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PROFESSOR LAKATOS BETWEEN THE HEGELIAN DEVIL AND THE POPPERIAN DEEP BLUE SEA

I. INTRODUCTION: A POP-HEGELIAN PHILOSOPHER

When Lakatos unexpectedly died in February 1974, Paul Feyerabend was invited to write an appreciation of his friend for the *British Journal for the Philosophy of Science*. He portrayed Lakatos as "a fascinating person, an outstanding thinker and the best philosopher of science of this strange and uncomfortable century"; as "a *rationalist*, for he thought that man had the duty of using reason in his private affairs as well as in any enquiry concerning the relation between himself, nature, and his fellow men"; and as "an *optimist*, for he thought that reason was capable of solving most of the problems arising in the course of such an inquiry" (Feyerabend, 1975b, p. 1).

Just a few years before Feyerabend had claimed, in a rather different style, that his fellow was a *"big bastard* - a Pop-Hegelian philosopher born from a Popperian father and an Hegelian mother" ("Lakatos-Feyerabend Correspondence," fothcoming in Motterlini, ed., 1999).' In fact, some of Lakatos' most fruitful contributions such as his dialectical conception of mathematical heuristic, the idea of rational reconstruction and, more generally, the emphasis on the role of criticism in the progress of knowledge come directly from a peculiar philosophical conflation of Hegelian and Popperian ideas. I shall argue, however, that for the same reason, an tension in Lakatos' thought cannot be ultimately resolved. Like a seaman in the famous pirates' ballad caught "between the devil and the deep blue sea," that is between his captain who held near-dictatorial powers on the one side, and the dangerous boundless forces of nature on the other,[2] Lakatos too was caught between the devil of Hegelian historicism and the deep blue sea of Popperian fallibilism.

I shall provide an analysis of the roots and objectives of Lakatos' philosophical programme especially in the light of the material in *the Archive of Professor Imre Lakatos* at the British Library at the London School of Economics for Political and Economic Science (henceforth Archive).[3] Instead of giving a complete description of the available material, I shall emphasise those items which illustrate most clearly Lakatos' method of "Proofs and Refutations," his revision of Popper's falsificationist approach, the shift that occurred in the conception of methodology from his early writings to his later papers, his criticism of the neoauthoritarian philosophies such as Toulmin's, and finally his struggle to defend "Reason" against Feyerabend's neo-sceptical challenge.

G. Kampis, L. Kvasz and M. Stöltzner (eds.),
Appraising Lakatos: Mathematics, Methodology and the Man, 23-52.

2. A CRITICAL MARXIST POLEMICIST

The contributions written by Lakatos for Hungarian literary and academic journals in the early Fifties show how Lakatos' enquiry into science, mathematics, history and method has always been firmly linked to *pedagogical* and *socio-political* issues. The Hegelian-Marxist influence is clear in the paper entitled "'Le Citoyen' and the working class" (Archive 1.1). Lakatos contrasts the abstract figure of the *Citoyen* with the reality of the working class. By analogy, he contrasts the abstract principles of the philosophy of science with the substantive scientific practice of working scientists. In 1956, just before leaving Hungary, he was co-author of the Declaration of the National Committee of the Hungarian Academy of Science calling for "the freedom of science from political and moral pressure," and in particular for "the freedom of the Hungarian scientific life from its Stalinist shackles" (Archive 1.10). In a passionate speech Lakatos delivered at the Petσfi Circle pedagogy meeting the same year, he argued for encouragement of a critical attitude, absence of censorship and science as a guide to the party instead of the other way round (Archive, 1.9).[4]

These writings possess the sharpness, originality, forcefulness, clarity and, at the same time, ambiguity, which was to distinguish all of Lakatos' later works. Here is for example how Lakatos deals with the problems concerning the education of a new generation of scholars claiming a role for talent, curiosity, original thinking, autonomy, right to doubt and dissent, demand for proofs and respect for facts.

