The Autonomy of Social Sciences: In Search for Objectivity

Juozas Kasputis
ISES

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Social sciences are trying to impose themselves as established ones. For example, it's used to be preupposed that there is an exemplary social science, like economics. But all the achievements and failures ascribed to social sciences are rooted in economics as well. In order to proceed with alternative and unconventional approaches to social processes it is desirable to start from historical background of social sciences. It may seem superficial but it is hard to escape the feeling of certain dissonance between presumably high weight and relatively young age of social sciences. This is a common feature of all political discourses in seeking to validate their dominance despite the limited period of their existence accordingly. It reveals a complexity within prevailing trichotomy of knowledge – humanities, natural sciences and social sciences. The overlapping history and methodology makes these lines of division quite blurred. Humanities and natural sciences have a longer history and a richer tradition which is still influential even today. As a result, quite many scientists imply that general knowledge consists of "two cultures" – humanities and science. Despite this challenge the notion of "three cultures" looks productive although ambiguous. The political dimension remains as the main source of controversy both implicitly and explicitly, especially in social sciences. Interestingly enough, it instigates the reevaluation of the "subjectivity/objectivity" problem within all sciences. So-called value-free knowledge is a constant and long term pursuit in all scientific endeavours, or at least used to be. But the concept of value-free science has many flaws and one of them is the scientist himself/herself. The "suppressed" subjectivity can enter a science by the backdoor both deliberately or subconsciously unnoticed. It means that social sciences occupy vaguely defined "intermediacy" between humanities and natural sciences. And this legacy causes many unresolved issues for conventional frameworks.

The idea of "two cultures" belongs to C. P. Snow but also many other authors refer to the seventeenth century as the beginning of major split. J. B. Bury (1920), Gulbenkian Commission on the Restructuring of the Social Sciences (1996), F. Dyson (2006) provide with valuable insights regarding this division of humanities and science. They imply that ideas of Bacon, Descartes and Newton had a far-reaching influence on the development of scientific thought. According to J. B. Bury (1920), the notion of progress indicates certain rupture from Greek and Christian tradition. Of course, there were many other speculations about the concept of change throughout the history of humanity but the key issue was the direction of change. "The world was created and set going by the Deity, and, as his work, it was perfect; but it was not immortal and had in it the seeds of decay (J. B. Bury, 1920)". Bacon diverted the focus from heaven to earth emphasizing the value of experiments and the applicability of knowledge. This utilitarian turn pointed out the material welfare and happiness of people. In order to proceed with progress Bacon debunked ancient science based on opinions and plunged into the interrogation of Nature. Descartes contributed to the idea of invariability of natural laws by attributing to the Nature the principles of clockwork mechanism.

Besides that, he endorsed the supremacy of reason and further strengthened the dualism of human and Nature. Newton laws were supposed to become the final and all-encompassing scientific maxims. The initial success of science established its autonomy from philosophy and theology. The notion of ultimate liberation or cutting of all ties is still very questionable. There is a widely spread sentiment that science didn't free itself from religious or ideological implications. The growing importance of natural sciences was synchronized with social and economic development. But the causal relations of these processes are quite complicated; it's even hard to define cause-outcome reciprocity. Social sciences inherited all this structural and methodical intricacy. The discovery of natural laws was fascinating but it also raised a problem of determinism within social processes. The existing gap between humanities and natural sciences could be bridged by social sciences. But despite the prevalent institutionalization social sciences are mainly modern project permeated with some disadvantages of immaturity. I. Wallerstein chaired the Gulbenkian Commission on the Restructuring of the Social Sciences and issued the report which was published as book in 1996. The group of scholars admitted that science was too much encapsulated by two major premises: quasi-theological Newtonian and dualistic Cartesian.

> By the beginning of the nineteenth century, the division of knowledge into two domains had lost the sense of their being "separate but equal" spheres and took on the flavor of a hierarchy, at least in the eyes of natural scientists – knowledge that was certain (science) versus knowledge that was imagined, even imaginary (that was not science). Finally, in the beginning of the nineteenth century, the triumph of science was ensconced linguistically. The term "science'' without a specifying adjective came to be equated primarily (often exclusively) with natural science.
>
> (The Gulbenkian Commission on the Restructuring of the Social Sciences, 1996, p.5)

The Gulbenkian Commission (1996) and I. Wallerstein (2000) pointed out that social sciences became established disciplines in the same nineteenth century when universalistic and mechanistic trends were very dominant. So, two contradicting trends could be distinguished – the overall split of knowledge into separate fields and the permeated concept of universality. As the result, sciences were put into hierarchical framework mostly preoccupied with "objective" reality. Baconian emphasis of empirical data, Cartesian dualism of matter/mind and Newtonian laws empowered the belief in objective truths and laws outside human mind. The subjectivity was despised as unreliable outcome of imagination and intuition. Economies have been studied long before the nineteenth century, especially on macro level. Because of institutionalization of social sciences "political economy" was renamed into economics. It was supposed to prevent by this move the political influence on economics and to declare the belief in impartial and natural market forces (laissez-faire principles). But this decision is quite political itself knowing the prevalence of liberal thought at the

end of the nineteenth century. The emerging demand to manage industries more effectively and the necessity to improve state governance propelled social sciences. Though, state and ideology did not become exclusively as the object of research in pure scientific terms, but anyway entered science and exerted the influence on methodologies and research priorities. The hierarchical implications are very damaging within sciences, as can be seen from the existence of the unilateral dominant framework in economics which stopped its fruitful scientific evolution. Conventional economics are still plunged in the paradigm of the nineteenth century. New alternative approaches on economics should be deeply interconnected with redefining the structure of knowledge. The competition and the complementarity are not antagonistic notions. F. Dyson (2006) appealed to fruitful competition between empirical and abstract sciences noting that both small details and ideas are equally important. Also, J. Kagan (2009) endorsed the concept of "three cultures" in terms of cooperation and respect; it implies more balanced structure of general knowledge. Following him, natural scientists "are primarily concerned with the relations between a concept and a set of observations"(J. Kagan, 2009, p. 3-5). This kind of science is supposed to minimize cultural influences and values (including moral ones) associated with historical background. On the contrary, social scientists and humanists "resist awarding biology too much influence, rely heavily on semantic networks and, therefore, are often as concerned with the relations among a set of semantic terms as they are with the relation between a concept and evidence, and frequently seek answers that affirm or disconfirm an implicit ethical ideal" (J. Kagan, 2009, p. 3-5). Natural scientists, social scientists and humanists can use different ways, like mathematical equations, semantic networks or perceptually based schematic representations, in explaining phenomenon. But they can equally rely on building ideal model whereof essential features are shared by related phenomena. The concept of "three cultures" eliminates the hierarchy which permeated a paradigm of the nineteenth century (the superiority of natural sciences). The most productive interdisciplinarity precludes the unilateral dominance of certain method or model. However, a great deal needs to be done because the "promise" of social sciences to bridge a gap between natural sciences and humanities still is not fulfilled due to, so-called, immaturity. The immaturity itself is presumably a mere indication of certain phase in evolution of ideas. But this indication is neither neutral nor superficial, it is rather misleading or revealing at the same time. The major problem of social sciences is not about their maturity, it is about the impartiality of science.

Albert O. Hirschman (1997) uncovered very serious political implications within emerging social sciences. Most interestingly, his analysis refers to the seventeenth and eighteenth centuries. And it is not surprising, because capitalism also has emerged long before the outbreak of industrialization in the nineteenth century. The capitalism had to become ripe in parallel with improving the idea of engineering social progress. "The beginning of that story does come with the

Renaissance, but not through the development of a new ethic, that is, of new rules of conduct for the individual. Rather it will be traced here to a new turn in the theory of the state, to the attempt at improving statecraft within the existing order" (A.O. Hirschman, 1997, p. 12). The authority of religion and philosophy was seriously shaken in the seventeenth century but it would be too plain to relate this demise with rising bourgeois ethos. The history of ideas is deeply interconnected with ideologies but shift in ideas does not necessary coincide with the shift in ideologies. This ambiguity belies steady development and "maturing" of social sciences, including economics. It means that older traces of political and ideological implications can be successfully preserved despite shifts of scientific paradigms in Kuhnian terms or evolutions of research programmes in Lakatosian terms. The absence of traditional scientific disciplinary borders in the seventeenth century enabled to construct an influential blend of natural sciences and statecraft. "The advances of mathematics and celestial mechanics held out the hope that laws of motion might be discovered for men's actions, just as for falling bodies and planets" (A.O. Hirschman, 1997, p. 13). There was a necessity to maintain social order and to preserve the existence of state as such. The destructive power of passions is the major problem for all state machineries. So, due to inability of religion and philosophy to provide with any effective restraint new ideas were introduced. A detailed dissection of human nature was a typical outcome of this sort of endeavours. Following A.O. Hirschman (1997), "the idea of engineering social progress by cleverly setting up one passion to fight another became a fairly common pastime in the course of the eighteenth century"(p. 26). In other words, the principle of the countervailing passion induced the commonly known countervailing strategy in political science. Montesquieu's tripartite system signifies the separation of powers among a legislature, an executive, and a judiciary. It still remains as one of the basic principles of democracy preventing the concentration of power. The underpinning assumption is that competition among branches of power precludes the dictatorial dominance. In addition to that, the countervailing principle was endorsed in the context of commercial activities. The negative impact of lust for power, disproportionate ambitions or, even, sexual lust could be reduced by other passions, such as, greed, avarice or love of lucre. This concept was improved by introducing the notion of interest. It could be treated like a third additional category of human motivation in relation to two other traditional categories – passion and reason. In this case another kind of tripartite system can be distinguished. According to A.O. Hirschman (1997), "interest was seen to partake in effect of the better nature of each, as the passion of self-love upgraded and contained by reason, and as reason given direction and force by that passion" (p. 43). The main goal of this "project" was to consolidate the state by doing business instead of making war. A.O. Hirschman's historical research revealed that expansion of commerce and industry had a political and ideological origin. It implies that basic premises of conventional economics regarding "rational agents" and "market forces" have

certain flaws. “Rational agents” and “market forces” can not operate outside political framework, they are not purely impartial entities transferred from natural sciences. It seriously qualifies economics as value-free science and provokes to rethink the distinction between scientific and policy activities. G. Myrdal (1944) put it in more strict terms, “man is, as Aristotle told us, a political animal, and social science is a political science, in this sense” (p. 1043). G. Myrdal’s approach debunks all attempts to validate economics by value-free premises which preclude subjectivities and external influences. In addition to that, scientist can not distance himself/herself from personal subjective valuations. In case of conflicting valuations rationalizations are activated smoothing illogicalities. But this function of rationalization has nothing to do about objective rationality. The psychology of bias in science should provide with useful methods helping to expose the hidden premises. G. Myrdal (1944) pointed out, that statistical treatment of data was insufficient enough because mere observation does not organize the chaos of the same data. The initial hypotheses can be permeated by a priori speculations. “Science becomes no better protected against biases by the entirely negative device of refusing to arrange its result for practical and political utilization”(G. Myrdal, 1944, p. 1041). It seems the best way to deal with valuations is to introduce them explicitly. The scientific research does not lose its advantage by rejecting value-free framework. Otherwise, false rationalizations can distort the final conclusions.

> Economics – or “political economy”, to use the old-fashioned but much more adequate term (the attribute “political” has been dropped for convenience and as a tribute to the purity of science) – is the oldest branch of social science in the sense that it was the earliest to develop into a system of observations and inferences organized under the principle of social laws. In economics we can most conveniently study the influence of the static and fatalistic general bias upon the development of a social science discipline. From natural science it early borrowed the concept of “equilibrium”. This concept, as well as the derived concepts of “balance”, “stability”, “normal”, are all often heavily loaded with the static and fatalistic valuations. The “assumptions” of economic theory have been useful. But their load of inherited static and fatalistic valuations is heavy, and they will often turn into convenient covers for biases in this direction.
>
> (G. Myrdal, 1944, p. 1047-1048)

G. Myrdal criticized the idea of “disinterested social science” but not the rationality itself. A strict rationality does not evade valuations, it is supported by them. The stable equilibrium scheme is not suitable for the analysis of dynamic processes in economy and society. Scientific terms are value-loaded because, for example, the study object of economics is not only money, wealth or material resources, but also human beings following purposes what is excluded from mathematical models.

A prevalent mathematization usually is positioned as value-free methodology aiming to objectivity through quantification. This trend was very influential in conventional economics, especially after World War II. W. Leontief (1982) disclosed the mathematization of economics in "king is naked" way. "Two mathematically trained engineers Leon Walras and Vilfredo Pareto translated Classical Economics with considerable refinement and elaboration into a concise language of algebra and calculus and called it the General Equilibrium Theory" (W. Leontief, 1982). It seems that mathematics could be applied in economics quite suitably because the phenomenon of analysis consists of measuring units and prices which are quantifiable. But here rests below one great problem regarding statistics. Statistical data usually is compiled according to the needs of government and business institutions. W. Leontief (1982) emphasized this unscientific partiality of supposedly neutral statistics. Even the most sophisticated mathematical models in economics are inadequate if input data for them is collected and supplied with biases. Either manipulation or unilateral use of economic data in statistics falsifies the scientific inferences, and external influence qualifies economics as science once again. Political implications within economics are reinforced by increasing power of multinational corporations. Commonly used technics of data "aggregation" is another example of mathematical misuse. The data "aggregation" eliminates unique and important variables which otherwise could reveal interesting correlations in economy. As W. Leontief (1982) indicated, it is the outcome of too many economists coming from the field of pure or applied mathematics. "Aggregate" variables are better suited for mathematical equations. But from sociological point of view, the mathematization can have additional function which is consolidating science and preserving autonomy. According to P. Bourdieu (2004), it "set up a very strong social separation between professionals and amateurs, insiders and outsiders" (p. 48-51). In this sense mathematics is treated as the price of entry to discipline for newcomers. Knowing that mathematics can become a tool destroying the autonomy of science it is easy to get confused in those different directions of maintaining objectivity and submitting to manipulative influences. So, P. Bourdieu's notions of scientific field and capital can help to clarify the picture of discipline formation. Following him, "the scientific field, like other fields, is a structured field of forces, and also a field of struggles to conserve or transform this field of forces" (P. Bourdieu, 2004, p. 33). "Scientific capital is a particular kind of symbolic capital, a capital based on knowledge and recognition" (P. Bourdieu, 2004, p. 34). Each discipline is a separate field of forces constructing objectivity as social product dependent on commonly accepted presuppositions in the same field. The scientific capital of scientist, team or research group implies the level of their authority inside discipline. For the outsiders it means the price of entry into the discipline keeping the competence at appropriate level. P. Bourdieu (2004) distinguishes scientific field from political field, but depicts the autonomy of science as not a given, but "a historical conquest, endlessly having to be

undertaken anew" (p. 47). The struggles inside discipline are interconnected with the struggles in the social world. The autonomy of economics is weak and it causes certain problems common to all social sciences. But, interestingly enough, it also provides with potential opportunities for interdisciplinary cooperation. The closure of discipline leads to the dead-end self-censorship and the superficiality of discourse. The value of science depends on its openness which means not just sharing of knowledge. N. Elias (2009) also emphasized the social value of knowledge which as fund of symbolic representations is developed over generations. The knowledge defined this way is not susceptible to be abstract or compartmentalized. It implies the evolutionary approach regarding the relations between society and knowledge. As stated by N. Elias (2009), knowledge "serves as a means of orientation for the members of a society, orientation with regard to the world in which they find themselves and, with it, to themselves"(p. 49). The possession of reality-adequate knowledge ensured the survival of individuals and their groups but it also remained independent from each individual knower and each generation of knowers despite being "a stream of collective and communicable symbolic representations" (N. Elias, 2009, p. 50). Interestingly enough, N. Elias introduced his own concept of relative autonomy of science. It implies that knowledge is in the possession of society but still has remained independent of it. This ambiguity does not presuppose a paralyzing contradiction. On the contrary, it provides with greater flexibility which is necessary to maintain the adequacy to reality. In other words, the relative autonomy is the major condition for the advance of knowledge. Such idea is enough complementary to the notion of interdisciplinary studies.

> For me, the term 'relative autonomy' has the added advantage that it removes from the mind of representatives of any scientific specialism the idea that it is possible to pursue their inquiries in total autonomy and independence from those pursued by representatives of other scientific specialisms. 'Relative autonomy', in that sense, has become for me a symbol of the need for closer and more continued co-operation between representatives of different academic disciplines.
>
> (N. Elias, 2009, p.101)

The sociological approaches of P. Bourdieu and N. Elias raise the problem of scientific autonomy into another level of discussion aiming at the basic premises of scientific evolution and the growth of knowledge. At this point it's very important to employ the approaches of sociology of science and philosophy of science in simultaneous way. It should enable more profound analysis encompassing both social influences and internal principles in science.

Science is a distinguishable activity in search for new knowledge. Basically, it presupposes fundamental procedures and principles which should be common to all scientific endeavours. The main thread of this paper is the assumption that social sciences, including

economics, undergo some sort of developmental shortcomming which impedes their maturity. Sociological analysis uncovers entire spectrum of social and political forces behind the rise of science. Especially it refers to the problem of social sciences. Natural sciences are less susceptible to external unscientific influences due to exploration of Nature which isn't subordinated to human beings. Natural laws and regularities discovered by natural scientists became the examples of human aspiration for objectivity. The growth of knowledge concerning the Nature poses the ambivalence about uncertainty and confidence regarding sustainability. The ambition "to interrogate" the Nature faces a pressure of unpredictable complexity. Despite different perceptions and methodologies the developmental pattern of natural sciences became very attractive for scientific endeavours in other realms, i.e. social sciences. Respectively, the same pattern was found useful for philosophy seeking to establish the main principles of science distinguishing it from other pseudo-scientific activities. The necessity to build up internal, meaning regulatory and critical, scientific framework appeals to the very attempt to preserve the autonomy of science. It's quite possible to engage in philosophical research simultaneously analysing sociological aspects of science. Such inclusive critical approach can be more helpful in demarcating science from ideological impetus. It doesn't seem that it's achievable goal in absolute terms, but it should preserve the major principles of freedom of research and sustain alternative non-mainstream theories.

K. Popper is one of the famous proponents of such philosophical critical approach employing the concept of falsification and the criterion of demarcation. Philosophy of science followed K. Popper in researching the growth of knowledge and the occurrence of new theories. K. Popper initially prefered bold conjectures to empirical method. According to him, observations and experiments alone don't guarantee the affirmation of theory. It's not a problem for any adherent to verify a theory by finding necessary confirmations. Empirical data can be easily manipulated in order to make theory irrefutable on demand. Following K. Popper (2002), "irrefutability is not a virtue of a theory (as people often think) but a vice"(p. 48). A theory tends to lose its scientific status if abundant auxiliary assumptions (re-interpretations in ad hoc manner) enable to escape refutation. In other words, it makes impossible to falsify a theory. Falsifiability is a key concept within Popperian approach. Science is improving the knowledge through refutation of old theories by falsifying hypotheses. It doesn't equate not refuted theory to irrefutable one. The mere theoretical possibility to falsify a theory renders a condition for scientific progress. K. Popper was deeply influenced by A. Einstein's revolutionary breakthrough in physics. Not surprisingly, it's very complicated to apply this critical procedure to social sciences. Human factor doesn't necessary follow logic or physics. But K. Popper successfully raised the problem of induction and observation due to their submission to conventionalism which can result in dogmatism with fake objectivity.

> Observation is always selective. It needs a chosen object, a definite task, an interest, a point of view, a problem. And its description presupposes a descriptive language, with property words; it presupposes similarity and classification, which in their turn presuppose interests, points of view, and problems.
>
> (K. Popper, 2002, p. 61)

Conventional practices may simply turn to rude dogmatism.

> Our propensity to look out for regularities, and to impose laws upon nature, leads to psychological phenomenon of dogmatic thinking or, more generally, dogmatic begavior: we expect regularities everywhere and attempt to find them even where there are none; events which do not yield to these attempst we are inclined to treat as a kind of 'background noise'; and we stick to our expectations even when they are inadequate and we ought to accept defeat.
>
> (K. Popper, 2002, p. 64)

I. Lakatos proposed more sophisticated methodology of falsificationism elaborating Popperian approach. It was focussed on providing new standards for intelectual honesty (I. Lakatos, 1970). Every durable and well-established theory should retain a progressive problemshift, which can validate a scientific status. A progressive problemshift becomes a major feature of true science in this case and it involves, of course, increasing empirical content and discovery of novel facts. I. Lakatos (1970) pointed out, that in the long run a theory, which represents degenerating problemshift, tends to be immersed into empty linguistic exercise. A problemshift itself isn't fixed to one theory – its direction rather indicates a succession of theories "usually connected by a remarkable continuity which welds them into research programmes" (I. Lakatos, 1970, p. 132). I. Lakatos softened methodological radicalism of K. Popper: 1) instead of a given theory a succession of theories within research programme is appraised as scientific, 2) an appeal procedure is allowed exposing the problematicality of falsifying hypothesis. This means that really objective appraisal of scientific theories is achieved through elucidation of progress or degeneration in problemshift. The concept of research programme is solely dedicated to series of theories connected by certain continuity. There are enumerated two sets of rules for each research programme: negative heuristic and positive heuristic. Negative heuristic is the 'hard core' of research programme. It consists of fundamental statements which aren't allowed to refute as long as they are protected by positive heuristic. The latter is a protective belt of auxiliary hypotheses.

> The negative heuristic specifies the 'hard core' of the programme which is 'irrefutable' by the methodological decision of its protagonists; the positive heuristic consists of a partially articulated set of suggestions or hints on how to change, develop

> the 'refutable variants' of the research programme, how to modify, sophisticate, the 'refutable' protective belt.
>
> (I. Lakatos, 1970, p. 135)

The idea is to protect theories from encroaching anomalies in reasonable way. Usually, positive heuristic delivers instructions how to construct models simulating reality. It's like establishing certain limits to ignore the actual counterexamples. The Lakatosian concept of research programme justifies the relative autonomy of science by employing positive heuristic. The mere existence of anomalies is the usual thing in science. The chosen strategy in dealing with anomalies depicts the current state of research programme. Sufficiently durable protective belt of auxiliary hypotheses enables to postpone indispensable anomalies, even including ideological urgencies. Very intense preoccupation with anomalies may be a symptom of exhausted positive heuristic. In other words, it leads to degenerating problemshift of research programme. But it also points to 'immature science' proceeding with initial pattern of trial and error. This point indicates a difference between Lakatosian and Popperian frameworks. I. Lakatos prefered to use a criterion of demarcation for mature and immature sciences instead of focusing on science and pseudo-science like K. Popper did. Besides that, I. Lakatos rejected the 'myth' of instant rationality. Competitive pluralism of research programmes tolerates the existence of divergent theories. Additionally, a final corroboration of new theory is suspended till a procedure of appeal against falsifying hypothesis is finished. So, for a long period of time certain theoretical claims for rationality can be postponed "untill further notice". It seems to be a reasonable way to cope with the problem of rationality. The pretensions and ambitions of newly emerging sciences can end in superfluous and fake rationality. To be truly scientific doesn't necessary mean to be rational immediately. In this respect social sciences pose certain challenge for philosophy of science. K. Popper raised the problem of demarcation between science and non-science in provocative way, but he remained too much bound up by physics. I. Lakatos introduced the concept of research programme taking into account social sciences more explicitly. According to him, social sciences still remain underdeveloped what brings the problem of maturity into new light. In addition to that, Popperian framework received a vast amount of criticism due to alternative approach elaborated by T. Kuhn.

Unlike K. Popper, T. Kuhn didn't ignore sociological implications for philosophy of science. He is famous mostly for the notions of scientific revolution and paradigm. T. Kuhn more willingly called himself historian of science, because he prefered history and social psychology to logic. Following him, descriptive method is more fruitful than unilateral adherence to logical normativity. T. Kuhn acknowledged that I. Lakatos emphasizing the maturity of science made their approaches less different. The idea of maturity is less normative than demarcation in logical terms. That's, why T. Kuhn (1970) was so attracted by perceived similarities with Lakatosian framework

despite its official allegiance with logical normativity. The sensibility of maturity can extract more social-psychological aspects than it's expected behind logical rules. But T. Kuhn remained rather philosopher than sociologist because he had endeavoured to discover eccential explanatory principles of science. He criticised K. Popper and I. Lakatos for their attempts to build the image of ideal science for evaluating real scientific theories. T. Kuhn (1970) accentuated that it's not the right way "to explain an enterprise practiced by people" (p. 240). There are a lot of misconceptions regarding the notion of scientific revolution. The refutation of old theories and proliferation of alternative theories sounds very fascinating. But T. Kuhn urged on the importance of normal science because it's very valuable point in the stream of revolutionary ideas. In order to elaborate new revolutionary theory there needs to be older one. Normal science is the basic point of departure. Without it the developmental pattern of science becomes irrelevant. K. Popper and I. Lakatos paid less attention to pre-scientific phase of development than T. Kuhn did. Actually, Popperian and Lakatosian approaches being too much bent towards the model of ideal science lose analytical force in studying the origin of theories. It's very important point concerning the current issues with social sciences. Formally speaking, social sciences potentially can satisfy the criterion of demarcation in terms of K. Popper, but their develomental pattern still has retained defects. T. Kuhn traced the origin of science to speculative branch of philosophy. He made a remarkable statement about essential similarities between arts and social sciences. T. Kuhn named them proto-sciences. They can generate testable conclusions but they don't resemble established sciences. As pointed out by T. Kuhn (1970), "in antiquity and during the Renaissance, the arts rather than the sciences provided the accepted paradigms of progress" (p. 244). The current state of many social sciences is identified with chemistry and electricity before the mid-eighteenth century. T. Kuhn published article "Comments on the Relations of Science and Art" (1977) which inquires into similarities and differences between arts and sciences. Interestingly enough, the ambivalence of social sciences can become quite provocative topic. It's possible to admit that social sciences share some common features both with science and arts. For example, the arts are distinguishable by positing aesthetics as goal of work. The sciences, including social ones, use the aesthetics mainly in instrumental way. But the aspect of publicity makes the problem more complicated.

> Both enterprises depend ultimately upon the public for support. Directly or through selected institutions, the public is a consumer both of art and of the technological products of science. But only for art, not for science, is there a public audience. Even the *Scientific American* is, I believe, read predominantly by scientists and engineers. Scientists compose the audience for science, and, for the man in a particular specialty, the relevant audience is even smaller, consisting entirely of that specialty's other practitioners. Only they look critically at his work, and only their judgment affects the

> further development of his career. Scientists who attempt to find a wider audience for professional work are condemned by their peers.
> (T. Kuhn, 1977, p. 344)

Social sciences didn't dispose entirely the remnants of speculative thinking and ideological impetus which are the source of bigger dependence on public audience. Many social scientists may try to follow the pattern of natural sciences, but it doesn't seem to be fitted coherently. T. Kuhn didn't pursue the set of rules assisting the transformation of a proto-science to a science. Methodological efforts to construct this kind of recipes for transition have a strong blend of metaphysics which is basically preoccupied with ideal entities. Despite widely known concept of scientific revolutions Kuhnian approach mostly is concentrated on normal science. It means that scientists in large part are not involved in scientific revolutions or paradigm shifts. They are, one might say, routinely engaged with puzzles and anomalies. Following this approach, usually the practitioners of proto-sciences endeavour to build alternative theories because of the abundance of weak spots within theory under critique. Anomalies need more focussed and narrow work in the realm of established theory. According to it, the scientific progress is achievable due to the possibility to exploit the established theory at full length and not to waste time on criticising it. The practitioners of proto-sciences are deeply interested to disseminate their frameworks, alternative theories in order to persuade larger audience. T. Kuhn prescribed for established science esoteric and self-contained disciplines where scientific community is presupposed to be the only audience. The existence of esoteric and self-contained groupes of scientists signifies the maturity of science. Mathematics and astronomy have become esoteric disciplines in antiquity already, economics is on the final stage of this process only in our times (T. Kuhn, 1970). The general picture of scientific development suggested by T. Kuhn implies discontinuity and incommensurability. "For me, therefore, scientific development is, like biological evolution, unidirectional and irreversible (T. Kuhn, 1970, p. 264)". It's quite different image comparing with one provided by K. Popper and I. Lakatos. They were engaged in designing a set of criteria and rules, like accuracy of predictions, and depicting the growth of knowledge as cumulative. A paradigm, in T. Kuhn's terms, not withstanding the presence of anomalies, is replaced by new one. That's a process of paradigm shift or scientific revolution, newly emerged paradigm is incompatible with predecessor. K. Popper and I. Lakatos were inclined to logical principles independent of any theoretical content. T. Kuhn could be able to equate such endeavours with search for 'universal content' of different languages. Since the seventeenth century philosophers have been looking for universal and neutral language (T. Kuhn, 1970). T. Kuhn argued that such language is unavailable.

> In the transition from one theory to the next words change their meanings or conditions of applicability in subtle ways. Though most of the same signs are used and

> after a revolution – e.g. force, mass, element, compound, cell – the ways in which some of them attach to nature has somhow changed. Successive theories are thus, we say, incommensurable.
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> (T. Kuhn, 1970, p. 266-267)

Not surprisingly, many treats Kuhnian approach as relativistic, too much sociological and not philosophical. But T. Kuhn had a reasonable answer for that kind of critique.

> None of this would be worth saying if Descartes had been right in positing a one-to-one correspondence between stimuli and sensations. But we know that nothing of the sort exists. The perception of a given color can be evoked by an infinite number of differently combined wavelengths. Conversely, a given stimuli can evoke a variety of sensations, the image of a duck in one recipient, the image of a rabbit in another.
>
> (T. Kuhn, 1977, p. 308)

The primal definition of paradigm isn't about only theoretical statements. First of all, it's a scientific community "bound together by common elements in their education and apprenticeship, they see themselves and are seen by others as the men responsible for the pursuit of a set of shared goals, including the training of their successors" (T. Kuhn, 1977, p. 296). A paradigm should be treated as disciplinary matrix. T. Kuhn opposed the universal approaches of philosophers keen on positivistic aspirations. The designation of universal framework can effect and alter the knowledge possessed by community. It will result in the substitution of fundamental meanings and the distortion of original image.

Natural sciences contain a standard developmental pattern which is introduced by many scientists as the most representative for all sciences. Naturally, newly emerged sciences desired the same status as natural sciences, the oldest branch of science. For example, social sciences copied many concepts from physics retaining the designation of universal laws, mechanistic interpretation of cause and effect, all encompassing determinism, etc. Even philosophers of science mainly used examples from natural sciences in order to create critical methodology suitable for analysis of social sciences. K. Popper and I. Lakatos refered to logic and physics in researching the growth of knowledge. T. Kuhn tried to emphasize the importance of scientific community and other sociological implications, but his notion of paradigm also resembled certain practices better discernible in natural sciences. At least, T. Kuhn gave preference to biology (not physics) in describing developmental pattern of science. Though, physical reality is absolutely different from social one. The adoption of concepts from natural sciences for social reality presupposes certain immaturity of social sciences. Of course, it's ambitious way to achieve objectivity in studying social phenomena. But historical and sociological analysis proved that objectivity could imply ideological and political impetus. Social reality isn't cognizable without

taking into account the subjectivity. Sociological implications are relevant to subjective factors within science. Sociology of science turns deeply into social origins of knowledge. As a result, subjectivity becomes an indispensible part of scientific activity. N. Elias rejected Popperian approach on the basis that K. Popper designed ideal images of science thus turning himself into metaphysician. Regarding T. Kuhn, N. Elias also made some critical remarks. The notion of discontinuity and revolutionary shifts of paradigms contradicted the basic promises of N. Elias – intergenerational experience and continuity. Kuhnian thesis of scientific revolution is suggested to be replaced by 'culmination and synthesis' thesis (N. Elias, 2009, p. 78). The question may be raised regarding the incompatibility between sociology of science and philosophy of science. But social sciences can provide with a field of their unification in dealing with social reality. Sociological and philosophical implications together can sustain friendly environment for, at least, relative autonomy of social sciences. Logical framework maintains the protection from popular wisdom and ideological influences. F. Dyson (2006) imagined the science as "growing autonomously by the logical interplay of its own concepts, not responding to external social and political pressures" (p. 163). But, as P. Bourdieu (2004) pointed out, "epistemological rules are nothing other than the social rules and regularities inscribed in structures" (p. 71). Following him, "the struggle for the truth of the social world is necessarily endless" and "truth is the generalized relativity of points of view" (P. Bourdieu, 2004, p. 115). P. Bourdieu (2004) introduced the notion of critical reflexivity into social sciences as "the objectivation of the subject of objectivation" (p. 92-93). Despite, that social sciences have difficulties to impose themselves as sciences, the efficient reflexivity should revive them. The 21st century brought new challenges not only to social sciences, but also to natural ones. The major concepts, like causality, determinism, universalism, are rethought and new theories, regarding biffurcation, complexity, etc., came into light. Natural sciences lost their previous superior position in the whole structure of science. The hierarchical relations among sciences are being dispensed; a new disciplinary approach is taking place.

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