principle is spared, the very principle which in the same pages proclaims the selective nature of a behavior, the control of which depends in large part on the evolutionary state of the genetic heritage instead of socio-cultural mechanisms and determinants (Mainardi 1979, pp. IX-XI). Most of the vehement reactions to this theorizing were triggered by Wilson's more provocative initiatives that, at the heart of the New synthesis debate, put a special emphasis on the possibility that "the scientists and cultivators of humanistic disciplines would consider that the time has come to biologize ethics" (Wilson 1975, p. 569), or that moral development can only be interpreted as a more complicated and less adaptable version of the genetic variance problem, "which can in any case be traced to the principles of behavioral genetics (Ibid., p. 569)."

While not entirely congruent, the reference to latent propensities for criminality found within the theses of Gottfredson and Hirshi clearly resonates with these conclusions. In any case, Wilson renews a thread of the debate that was destined to become more and more prevalent in the social sciences, which were forced to come to terms with the possibility of some degree of genetic control over social behaviors. Within the disciplines themselves, this is how the notion developed that specific variations in the human condition can be derived from social and historical levels of conditioning or they can be genetically programmed to promote survival and reproduction, with historical-cultural processuality being framed as the product of evolutionary dynamics.

The heart of the debate, once again, concerns the possibility of theorizing that cultural phenomena can be identified with a bio-evolutionary level of mechanisms and, in particular, the refusal to grant full autonomy to social constructivism and unconditional specificity in the genesis of phenomenological variations and associated behaviors (Vignera 2011).

Richard Dawkins, for instance, theorizes a redefinition at the scale of the fundamental units of evolutionary selection - species, individual, genes - and a turning point in the study of cultural evolution by attributing a certain degree of pliability to human nature itself in terms of mechanisms and explanatory principles that are rooted in blind evolutionary selection.<sup>13</sup>

Agreeing with Dawkins, Charles Lumsden theorizes the existence of a level at which direct relationships can be identified between genes and behavior, as well as close ties between genes and culture and even geno-cultural transmission. Along the same line as Dawkins and Lumsden, William Hamilton and Robert Trivers apply their own ideas to the evolution of the communication process, altruism, aggression and moral sense, James Wilson and Richard Herrnstein do so with the relationship between Crime and Human Nature, Charles Murray and Herrnstein (once again) on the hereditary nature of intellectual faculties, and Benjamin Libet, who draws on experimental studies on the temporal relationship between neural events and conscious experience in order to theorize implications for the definition of free will.<sup>15</sup> Last of all, there is Judith Harris' radical redefinition of the limits of educational processes in *The Nurture Assumption* (1999).<sup>16</sup>

Starting from these last theories, the three famous laws on the genetics of behavior give an authentic summary of a group of findings recognized as "the most important discoveries in the history of psychology."<sup>17</sup> The same line of thinking includes other theses that have developed within the cognitive neurosciences to offer visions of determinism and free will that could refresh a considerable part of the debate on the human condition, at least in the Judaic-Christian tradition. How to respond to invitations to obscure learning as a model of cognition and how, at the same time, are we to respond to those who to resort once again to the most deeply rooted of biases, whether it is the environment, education level or parental behavior to determine who we become? The closing decades of the 20th century witnessed the most direct accusation against the social sciences, i.e., that they are unequipped to explain how pure evil fits in (Piattelli Palmarini 2003, p. 5 and 137). We find ourselves completely unarmed whenever faced with evidence "that evil can exist, that it can have distant biological origins and that it can exist more in some and less in others," and we are less capable than ever of distinguishing - in regards to criminal behavior itself - between the solution of a problem and its redefinition "on more solid foundations" (Ibid. 2003, p. 140).

Steven Pinker, a supporter of Dawkins' theses, theorizes a direct relationship between evolutionary changes and competition among the fundamental replicators of genetic heredity. He falls shy of claiming that behavior can be directly controlled by genetics, although these latter units of explanation, from his reductionist perspective, would necessarily be translated into neural interactions and incorporated in strategic evolutionary complexes (Pinker, Rose 2006, p. 59). In this way, the most common phenomenologies that can be observed in the context of deviant behavior would necessarily refer to a human nature that is already partially defined, having been hard-wired long before the influx of culture and society began shaping the process of personal identity development. Morality itself is framed as a genetic exercise that plays a function in evolutionary dynamics, and the criminal behavior interpretive frameworks, which are based entirely on the action/influence of the socio-cultural environment, would be the proclamations needed to keep breathing life into a moralistic fallacy that views criminal behavior as "having nothing to do with human nature, but that is perhaps dictated by culture" (Pinker 2005, p. 378). From a social context, in other words, that is dominated by individualism and the spirit of competition, so that violence would not belong to the natural repertory of human strategies (Ibid. 2005, p. 384).

As far back as the 1980s, as has already been suggested, biological and cultural evolution began to be interpreted as closely intertwined processes, as the product of a selective adaptation that was complex in terms of its dynamics but relatively simple "in its essentially demographic constitution" (Vattimo, Cavalli Sforza L., Cavalli Sforza F. 2006, p. 12). History Repeats

Stephen Jay Gould, Richard Lewontin and Steven Rose have criticized ultra-Darwinism and the adaptationist program from a discontinuist perspective by demanding, first of all, an opportunity to view organisms as integrated units characterized by constitutive plans that are so strongly determined by phylogenetic heredity and developmental models that adaptational forces are rendered insignificant with respect to potential pathways for change. These authors have fielded the harshest criticisms of a formalization characterized by weak and contradictory (if not outright erroneous) experimental evidence and a formalization that refuses to consider the basic elements of human nature as being essentially undetermined (Lewontin 2002; Pinker and Rose 2006, p. 71; Gould and Lewontin 2006, pp. 77-100).

This critical perspective reframes the evolutionary process as being contingent on an unlikely series of events while, as Gould proclaims, all the rest is nothing more than bio-determinism and ideology (Gould, Lewontin 2006, pp. 81 and thereafter), such as when the idea prevails that a natural human encoding is responsible for certain capacities or behavioral traits, making it useless to oppose this determinism (Gould 1981).

From the same perspective, Steven Rose voices his own criticisms and claims, in open polemics with Pinker, that none of biology would make any sense if it were not for history (Rose, Lewontin, Kamin 1983). Nothing will make any sense until we clarify that the need for materialistic

explanations that can attribute a fundamental role to genetics and biological evolution in no way implies that social behavior need necessarily be reduced to reproductive strategies that are determined by genetics alone.

Another critic of all forms of bio-determinism is Richard Lewontin, who sees them as bad metaphors that are being applied by interpreters of Darwin's original ideas and promoters "of a mainstream evolutionary melody" (Lewontin 2002, p. 47). This takes place, furthermore, by assigning a primary role to the social sciences themselves, making specific reference to the significance that Merton and his sociology of science had assigned to the social context from which the problems addressed by scientific knowledge emerge and to the institutional structure where his investigative processes are articulated (Lewontin 2009, p. 13).<sup>18</sup> From a technical point of view, Lewontin finds it impossible to identify any cultural equivalents for the genetic mechanisms identified in biology or even for the elementary units of culture, except through the resort to arbitrary criteria akin to those first adopted by Dawkins and later by Pinker. Biological evolution can only be portrayed through a close association with contingent, unique and non-reproducible events, making it impossible to establish an order (unless it is ideological in nature) because of how organisms represent convergence points for numerous but weak causal determinants that evade comprehensive explanation (Lewontin 2002, p. XVII).

By unanimous agreement, apparently, the tenor of these debates has become increasingly intransigent. While it is may be true that no molecular biologist, naturalist, neurophysiologist or neurobiologist has ever denied the presence of evolutionary dynamics and their continued significance, the more vehement disagreement focuses instead on how such dynamics are actually realized and the precise limits of their influence, especially with respect to the more classic questions of consciousness, morality, free will, emotional bonds and fate.

While Wilson's New Synthesis was in the process of being formalized, the field of biology was witnessing the emergence of an analogous need - a direct descendant of the theses of theoretical biologists like Joseph Henry Woodger, Emil Ungerer, Johannes Johann von Uexküll and particularly Ludwig von Bertalanffy in the early decades of last century, whose objective was to create an independent theoretical and methodological synthesis that varied slightly from the Darwinian tradition. To liberate the methods of biology from the interpretive and explicative criteria of the physical sciences, it was first necessary to acknowledge the dual need of emphasizing how a great deal of this particular context was not traceable to the standard scientific method and how this meant that new terms and methods would be needed to capture the peculiarities of the living - discrete units defined as closed, living systems that were structurally-determined. Not even the redefinition of the traditional observer/observed relationship was spared from this perspective, which involved an emphasis on the organizational closure of living autopoietic systems, a special focus on their morphogenetic properties of self-maintenance, self-regeneration and self-replication, and the critical interest in identity-preserving capacities that devolve from a system of organized, coordinated transformations that is embedded within the living systems themselves. This and more forms the backdrop of the search for new interpretive keys for understanding the process of interaction between living systems and the external environment (Maturana, Varela F.J. 1980; Varela 1986). The complex and dynamic networks of interaction that are generated by complex systems and designed to reproduce the systems themselves point out new directions to take in the search to identify the logical formalisms that would be needed to replace atomistic base units and linear causal principles (gene-behavior, meme-behavior) with systemic foundational units and cyclical-recursive causal principles. This would shift the focus from the search for universal constants through quantitative models to the exploration of variability and potentiality by means of historical-evolutionary narratives and interactive-systemic choreographies.<sup>19</sup>

From this perspective, both the reasoning styles and the models themselves put a priority on horizontal relationships and the reciprocal organization of the parts into a whole, and it does so in reference to both the subject of study and the methodological level, which is characterized by considerable disciplinary integration (i.e., the antithesis of mechanistic reductionism and analytical

explanations). Historical diachronicity is viewed as playing a more and more prominent role than in Darwin's original evolutionism or contemporary evolutionary pluralism.

The theorization of autopoietic systems as a reasoning style and algorithmic model that can be generalized to all disciplines is a perspective that claims to redefine the terms of Darwinian evolutionism and that, beginning in the 1980s, has come to be known as the paradigm of complexity. While evolution is not attributed a preponderant role in the initial phase, its integration within a subsequent phase is mainly understood as the temporal unfolding of a stage-based dynamic involving random mutations and selections. The models of ontogenesis and the spontaneous stabilization of complex molecular and cellular structures, in any case, pinpoint self-organization as the key to explaining this system-world, all the way from the pre-biotic up to entire social organizations, from the economic sector to forms of Artificial Life.

Niklas Luhmann applied these concepts in the Social Science context, where he pointed out how the simple concept of autopoiesis may serve to distinguish and indicate a corresponding condition and how this concept, when put in these terms, is deprived of any empirical explanatory value. This is why early applications to the explanation of organizations were actually proposed in the form of biological metaphors or analogies. He clarifies how his perspective has nothing to do with the first or second of the two operations, but that "it is more about different applications of a general theory" (2005, pp. 36-37; 1985, pp. 63 and thereafter).

Given such a multifaceted framework as the backdrop, therefore, it seems premature to attempt to build a general theory of crime by struggling to carve out a middle ground foundation amid such a wide variety of mutually irreducible adaptive models. Nor does it seem like likely that a general theoretical paradigm could emerge from the latest trends in modern criminology, which are focused on defining: whether and to what extent different instances of deviant behavior could be attributed to social conditioning as opposed to hereditary traits; whether and to what extent the former could prevail over biological mechanisms of adaptation; whether and to what extent the social mediation embedded within the structure of every behavioral-instinctive response could modify the content and potential outcomes by adapting them to the conditions of existence generated by the social system. However paradoxical the implications of all this may seem... Our conclusions could be much different, however, if we were to take a closer look at current trends in how the Genetics of Human Social Behavior is being applied criminal behavior. The same author, Gail Anderson, has encouraged the integration of biological, psychological and social planes in the study of criminal behavior (Anderson 2006, p. vii).

A special 2009 edition of Criminal Justice and Behavior presents other authors who make reference to analytical developments in the context of crime-genesis and Deviant Behavior and the correspondence between constitutional-genetic and social factors, for which the experimental evidence is mounting. The Nature vs Nurture debate, in any case, is being redefined and revived from relative obscurity, a development which garners additional support from a rereading of earlier findings on the relationship between genetic makeup and environmental surroundings (Beaver, Ratchford, Ferguson 2009, p. 1148). Let alone the most pointed accusation in this context, last of all, which is addressed directly at sociological criminology itself and its obstinate desire to engage in sterile debates.<sup>20</sup>

### Borderlands

In light of the main dimensions of the debate reviewed herein, there can be little doubt that biology and culture are more and more commonly being framed as two extremes on a dimensional continuum with considerable territory left to explore. The traditional distinction between the world of nature and the world of culture is in decline and is gradually giving way to a much more complex framework, one in which epigenetic mechanisms are no longer circumscribed by clear and unquestionable borders. At the same time, the social context we construct has a deep and pervasive influence on the expression of our hereditary endowments in a scenario highly reminiscent of Lamarck (Gallese 2010, p. 25).

Could the evolutionistic paradigm be the scenario within which the natural sciences come to acknowledge the epistemological specificity of the social sciences? The complexity that derives from interdisciplinarity seems to speak more to the possibility of becoming aware of the problem than of solving the problem. It is not so much the questions and answers that seem to be undergoing a transformation, in other words, as the types of questions and types of answers that we accept as being definitive of scientific inquiry. Gone are the myths of certainty and comprehensiveness that had dominated the path of science for centuries - we are now facing a new conception of knowledge that sets aside the issue of how knowledge came to be identified with the method that was invented for the "hard sciences" back in the 17th century and turns its focus instead towards the recent developments in the physical, biological and system sciences that have brought the legitimacy of this identification into question.

This reasoning is even more apt in the context of deviant behavior, the definition of which is so closely tied to the terms and conditions of the bio-political horizon of 'modernity,' and which could be viewed as the borderline between nature and culture. The concept of deviance and its association with criminality is becoming increasingly sensitive to semantic differences between the normative plane and the socio-cultural plane.

A landscape like the one outlined here is a sort of no-man's land that both the social and the biological sciences are constrained to navigate, a territory in which the concept of deviance has become more political in nature than scientific, with the consequence that more precise meanings are highly dependent on specific decisions and rulings. The discovery of the "aggressiveness gene," in other words, tells us nothing about how we should be treating confirmed "criminals" who exhibit this gene, and tells us nothing about how we should be treating individuals who exhibit this gene but who have not committed any crime. Allow me to elaborate. By depicting biology as the preeminent if not exclusive level for determining the relative valuation/devaluation of different behaviors (with direct consequences on the legal plane), the definition of deviance itself is subject to a never-ending process of politicized decision-making. This is why the frontiers of definition are mobile, bio-political frontiers, and the fact that they are currently in the process of being redefined demonstrates more than ever how the exercise of power (and the relationship of subjugation, in Weber's words) will never shy away from the manipulation of the medical, biological and social sciences (Agamben 2005, pp. 171 and thereafter).

The path of preference, in other words, seems to lead through a critique of the classical notions of law, prediction and determinism and towards a science that is unitary<sup>21</sup>. The social sciences have acknowledged the prospects for an approach that conceives of human nature as fully biological and fully cultural (therefore fully political) at one and the same time, an approach that begins by identifying the relationships between multiple, isolated dimensions derived from different disciplines. At first glance this may seem to threaten a loss of identity for different fields of knowledge, but in reality the specificity and differentiation of different disciplines will instead be accentuated as long as we embrace the fact that in-depth study is the only fruitful path to interconnection and reciprocal acknowledgement. In the author's opinion, the only way to construct explanatory models through sharp distinctions, criteria setting and well-defined scopes of study. From an epistemological perspective, this is about redefining the limits of knowledge itself - new conditions, new opportunities and new possibilities that, as Ceruti has argued extensively (2007), represent the core of the transition from an epistemology of representation to one of construction. This is the type of transition, furthermore, that can help redefine the coordinates within which a positive debate on the nature of human rationality and free will can proceed.

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## Связь между природой и воспитанием: социологические перспективы

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Новые разработки в области биотехнологии и их значение для уголовного судопроизводства в последние годы внесли природа и воспитание. Унитарная наука, которая включает в себя как биологические, так и социальные уровни требует, соответствия актуальным запросам биотехнологических достижений и их непосредственное влияние на интерпретацию девиантного поведения в зале суда.

**Keywords:** биотехнологии, эпистемология, девиантное поведение.

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