> The first question is that *of talent*, its sociological role and evaluation. [...] A counter-selection has been going on for years at a national scale on this basis. Talented, courageous men of initiative were pushed more and more into the background of so-called "simple, colourless, decent, disciplined" men. When a post had to be filled or a prize given, it was always the latter type who moved up a rung, while the former moved down one. At the same time, when it came to sacking or even arresting someone, the same selective principles were at work, only this time operating in the opposite direction. [...] Education, if it is to produce scholars of whatever field, must have, as one of its central elements, the training for *original thinking*, must help develop a reliance on individual judgement, sense of justice and truth, and conscience. In the past years, however, there has been an ideological campaign against original thinking and for preventing us from believing our own sensory organs. It is enough to refer here to the unfortunately misunderstood or misinterpreted slogan: "The Party is our mind." Another vital quality of future learned men was also put in the dock, "petty bourgeois" branded on its forehead: *curiosity*. Curiosity and interest were restricted most brutally within narrow, brain-stifling limits. In libraries the pile of strictly confidential stock was getting higher and higher. [...] It is the basis of scientific education to train students and research students to respect facts, to demand exact thinking and proofs. Stalinism, on the other hand, branded these very demands as "bourgeois objectivism." Under the banner of party-minded science, a large (even, we could say, world-scale) attempt has been made to create fact-free and proof-free scholarship or science. (For example, Lysenko's and Lepichinskaia's biology.) The extermination of facts was often carried out under the pretext of a "Marxist" fight

against empiricism - an invisible and frequently non-existent "salient feature" was given first importance over the miserable and mostly unpalatable "phenomena." The victims of this fervid fight against formalism included logic; and many branches of applied mathematics (biometrics, econometrics) were anathematised. Dialectics was corrupted into scholastic sophism. The history of science indicates that we ought to teach the future scholar to be modest, to be humble in his scientific claims, to be averse to all kinds of fanaticism. He ought to learn that what he does not understand, or disapproves of, still has a right to exist, and that no scientific theory, no theorem can conclude anything finally, in the history of science. [...] New, hitherto unfamiliar chapters ought to be included in pedagogical textbooks, such as "Methods for stimulating curiosity and developing it into interest," "How to teach to think scientifically," "How to teach people respect for facts" and - God forbid! - "How to teach people to doubt." [...] At the last Party Congress in China, Teng Xiao Ping talked about guaranteeing the *right to dissent* and remarked that if, perchance, truth happened to be on a minority side, this right would facilitate the recognition of that truth. This principle has enormous significance in science, where new conceptions are formulated at no instance by "the demand of the masses," but always by the single, solitary voice of a fragile scholar. It often takes many decades for his opinion to become that of a majority. That is to say, it would be good if our pedagogical textbooks devoted a chapter to *"How to teach respect for the right to dissent."* (Bearing in mind that he who tramples upon a dissenting individual opinion is usually not interested in the opinion of the majority either.) (Tudomanyra Nevelesrol - "On Rearing Scholars," English translation by Ninon Leader, Archive, 1. 9).[5]

In the same period, during a discussion with friends, he is reported to have lost his temper when the question turned to defending Marxism: "You are talking about scientific method, why do you keep calling it Marxism?." It is clear that, instead of preaching the dogmas of communist orthodoxy, Lakatos claims an active role for dialectics as an instrument of criticism, rather than as mere rhetoric for empty scholasticism. In his defence of "dialectical rationality" as opposed to "irrationalistic mystification" Lakatos was probably influenced by Gyorgy Lukács.[6] The appeal to dialectics has to be seen in connection with the prevalence of vulgar Marxism in organised working class movements and pedestrian mechanistic materialism in an age of totalitarian systems in which mankind was repeatedly menaced by self-destruction.[7] Hence, asserting the validity of dialectical rationality was, according to Lakatos, an attempt, on behalf of detractors who had not grasped the point of Hegel's logic, to condemn all forms of irrationality and decadentism. Following this line of argument, history is not brought into the picture to "explain" the necessary realisation of the present society and, therefore, to vindicate the *status quo,* but rather to recognise that knowledge is fallible (for "no scientific theory, no theorem can be eternally estabilished in the history of science").

Leaving his country for Cambridge, after the Uprising in late 1956, Lakatos would not entirely give up the outlook in which he was brought up, rather he would take with him the "forbidden brew" of Hegelian-Marxist dialectic to employ in a creative way.

3. THE ENTANGLED ROOTS OF LAKATOS' PHILOSOPHICAL PROJECT

In the Acknowledgements of his Ph.D. thesis, Lakatos claims that his work was born from the aversion to a conception of mathematics as static and authoritarian. In fact, he aims at showing that "mathematics is *dialectics* and that it cannot exist without *criticism."* Lakatos also remarks that

> The three major - and *apparently quite incompatible* "ideological" sources of the thesis are Pólya's *mathematical heuristic,* Hegel's *dialectic,* and Popper's *critical philosophy* (Ph.D. thesis, emphasis added, Archive, 3. 4)

The importance given to the "movements of concepts," i.e. the "unfolding" of mathematical developments seen as a product largely independent of the producer's psychology, is a clear reference to Hegel; whereas when Lakatos refers to Popper he is taking a position against any account of mathematics as certain and definitive knowledge.[8] Combined to this is also the reference to Pólya: mathematics is a problem solving activity.

With reference to Hegel, Lakatos never specified the kind of works and contributions he regarded as fundamental for his education. This is why such a source of inspiration is merely "ideological." It is even possible that Lakatos never read Hegel's works and that, like many others, he knew of Hegel what he read in Marx. Lakatos had certainly studied Marxism at the time he took part in Szabó's seminar on Plato at Debrecen University (Szabó for example recalls that: "Lakatos was more interested in Marxism than in philosophy"), and he later attended Lukács' lectures on Aesthetic centred on Kant's *Critique of Judgement* and Hegel's *Phenomenology of Spirit,* at Budapest University. It is worth noticing that "Lakatos' mathematical Hegelism" does not endorse Hegel's dogmatically undialectical philosophy of mathematics. On the contrary, Lakatos criticises precisely that kind of "deductive style" and static rationality which is typical in Hegel's idea of mathematics as proposed in the *Phenomenology of Spirit.* In this work, Hegel regards mathematics as the "inert and lifeless" realm of "rigid, dead propositions," i.e. the very opposite of the dynamic self-movement of concepts which constitutes the subject matter of philosophy.[9]

With reference to Pólya, it is worth quoting a passage from the "Preface" of his *How to solve it* (a book Lakatos translated from English into Hungarian):

> Studying the methods of *solving problems,* we perceive another face of mathematics. Yes, mathematics has two faces; it is the rigorous science of Euclid, but it is also something else. Mathematics presented in the Euclidean way appears as a systematic, deductive science, but *mathematics in the making* appears an *experimental,* inductive science (Pólya, 1945, p. vii).

The idea that observation may also play a role in pure mathematics goes back at least to the great mathematicians of the seventeenth and eighteenth centuries, who had shown that inductive procedures are often present where

least we would expect them; in geometry, for instance, or in the theory of numbers etc.,[10] although ultimately the reliability of results is guaranteed by a rigorous (Euclidean) proof.[11] Lakatos progressively separates *reliability* from *certainty* in mathematics. Suppose we express the proof of a theorem in a given axiomatic-formal system; if we accept that the latter is consistent, we could thereby exclude the possibility of formalising any counter-example in terms of the given system. But mathematics in the *making*, mathematics in its *growing process*, rarely expresses itself in axiomatic-formal theories; instead, mathematicians too make progress through conjectures, *experiments* and refutations. In line with Arpad Szabo's classic works,[12] Lakatos considers *informal proof* 'as just another name for *thought experiment*. Broadly speaking, just as *in physics* we have to deal with an entire experimental set-up in order to guess why a theoretical system has failed, and to find the possible ways out, so *in mathematics* we have to analyse "proof-thought experiments" in order to find the hidden assumption from which a paradoxical result or contradiction follows. Similarly, just as it is not always easy to deal with an anomaly of a scientific theory, so it is not always easy to deal with a counter-example in mathematics.

In both cases we have to direct the refutations towards some identified auxiliary lemmas in order to save the "hard-core" of our research. *Feedback* from counter-examples is particularly crucial in mathematics because, in calling for a further analysis of the primitive conjecture and of the proof, it suggests *where* the amendments have to be made and which (no longer hidden) lemma has to be replaced. The whole process is not just a matter of conjectures and refutations, but rather of conjectures, *proofs* and refutations. This implies a fundamental *unity* between the *context of discovery* and *the context of justification*. Proofs are the engines of discovery.[13]

As is well known, according to Popper (and to Reichenbach), there is, strictly speaking, no "logic" of discovery. The psychological process of having a new idea or arriving at a new conjecture cannot be rationally analysed. Rationality is a matter of testing. It operates only in the context of "justification." But Lakatos does not follow Popper here. According to him, a third alternative between "mechanical rationalism" and the "irrationalism of blind guessing" is possible: a rational and non psychologistic heuristic providing a guideline, a set of instructions, from the criticism of an old conjecture to the "discovery" of a new, improved one.

From Pólya, Lakatos took the idea that mathematical discovery follows some patterns that can be rigorously analysed. But it is mainly because Lakatos did not give up his Hegelian background that he was able to look at the process of discovery in a different way than both Popper and Pólya. In fact, the growth of mathematical knowledge is *autonomous* and *objective* and so must be its heuristic. As the Hegelian influence suggests, *growth* is not just a feature of mathematics and science, but their very *essence*. What Lakatos himself refers to as a "Hegelian conception of heuristic" follows: