

## ИССЛЕДОВАНИЯ

### The “Soviet Creative Darwinism” (1930s–1950s): From the Selective Reading of Darwin's Works to the Transmutation of Species

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The paper focuses on the evolution of the relationship between the Michurinist biology, Darwinism, and Lamarckism in the 1930–50s. The argument is based on the analysis of citation practices in Lysenkoist periodicals and programmatic statements of Lysenko and his close associates. It is proposed to consider “Darwinism” primarily as a contested identity marker, not a certain more or less coherent set of beliefs.

**Keywords:** Trofim Lysenko, Isai Prezent, Lamarckism, identity, agrobiology.

Speaking of Lysenko, historians mostly pay attention to the political dimension of what is called the Lysenko Affair<sup>1</sup>. His biological theories are considered at best outdated or utterly false and bizarre. In the history of evolutionary thought written by biologists and philosophers, he is conveniently placed under the label of neo-Lamarckism, which is justified by references to Lysenko's adherence to the doctrine of inheritance of acquired characters, while his claims to Darwinism (including the self-imposed labels of “Creative Darwinism” or “Michurinist Darwinism”) are usually disregarded<sup>2</sup>.

<sup>1</sup> The literature on Lysenkoism is vast. For the standard point-of-departure texts see Zh. Medvedev (1969), D. Joravsky (1970), and V. Soyfer (1994) for more recent treatments see e. g. N. Kremontsov's *Stalinist Science* (1996) and N. Roll-Hansen's *The Lysenko Effect* (2005), and bibliography therein.

<sup>2</sup> In the historical writings, Lysenkoist views can be labelled “Lamarckism” or “pseudo-Darwinism” (Gall, Kolchinskii, 1983, p. 72–73), “crude Lamarckism” (Alexandrov, Aronova, 2004, p. 17),

The qualification of Lysenkoist evolutionary doctrine as Lamarckist or Darwinist is of little interest, indeed. It is the ability of historians of science to deal with such issues that deserves more attention. In the present paper, I would like to approach the problem of relation of Lysenkoist evolutionary views to Darwinism and Lamarckism in a peculiar way. Rather than considering “Darwinism” to be a certain more or less coherent set of beliefs, I would primarily view it as a contested identity marker<sup>3</sup>.

The main questions I would like to address are: What did it take practically to be a Soviet Creative Darwinist? How were the boundaries of Soviet Creative Darwinism delineated (especially with respect to Lamarckism)? I would try answering these questions in a rather unsystematic manner, and this article will by no means settle them, but they should be kept in mind in the further discussion. I will focus on Lysenkoist's publications, only briefly mentioning the arguments they had with their opponents. This lack of symmetry is mostly due to the spatial limitations and the fact that the views of geneticists and evolutionary biologists are duly analysed elsewhere<sup>4</sup>. The paper is organised in three sections and a conclusion. The first section deals with the Darwinist connections of Lysenkoism, the second, with the attempts to delineate the boundary between Lamarckism and Michurinism, the third, with the attempts to revise Darwinism and the development of “Soviet Creative Darwinism”. The narrative in these three sections follows parallel routes, stretching from 1930s into 1950s, while an abridged timeline serving as a background to the whole story is given in the table 1.

“a bizarre mixture of propositions selected from all important anti-Darwinian evolutionary concepts ranging from mechano-Lamarckism to vitalism” (Kolchinskii, 2006, p. 422), “a distinct and strongly ideologically affected version of neo-Lamarckism” (Levit et al., 2008, p. 79), to give but a few examples. The problem of the evolution of Lysenkoist endonyms still awaits a proper treatment, probably until more digitalised sources will be available. A review of a limited collection of texts published in Lysenko's *Agrobiologiia* (1949), materials of the 1936 (*Spornye voprosy ...*, 1936), 1939 (*Soveshchaniie...*, 1939), and 1948 (*O polozenii ...*, 1948) debates between geneticists and agrobiologists, and some programmatic papers in the journal *Agrobiologiia* (Lysenko, 1946; Prezent, 1947) yields the following results. The terms “Michurinist doctrine” (*michurinskoie ucheniie*) and “Darwinism” were in use since the mid-1930s. They were used interchangeably and sometimes their equivalence was stated explicitly. In 1940, the “Creative Darwinism” (and even “Revolutionary creative Darwinism”) appeared in a number of articles, again being equated to “Michurinist doctrine” or “Michurinist theory”. The label of the “Soviet Creative Darwinism” appeared for the first time in a belated publication of a verbatim transcript of a lecture Lysenko read at a Timiryazev Agricultural Academy on March 27, 1941 (Lysenko, 1946, p. 7), thus it is not possible to identify the precise date of the invention until more research is done. In 1947, the “Soviet Creative Darwinism” moved to headlines (Prezent, 1947) and was more or less widely used hereafter.

<sup>3</sup> The construction and manipulation of identities and boundary work is a standard topic of cultural anthropology and constructivist studies in the history of science (see, e. g., Gieryn, 1983 as a seminal work and a review in Golinski, 1998).

<sup>4</sup> For a general characteristics of the development of the evolutionary theory in the USSR see *Razvitie evoliutsionnoi teorii...* (1983). The scientific dimension of the Lysenko controversy was covered in the monographs by David Joravsky (1970) and, more recently, Nils Roll-Hansen (2005). More specifically, the problem of inheritance of acquired traits was treated by Leonid Bliakher (1971) and the history of research in struggle for existence, by Yakov Gall (1976). It should be noted, however, that none of these books treats specifically the issues central to the present paper.

**Table 1. Lysenkoist controversy abridged timeline. Many important events, especially in the post- World War II history of the controversy are omitted deliberately**

1898	On September 17 (29), Trofim Lysenko was born to a peasant family of Denis Lysenko in a small town in Poltava government (now Eastern part of Ukraine).
1925	Lysenko graduated from the Kiev agricultural college (studied extramurally working at an agricultural station in Bila Tserkva near Kiev) and moved to an agricultural station in Ganja (now in Azerbaijan), where he invented the concept of <i>yarovizatsia</i> <sup>5</sup> and attracted attention of the press and of the Soviet authorities.
1928	Lysenko published his first (and last) long research paper on the action of temperature on the growth and development of plants.
1929	Lysenko moved to Odessa (South Ukraine) to continue his work on vernalisation project in the Institute for Plant Breeding and Genetics.
1932	On February 11, Lysenko and his main ideologist, Isai Prezent (1902–1969) met for the first time.
1935	Lysenko was applauded by Stalin (“Bravo, comrade Lysenko, Bravo”), and elected member of the Lenin Academy of Agricultural Sciences (VASKhNIL). On June 7, an autodidact plant-breeder Ivan Michurin (1855–1935), a soon to become founding father of the “Michurinist” biology, died. In August, the first issue of <i>Yarovizatsiia</i> (Vernalisation), the central Lysenkoist journal, was published.
1936	Public debates between “geneticists” and “Michurinist geneticists” at the session of VASKhNIL in December.
1938	Lysenko became President of VASKhNIL and moved to Moscow.
1939	Lysenko was elected member of the Academy of Sciences of USSR. Public debates between “geneticists” and “Michurinist geneticists” initiated by “geneticists” were carried out under the auspices of the central journal of the Communist party philosophers, <i>Pod znamenem marksizma</i> [Under the banner of Marxism].
1940	Nikolai Vavilov (1887–1943) was arrested. Lysenko replaced him as the director of the Institute of Genetics in Moscow. Lysenkoists take full control over the Vavilov’s Institute of Plant Breeding in Leningrad.
1941	<i>Yarovizatsiia</i> discontinued due to the War. Lysenko moved to Siberia where he continued his work in practical agriculture. The controversy fades until 1945.
1948	At the “August” session of VASKhNIL (July 31–August 7), the “Mendelian-Weismannist-Morganist” genetics was officially condemned. In the fall, many leading anti-Lysenkoists were fired from universities and research institutes. The formal teaching of and research in “Morganist” genetics ceased.
1963	The first after-1948 Russian university textbook in “Morganist” genetics published by Mikhail Lobashev in Leningrad.
1965	Lysenko lost his dominating positions and retreated to his personal Agricultural research station in Gorki Leninskiye near Moscow. <i>Agrobiologiia</i> [Agrobiology] (1946–1965), the post-War successor of <i>Yarovizatsiia</i> discontinued. Lysenko’s Institute of Genetics in Moscow reorganised.
1976	On November 20, Lysenko died.

<sup>5</sup> *Yarovizatsia*, or vernalisation was the ability of plants on a certain stage of their development to respond to the action of low temperature, which response triggers the formation of flowers later in the season. Gradually Lysenko became convinced that the vernalisation (defined by him rather vaguely) not only provoked plants to flower but was capable to make other important things like bringing higher yields or transforming winter wheat into the spring wheat.

## 1. The uses of Darwin

First, it should be noted that neither Lysenko nor Lysenkoists called themselves Lamarckians. Moreover, until a certain point Lamarck was hardly ever (let alone favourably) mentioned in their writings (see section 2 below for details). A preliminary quantitative assessment based on a random sample of papers from the central Lysenkoist journal *Yarovizatsiia* [Vernalisation]<sup>6</sup> from 1935 through 1941 shows that Lamarck was roughly 25 times less frequently cited than Darwin<sup>7</sup>. The postwar data on the *Yarovizatsiia*’s successor *Agrobiologiia* [Agricultural biology] are less complete, but the dominant position of Darwin is still clearly visible (cited roughly ten times more often than Lamarck).

This disproportion may be hardly a surprise given the relative abundance of the publication of Russian translations of Lamarck and Darwin. A recent bibliographical survey shows that there were six editions of collected works by Darwin and more than forty separate publications of his works, all different editions and translations included (Konashev et al., 2009). Lamarck’s Russian bibliography is far less impressive: a couple of separate editions of *Philosophie zoologique* and a two volume edition of collected works (one may compare this to up to nine volumes of Darwin’s collections)<sup>8</sup>.

The comparison of citation frequencies across journals was even more revealing. The excessive total number of periodicals — there were more than four hundred journals, bulletins, and more or less periodically published proceedings (*trudy*) of different institutions dealing with biology between 1917 and 1951<sup>9</sup> — and lack of full-text databases renders the exhaustive comparison impossible. So we had to limit our searches to a few (and by no means all) central journals dealing specifically with experimental biology and agriculture. The comparison of Lysenko’s *Yarovizatsiia* to four other journals, *Uspekhi sovremennoi biologii* [Recent Advances in Biology], *Doklady VASKhNIL*<sup>10</sup> [Proc. of the Lenin Acad. of Agric. Sci.], *Semenovodstvo*

<sup>6</sup> *Yarovizatsiia* (with a subtitle “Journal in the developmental biology of plants”), named after one of the most noticeable Lysenko’s achievements, was a two-month periodical published from 1935 through 1941. Lysenko himself was editor-in-chief, and his one time right-hand man Isaak Prezent served as vice editor. After the WWII the journal was reopened under a more encompassing name *Agrobiologiia* (a new disciplinary identity marker symbolising the unity of agricultural science and biology). Lysenko remained editor-in-chief until the journal was discontinued in 1965. Vice editors Ivan Glushchenko (1907–1987, in office: 1946–1948) and Isai Varuntsian (1898–1988, in office: 1949–1965) and the editorial board (established in 1954) were recruited from among the Lysenkoists. The journal *Agrobiologiia* should not be confused with the collection of Lysenko’s papers published in six editions from 1943 through 1952 under the same name.

<sup>7</sup> The following data on the citation frequencies for 1929–1941 are based on the calculations by me and Ms. Irene Fedorova, who defended her B. A. thesis under my supervision at the Higher School of Economics (St. Petersburg).

<sup>8</sup> The data on the Russian translations of Lamarck’s writings published as separate volumes are taken from the catalogue of the National Library of Russia (St. Petersburg).

<sup>9</sup> The calculation is based on the data presented in *Periodicheskaiia pechat SSSR*, 1956.

<sup>10</sup> VASKhNIL, or the Lenin Academy of the Agricultural Sciences of the USSR (founded in 1929), was a typical Soviet Academy built upon the model of the Academy of Sciences of the USSR. It was a federation of research institutes and agricultural stations with thousands of research associates. The body of the Academy consisted of Academicians (who usually were directors of the VASKhNIL institutes). VASKhNIL was governed by an elected Presidium and President. During the years of the Lysenko controversy, the Presidents of VASKhNIL were Nikolai Vavilov (1887–1943, in office: 1929–1935), Alexander Muralov (1886–1938, in office: 1935–1937), Georgii Meister (1873–1943, in office: 1937 as an acting

[Seed production], and *Zhurnal eksperimentalnoi biologii* [Journal of Experimental Biology] brings a remarkable result. *Yarovisatsiia* accounts for 90 % of all references to Darwin's works found in a random sample of articles from these journals between 1929 and 1941<sup>11</sup>. Comparable data for the post-war period are not yet available but the preliminary counts permit to foretell a similar asymmetry.

The question arises naturally: how come that a journal specialising in the developmental biology of plants and practical agriculture could have such an enormous proportion of references to Darwin? The answer lies in the ways Darwin's works were used by the authors of the journal.

If we exclude anniversary articles published in 1939, then during the 1930s, the use of Darwin's name and works in *Yarovisatsiia* was mostly twofold. First, the epithet "darwinist" was increasingly used as a positive personal characteristic. It was most frequently applied to the two "classics" of Soviet Biology, a plant physiologist and populariser of Darwinism Kliment Timiryazev (1843–1920) and an autodidact plant breeder Ivan Michurin (1855–1935), as well as to an American comrade-in-arms, another autodidact plant-breeder Luther Burbank (1849–1926). Secondly, what is more important, two Darwin's treatises (*The variation of animals and plants under domestication* (1868) and *The effects of cross and self fertilisation in the vegetable kingdom* (1876)) were frequently cited as a reliable source of empirical data on two specific problems of plant breeding (and two of the many Lysenko's favoured theories respectively). First, the vegetative or graft hybridisation, based on the idea that the stock and the scion exchange with their "plastic stuffs" or "saps" thus blending their "natures" to produce a "vegetative hybrid" which is reproducible by seed. Second, the technique of forced cross fertilisation of the self-fertilising domestic plants. This technique was meant to improve the quality of cultivars by avoiding degeneration due to the inbreeding. Thus the most often quoted passages were those related to grafting experiments and to the inevitably dangerous consequences of inbreeding. This tradition extended well into 1950s. Nearly every paper dealing with crossbreeding or grafting published in *Agrobiologiya* contained ritual references to Darwin.

To facilitate the use of Darwin's works among the down-to-earth agricultural researchers, a number of materials was published in *Yarovisatsiia*: a historical paper by Isai Prezent with page-long quotations from Darwin and Timiryazev (Prezent, 1935b), a long reprint from Darwin (Darwin, 1938) and two special collections of excerpts (*Darwin on vegetative hybridisation* and *Darwin on the harmful consequences of self-pollination*) each followed by a series of half-dozen papers elaborating on the topics (Darwin, 1939a, 1939b).

The open opposition of geneticists to both forced intravarietal cross-breeding and vegetative hybridisation, which they considered useless, made them vulnerable to accusations of the revision of classical Darwinism in a neo-Darwinian, Weismannist way. Both themes were among the central topics of the 1936 debate at the 4<sup>th</sup> session of VASKhNIL (*Spornyie voprosy ...*, 1937). Another important rhetorical resource was the conflation of plant and animal breeding in general with evolution, so the practical work in breeding was considered Darwinist by definition. Selection by man was considered a most important tool of it, so anyone who doubted selection's unlimited power could be charged with anti-Darwinism. Geneticists became vulne-

President), Trofim Lysenko (in office: 1938–1956 and 1961–1962), Pavel Lobanov (1902–1984, in office: 1956–1961), and Mikhail Olshanskii (1908–1988, in office: 1962–1965). The public debates at the "sessions" of VASKhNIL marked important steps in the development of the controversy. *Doklady* was the central scholarly journal of the Academy.

<sup>11</sup> The interval is defined by the first issue of *Semenovodstvo* and the last issue of *Yarovizatsia*.

nable in this respect too, because they used Wilhelm Johannsen's principle of the inefficiency of selection within pure breeds as a basis for the planning of the rational plant breeding. This theme repeatedly surfaced in public debates, notably in the VASKhNIL "sessions" of 1936 and 1948<sup>12</sup>. The opposition of geneticists and Michurinists was, in addition to a number of other frames, framed as an opposition of revisionists and champions of genuine Darwinism. The mid-1930s Lysenkoist position was eloquently summarised by a lifelong collaborator of Lysenko, a plant breeder Donat Dolgushin (1903–1995):

We believe, that as soon as one steps back a bit, returns to the Darwin's biological position, and forgets for a moment about Mendel, his adherents, Morgan, crossing-over, raphanobrassica, and other genetic subtleties, one sees clearly the way, which every plant breeder must follow, the way shown once by K.A. Timiryazev, the way which was triumphantly followed by the famous Luther Burbank, the greatest plant breeder I.V. Michurin, and which is now being followed by Acad. T.D. Lysenko, who holds high the banner of the agrobiological science (*Spornyie voprosy ...*, 1937, p. 264–265)<sup>13</sup>.

Geneticists admitted that Darwinism should remain the basis of biology and practical plant and animal breeding but they advocated a reasonable revision. In his concluding remarks at the 1936 discussion, Georgii Meister pointed out that while Darwinism remains the basic principle, Darwin's vague notions concerning heredity should be abandoned, and Darwin's words should not be quoted selectively and used against new breeding techniques, e. g. inbreeding (*Spornyie voprosy ...*, 1937, p. 406–408). Summarising the results of the session in his letter to the central Soviet newspaper *Pravda*, one of the leaders of geneticists, Nikolai Koltsov (1872–1940) warned:

It is not possible to replace genetics with Darwinism, just as differential calculus can not be replaced with algebra (and, of course, vice versa). Half a century in science is a long way, and the Soviet Union can not afford lagging 50 years behind [the rest of the world] even in a single branch of science...<sup>14</sup>

The Lysenkoist's claim to Darwinism in the 1930s was well substantiated with their selective and dogmatic use of Darwin's words. Lysenkoists used Darwin's works not only as a source of theoretical inspiration but as a source of reliable empirical facts as well. Moreover, the Lysenkoist's claim to Darwinism was recognised by their opponents. The geneticists tried to oppose a reasonable revision of classical Darwinism to its dogmatic use, however to little success. By the end of the 1930s, they were increasingly associated in the official discourse with anti-Darwinism, despite their own Darwinist rhetorics.

<sup>12</sup> E. g., at the "August" 1948 session of VASKhNIL, among the "classics" of genetics, Johannsen (23 entries) was outnumbered only by the trio of Morgan (608 entries total, including derivative epithets like "morganist"), Mendel (475), and Weismann (182). Others, like William Bateson, Hugo De Vries, and John Lotsy, were mentioned far less frequently than Jonannsen. The calculation is based on a digitalised copy of the published version of the verbatim report (*O polozenii ...*, 1948).

<sup>13</sup> All translations of the quotations from Russian sources in the present paper, except for the passages from Engels, are mine. — A. K.

<sup>14</sup> Quoted after Babkov, 1993. The reaction of People's Commissar of Agriculture Yakov Yakovlev to Koltsov's letter appeared in *Pravda* under a symptomatic title *On Darwinism and some anti-Darwinists* on April 12, 1937 (Babkov, 1993).



## 2. Disentangling from Lamarckism

By the time Lysenko entered the scene of theoretical debates in mid-1930s, Soviet biologists seemingly reached a consensual operational distinction between neo-Lamarckism and neo-Darwinism. The former was associated with the idea of the inheritance of acquired traits, while the latter, with the integration of a rapidly developing chromosomal theory and natural selection. To make matters worse, different aspects of Lamarckism were condemned on philosophical grounds for their mechanism, idealism, and teleology<sup>15</sup>. No wonder that some (but not all) Lysenkoist's practices and concepts (notably, training of plants and vegetative hybridisation) fell under operational definition of neo-Lamarckism and were accordingly labelled in the public debate. No wonder that these accusations had to be dealt with.

Unlike Lysenko, whose confession of insufficient familiarity with Darwinism (let alone Lamarckism) might be, for all we know about his education, empirically true<sup>16</sup>, his main ideologist Isai Prezent was well-versed in the current biological and philosophical debates and participated in the development of the new materialist biology since the late 1920s<sup>17</sup>. He knew all too well that Lamarckism was generally considered to be an outdated evolutionary doctrine, inferior to Darwinism, whatever difference between them one may wish to see. In 1931, Prezent headed a newly established department for the Dialectics of Nature and General Theory of Biology at the Leningrad University. A reader in Evolutionary Doctrine compiled by a "brigade" from this department and edited by Prezent himself drew a clear distinction between Lamarckism and Darwinism, and reproduced the conventional interpretation of the divide<sup>18</sup>. Moreover, in his early writings, Prezent explicitly criticised the doctrine of the inheritance of acquired traits for its mechanistic character<sup>19</sup>.

However, to criticise the doctrine of the inheritance of acquired traits is one thing, and to explain why Michurinist biology is not Lamarckian is quite another. In the face of accusations of Lamarckism raised by geneticists, Prezent tried to disentangle Michurinism from Lamarckism and develop some rhetorical defensives. In his obituary to Ivan Michurin, Prezent praised the year 1900 as an important turning point in the development of Michurin's thought.

<sup>15</sup> For a detailed account of the debates see e. g. Gaissinovich, 1980.

<sup>16</sup> At a meeting of the front-rank workers ("peredoviki") of agriculture with the governmental representatives, Lysenko pronounced a phrase much quoted later: "I often read Darwin, Timiryaziev, Michurin. Our laboratory co-worker I.I. Prezent helped me with that. He has shown me that the origins of the work I carry out, its roots, they were given by Darwin. I, Comrades, must confess right here, in front of Joseph Vissarionovich Stalin, that, shame on me, I did not really study Darwin [before]." published in *Pravda*, January 2, 1936, cit. in Popovskii, 1991 and Reznik, 1983, p. 72).

<sup>17</sup> A detailed account of the early years of Prezent's career can be found in a monograph by Kolchinskii (1999, see esp. Chapters 4.3 and 4.6, p. 178–188 and 203–208 respectively).

<sup>18</sup> *Khrestomatiia ...*, 1934. Ironically, one of the members of the "brigade" was I. A. Rapoport (1912–1990), a future geneticist and militant anti-Lysenkoist (Iosif Abramovich Rapoport ... , 2001, p. 310).

<sup>19</sup> See his foreword to the posthumous publication of Iu. A. Filipchenko's *Experimental zoology* (Prezent, 1932a, p. I–XXVIII). Part of this introduction criticising "ectogenetic mechano-Lamarckists" was reprinted in the reader (*Khrestomatiia ...*, 1934, p. 503–505). Along with two other critical pieces and a resolution approved by the joint meeting of the Communist Academy and Natural Sciences division of the Institute of Red Professors condemning "mechanistic materialism", the Prezent's two pages and a half comprised the final eighth chapter *Criticism of the mechano-Lamarckism* of the section five on *Metaphysical theories of speciation* (*Khrestomatiia ...*, 1934, p. 495–509). Another chapter of the same section criticised specifically the doctrine of acquired traits (*Khrestomatiia ...*, 1934, p. 480–495).

It is exactly the year 1900, that is renowned in the official biological historiography as the year of the rediscovery of Mendel's laws, will also go down in the history of biology as the year marking a new phase in the work of a fighter for Darwinism, a creator of the new forms, I.V. Michurin. In 1900, I.V. Michurin broke with the ideas of acclimatizers led by Dr. Grell, who proceeded from an essentially Lamarckian assumption that a foreign plant being brought under new conditions will by itself adapt to the climate of the new locality, and decided to realise [vplotit' v zhizn'] his mature ideas (Prezent, 1935a, p. 16).

Prezent did not explain any further the details of the differences between Lamarckian and Michurinist basic assumptions. However, a considerable part of the obituary deals with the active role Michurin himself played in the process of plant adaptation. Prezent mentioned the famous Michurin's dictum "We cannot wait for favours from Nature. To take them from it — that is our task" and emphasised the planned selection of parents for crosses, "training" of hybrid seedlings, and "control of dominance" in hybrids (Prezent, 1935a, p. 17–21). By the latter, he meant that young plants can be treated in such a way as to secure the dominance of desired traits of their parents. Prezent credited Gregor Mendel with the discovery of the "fact of dominance" but it was Michurin who discovered the laws governing dominance and put them to the service of practical plant breeding (Prezent, 1935a, p. 18).

Prezent provided some further explanation next year. In his paper based on a talk at a session of VASKhNIL in Michurinsk (June 1936), he undertook a more sophisticated attempt to distance from Lamarckism emphasising the role of the organism's own structural requirements.

Anti-Michurinists are trying to portray Michurin as a Lamarckist and the method of mentor as a Lamarckist one. This must serve to further scare [people] away from Michurin and Michurinist methods. However, only those who understand little of both Michurinist doctrine and Lamarckism and know both of them only by hearsay can take the methods proposed by Michurin for Lamarckist ones. Indeed, the core of Lamarckism as a distinct school of thought lies with the proposition that an organism subjected to the conditions inappropriate for that organism's biology can reconstruct itself on its own according to these foreign conditions, that go far beyond the *limits* of the organism's requirements. If we put aside the psycho-Lamarckism, which ascribes such a reconstruction to the psychogenic [factors], and speak only of mechano-Lamarckism, the latter holds to the opinion that the organism's reconstruction adjusted to the new *kind* of external conditions by means of a simple diffusion of external into the internal. This mechanical theory, put forward in Feuerbach's classical dictum "man is what he eats", is wrong not only in relation to man, it is wrong in relation to animals and plants too. ... [A]n organism does not simply incorporate the external, it actually *assimilates* this external, reworks it according to *its own*, already established, structure, and it is for this reason that an organism can not incorporate *any* elements of environment, but only those, which *in this or that way* fall within the measure of its present adaptive requirements<sup>20</sup>.

These two Prezent's statements added up to a dialectical and subtle distinction. Neither Michurin nor plants trained by him were passive observers waiting for Nature's favours, they actively participated in the adaptation process, Michurin, by training and reshuffling plants,

<sup>20</sup> Prezent, 1936, p. 52–54, italics in original. The psycho-Lamarckism was already condemned for its "idealism", so Prezent tossed it aside without any further discussion. The method of mentor originally proposed by Michurin was one of favorite Lysenkoist techniques of training a promising seedling by grafting on it a scion of an established old breed, the properties of which were believed to somehow influence the seedling.

plants, by assimilating selected elements of “the external” according to their structure. The distinction, though, was too subtle to be easily reproducible.

At the 4<sup>th</sup> session of VASKhNIL (December 19–27, 1936) the issue of Lamarckism was raised in an open debate. The first accusations of Lamarckism surfaced well before the session, and Lysenko reacted to them in his keynote address *For the Darwinism in the agricultural science* but he had to be less specific about the differences from Michurinism relying more on the intrinsic logics of Prezent’s anti-Lamarckian stance:

Nobody would dare to say that environment plays no role in the evolutionary process of the plant form. At the same time, geneticists deny the possibility of a directed change of the hereditary basis of plants by means of appropriate training in a series of generations. Without a slightest hesitation, geneticists at once classify any attempt to take control over this process as Lamarckism. They forget that, when one departs from the Lamarckian standpoint, there can be no positive result. ... It is hard to find a worse enemy of Lamarckism than Dr. Prezent, and, at the same time, comrade Prezent, as you know, not only supports the idea of transformation of the hereditary nature of plants by means of appropriate training, but he himself is among those few who undertake extensive experimentation in this direction<sup>21</sup>.

After the keynote address on animal genetics by Alexander Serebrovskii (1892–1948) (*Spornye voprosy ...*, 1937, p. 72–113), the theme became recurrent, even though not central to the debate (the forced intravarietal cross-breeding in self-pollinating agricultural plants, vegetative hybridisation, vernalisation, and the problem of the unity of theory and practice were more pressing). Boris Zavadovskii (1895–1951) devoted a special section of his long statement to the problem of possible revival of Lamarckism in the works of Lysenko, which revival he identified as a “serious threat”. However, like Lysenko, he did not go much further than to refer to Prezent’s and to his own reputation of anti-Lamarckians (*Spornye voprosy ...*, 1937, p. 179). Boris Zavadovskii conceded that certain Lamarckian tunes can be heard in the statements by Lysenko’s constant co-worker Donat Dolgushin or a philosophising biochemist Sergei Perov (1889–1967) but definitely not in those by Prezent and Lysenko (*Spornye voprosy ...*, 1937, p. 180). The similarity between Lysenko’s and Lamarckian views was denied by several other speakers<sup>22</sup>. The denial theme was taken up by geneticists, even though not without irony. A young geneticist Nikolai Dubinin (1907–1998) rejoiced to see Lysenkoists denying Lamarckism but doubted the degree to which this denial was conscious.

Trofim Denisovich [Lysenko. — A.K.] in every possible way denies the bugbear (*zhupel*) of Lamarckism, and I rejoice, and all geneticists rejoice too. (Acad. T.D. Lysenko: They affix it on me all the time) ... The interpretation of your experiments on the “retraining of plants” has an undoubtedly mechano-Lamarckian character, even though you do not realise it themselves (*Spornye voprosy ...*, 1937, p. 341).

<sup>21</sup> Lysenko’s speech at the 4<sup>th</sup> session of VASKhNIL on December 23, 1936, cited after: Lysenko, 1949, p. 202–203. The title of the two published versions have different emphases. The version published in *Agrobiologiya* was titled *On the two schools in genetics*, the one published in the conference proceedings, *For the Darwinism in the agro-biological science* (*Spornye voprosy ...*, 1937, p. 39–71). The verbatim transcript gives a more colloquial wording but the structure of the argument remains basically the same (see Babkov, 1998 for excerpts).

<sup>22</sup> See the statements by E. Ya. Borisenko, Sergei Perov, and Mikhail Olshanskii (*Spornye voprosy ...*, 1937, p. 249, 327, 346–347).

Mikhail Zavadovskii (a more genetically inclined elder brother of Boris, 1891–1957) seconded Dubinin and even proposed Lysenkoists to join the efforts in combating Lamarckism, but he too insisted on the need of a “real” denial.

It is most pleasant to hear that Lamarckism is not the Acad. T.D. Lysenko’s school position. ... If we have already reached an agreement on this issue in our debates, reached a clear denial of Lamarckism in the sense of somatic induction, then it is excellent. (From the floor: We never took the stand of Lamarckism) Offering you our hand on this matter, we shall form a united front to fight Lamarckism, because this theory does not agree with the facts available. ... It should not only be dogmatically stated that you deny the Lamarckian standpoint (it is not enough), but, in the analysis of the material you work with, it ought to be shown that you really deny this position (*Spornye voprosy ...*, 1937, p. 401).

The 1936 debate revealed the problematic character of the Prezent’s hairsplitting effort to distinguish between Michurinism and Lamarckism, even though some observers saw the difference. A better and rather unsophisticated solution arrived soon. Instead of messing with the slippery philosophical distinctions drawn by Prezent, the vice was boldly turned into a virtue, and Lamarck was portrayed as a genuine precursor of Darwin at least in one important respect. In his lecture at the nation-wide meeting of the heads of the Departments of Marxism-Leninism on July 6, 1940, Lysenko favourably mentioned Lamarck praising the latter as a smart guy and claiming that the Michurinist principle of the unity of the organism and environment is not only Lamarckian but also truly Darwinian<sup>23</sup>.

... [I]n vain Morganists scare the people this much with Lamarckism. Lamarck was a clever man. Although his teachings can not be equated with Darwinism in their importance. In the Lamarck’s teachings, there are serious mistakes. However, during his lifetime, there was no scientist more advanced than Lamarck. Lamarck should not be turned into a bugbear [*pugalo*. — A.K.]. ... Morganists do not understand and do not accept the Michurinist proposition that the changes in the race of an organism are connected to the conditions of existence of that organism. They are trying to affix the label of Lamarckism to this idea. Meanwhile, the said Michurinist proposition is part and parcel of Darwinism (Lysenko, 1940b, p. 23).

This rhetorical turn became a persistent theme in the cursory interpretations of Lamarck’s writings within the Lysenkoist tradition. It is enough to say that at the VASKhNIL session of August, 1948, nearly all speakers who mentioned Lamarckism paid their tribute to it<sup>24</sup>. A rustic *pugalo* (literally: scarecrow) was used interchangeably with a more pathetic *zhupel* (literally:

<sup>23</sup> It should be noted that there were hints in this direction, see e. g. the speeches by Boris Zavadovskii and Sergei Perov at the 1936 session of VASKhNIL (*Spornye voprosy ...*, 1937, p. 180, 327) or Ivan Polyakov’s statement at the conference on the problem of genetics, plant and animal breeding under the auspices of the journal *Under the banner of Marxism* (*Soveshchaniie ...*, 1939, p. 172).

<sup>24</sup> Among other important texts of the period, this sujet re-emerges in the programmatic paper by Prezent (1947), in which the Soviet Creative Darwinism propelled to a front-page headline (see section 3 below). Prezent identified six basic principles of Lamarckism, rejected three or them (the internal drive towards progress and the action of subtle fluids upon less and more organised plants and animals), and recognised the remaining three (progressive evolution by means of purposeful adaptation to the conditions of life and two principles regarding training and reduction due to inactivity) as a part and parcel of Darwinism (Prezent, 1947, p. 23–25).

“[fire and] brimstone” with obvious but faded Biblical connotations) but the structure of the argument remained the same<sup>25</sup>.

Ironically, Lysenkoists now used what was considered the worst part of Lamarckism, the “autogenetic” idea of the internal drive pushing organisms up the Scale of Nature, to blame “mendelist-morganist” geneticists for building their research program upon a wrong part of the Lamarck’s heritage. The offensive was started by a cattle-breeder Vaginak Shaumian:

All judgements and propositions by Weismann, Morgan, Mendel, and the others on the sex cell, on its specifics and its immutability, on the mutations and autogenesis, etc., are essentially nothing but some absurd and anti-scientific propositions by Lamarck, that he tried to apply to the animal organisms. The “internal drive”, by which Lamarck tried to explain the creation of forms and development in the animal world, serves, essentially, as a basis for the theory of mutations, autogenesis, autonomy and specifics of the sex cell in its attempts to remain unchanged for ever. The difference between Lamarck and Morgano-Mendelists with respect to the problem discussed above consists only in the following. According to Lamarck, these “drives” caused variation in animals, while Morganists claim that this “drive” is present in the sex cells of both plants and animals, what guarantees their immutability and permanence. This is why we regard Lamarck as a beating stick in our hands, which stick has two ends. And we should beat formal geneticists with this stick using its appropriate ends in a reasonable and thorough way<sup>26</sup>.

The beating stick was picked up by Fyodor Dvoriankin and Isai Prezent (the former only briefly stated that the ones who accuse Lysenkoists of Lamarckism are Lamarckians themselves, while the latter went into an intricate argument involving I.I. Schmalhausen’s inappropriate sympathies to American paleontologist Edward Cope who exemplified covert Lamarckism)<sup>27</sup>.

However, despite this change of attitude towards Lamarckism, it was not until the late 1950s that Michurinists found time to read Lamarck closely. In 1955–1959, a two volume collection of translations from Lamarck’s writings was published under the auspices of Ilya Poliakov, an author of a university textbook of Darwinism who saw no Lamarckism in the Lysenko’s works in 1936 and had to repent on the last day of the August 1948 Session of VASKhNIL, and Nikolai Nuzhdin, one of the leading Lysenkoists (Lamarck, 1955–1959). Isai Prezent reacted with a brochure, in which he tried (at last) to “resort to the Lamarck’s own texts in order to substantiate this or that claim on the propositions of his doctrine”<sup>28</sup>. After fifty pages of analysis, which, if one forgets

<sup>25</sup> See, e. g., the speeches by Lysenko himself (*O polozhenii ...*, 1948, p. 11, 14), I.G. Eikhfeld (ibid, p. 57–58), I.E. Glushchenko (ibid, p. 185), V.A. Shaumian (ibid, p. 220), M.B. Mitin (ibid, p. 230), F.A. Dvoriankin (ibid, p. 304). The theme of selective distancing from Lamarckism at the 1948 session was so prominent because of a new wave of charges with Lamarckism raised by non-Lysenkoist biologists in 1946 — spring of 1948.

<sup>26</sup> *O polozhenii ...*, 1948, p. 220. Ironically, it mirrors the 1936 Dubinin’s attempt to charge Prezent with “Weismannism” for the latter’s theories of mutual assimilation of gametes and of “marriage of love” [*brak po liubvi*] among plants, according to which the pollen corns stuck to the stigma of the pistil compete with each other for the right to pollinate the ovule (*Spornyie voprosy ...*, 1937, p. 339).

<sup>27</sup> *O polozhenii ...*, 1948, p. 304–305, 498. Academician Ivan Schmalhausen (1884–1963) whose interests embraced the whole field of evolutionary biology from comparative anatomy and paleontology to genetics, an author of university textbooks and monographs on the theory of evolution, and an active cricote of Lysenko was one of the main targets of Lysenkoist criticism at the August 1948 session of VASKhNIL.

<sup>28</sup> Prezent, 1960, p. 6. It should be noted that the reader compiled in the 1930s by Prezent’s brigade included excerpts only from the then available translation of *Philosophie zoologique* and from several texts analysing Lamarck’s writings (*Khrestomatia ...*, 1934, p. 87–117). The newly published collection offered a much wider

about the name of the author, might pass for an ordinary boring exercise in the history of ideas, Prezent came to an inevitable conclusion reiterating the ideologemes worked out years before.

Remarkable is the fate of the Lamarck’s doctrine. Unacknowledged during its author’s lifetime, it has found later many followers claiming the succession. Here they are, “psycho-Lamarckists”, crudely distorting the Lamarck’s doctrine in the spirit of idealism, “mechano-Lamarckists”, who proved to be unable to overcome the mechanistic traits present in this doctrine. Ch. Darwin accepted the proclaimed by Lamarck proposition on the inheritance of features acquired under the influence of the conditions of life, without which [principle] the historicity of organic forms and the accumulating action of selection are impossible. K.A. Timiryazev and E. Haeckel elaborated on the problems of Darwinism, enriching the theory with Lamarck’s ideas on the factors of evolution. At the same time, our contemporary metaphysics of biological science, represented by Weismannist-Morganists, made Lamarck into a bugbear [*zhupel*], slandering every truly materialist proposition of his doctrine as anti-scientific. And, at last, the Michurinist doctrine, in its fight for materialism in biology, avoiding a scholastic approach both to the doctrine of Darwin and to the doctrine of Lamarck, played the role of the true heir of whatever was scientific in these doctrines<sup>29</sup>.

Thus, the Lysenkoist’s attitudes towards Lamarck underwent some evolution, changing from overtly negative to partly positive. From mid 1930s until the very end of the Lysenko affair in mid-1960s, Lysenkoists consistently denied the charges with Lamarckism. At first, they tried to find sophisticated differences between “Michurinist” and “Lamarckist” approaches to the plant and animal breeding and organic evolution but their critics doubted the logical coherence and sincerity of the Lysenkoist argument. Since early 1940s Lysenkoists began to stress a selective approach to Lamarck’s heritage, favouring the principle of the inheritance of acquired traits as “truly Darwinian”, rejecting other “Lamarckian” ideas they found objectionable on philosophical grounds, and, sometimes, even accusing of Lamarckism their Weismannist-Morganist adversaries. It was only in the late 1950s that Lysenkoists got a chance to consult a wider range of original Lamarck’s works, however this wider acquaintance with Lamarck did not have any effect on the ideologemes worked out during the mid-1930s — early 1940s.

### 3. Revising Darwinism

The first signs of the coming revision appeared as early as in April 1932, shortly after Prezent and Lysenko met for the first time. On the occasion of the 50<sup>th</sup> anniversary of Darwin’s death, Prezent published a booklet *Darwin’s theory in the light of dialectical materialism* (Prezent, 1932b)<sup>30</sup>. The booklet was subdivided into 29 numbered sections varying in length from three lines and a half to several pages.

range of Lamarck’s texts. The above-mentioned paper by Prezent (1947), in which he established six basic principles of the Lamarck’s evolution theory, lacks any references to Lamarck’s writings, even though, unlike many Lysenkoist papers, it was not completely devoid of citations (there are 35 footnotes). Moreover, two references (to Haeckel and Engels) were present even in the pages under discussion (Prezent, 1947, p. 23–25).

<sup>29</sup> Prezent, 1960, p. 58–59. It is worth a notice that, besides *zhupel*, Prezent used other nonconventional words, notably *vospriemnik* (godfather) instead of *preemnik* (successor or heir) and *podbor* (matching) instead of *otbor* (selection). The literal translation would render the passage incomprehensible.

<sup>30</sup> The first documented encounter happened on February 11, 1932. It is more likely that Lysenko had played no role in the preparation of this booklet, for his intense co-operation with Prezent began somewhat later, in the summer or fall of 1932 (Kolchinskii, 1999, p. 204–205).



Prezent began by stating that, building socialism, “we” should not throw aside the achievements of the world culture but assimilate them in an appropriate way. Darwinism surely was one of such achievements produced by the “ascending line of the capitalism’s development”. However, it should first be saved from menshevizing idealists and mechanists (Prezent, 1932b, p. 1). Prezent stressed that the origins of Darwin’s theory lied with the breeding of new breeds of domestic animals by means of selection of hereditary adaptations. This made Darwin a near-Marxist in the Prezent’s eyes: the practice of breeding was contrasted to a contemplative attitude and reminded of a Marxist dictum “Practice is the sole criterion of truth”. On the other hand, this bond to the contemporary agricultural practice put certain limitations on Darwin’s thought, for the contemporary practice was a bourgeois one (Prezent, 1932b, p. 5). Prezent’s Darwin vacillated between mechanism and autonomism, preferred gradualism to saltationism (Prezent used charming neologisms *postepenovshchina* and *skachkizm* respectively). This made Darwin a poor non-reflective dialectician, even though his theory was sometimes close to spontaneous or instinctive (*stikhiinyi*) dialectical materialism. A more serious drawback of the Darwin’s theory was that, although it provided an explanation to the problem of adaptation, which is achieved historically, by means of selection of those better fit to the environment, it failed to explain the “specific essence of life established by Engels, the essence that makes the selection of adaptations inevitable” (Prezent, 1932, p. 7). This essence was the dialectical unity of assimilating and dissimilating activities of an organism. It was because of these processes, that for the living, organised, bodies “not every [possible] environment is the ‘condition of existence’” (Prezent, 1932b, p. 8). The following passage, however obscure, is instrumental in our attempts to find the sources of the future ideologemes.

This is why the fitness, the adaptation of an organism to its milieu is necessarily included *into the measure* of life of an organism, this is why the natural selection of those organisms that are not adapted to the conditions of existence happens.

14. Instead of deriving the necessity of selection of adaptations from the very essence of the process of life, Darwin put forward Malthusianism, the Malthus’ doctrine on the progression of population growth, as the universal principle, which makes selection necessary.

15. However, Darwin himself, in the illustrations he provides, gives some material to establish the fact of heritable adaptive transformations *without any Malthusianism*.

16. “The struggle for existence”, identified by Darwin with *any* manifestation of life, must, indeed, be limited “to the struggles resulting from plant and animal over-population, which do in fact occur at certain stages of plant and lower animal life. But one must keep sharply distinct from it the conditions in which species alter, old ones die out and newly evolved ones take their place, without this over-population” (Engels)<sup>31</sup>.

On the following page, the Prezent’s Darwin (after paying the tribute to his class values by succumbing to Malthusianism) instinctively (*stikhiino*) but successfully resolved a dialectical problem of the intrinsic connection between the necessary and the accidental. He did so by applying the principle of selection among the many relatively adaptive or inadaptive variations, instead of Lamarckian “physiological” hypothesis of the “internal feeling” to the problem of adaptive character of the phylogenesis. Thus, even though Darwin did not go any farther than

<sup>31</sup> Prezent, 1932b, p. 8, the original boldface is changed to italics; the quotation from Engels’ *Dialectic of Nature* is given in the translation from the German by Clemens Dutt, see: Engels, 1934 (1974), p. 295–311. Had Prezent extended his quotation a little further, the borrowings from Engels would become more evident, for the catch phrase “without any Malthusianism” lies a couple of lines below the quoted passage.

treating the accidental as a consequence of “the crossing of external series of development”, he managed to strike a fatal blow on teleology and theology and made his way to the materialists’ hall of fame (Prezent, 1932b, p. 9). A considerable part of the paper was reserved for the defense of Darwinism from anti-darwinists denying the creative power of natural selection or banning teaching of Darwinism at school on the one hand, and Social-Darwinists using the concepts of struggle for existence and improvement of race by means of natural selection to justify the inequality, wars, and racial hygiene, on the other (Prezent, 1932b, p. 10–16).

Finally, after dealing, among other enemies, with mechanists and menshevizing idealists, Prezent came to the good news about the fate of Darwinism in the contemporary USSR. The most important feature of the Darwinism in the USSR was the opportunity to make plants and animals evolve in huge quantities and in a planned manner. Michurin and Lysenko exemplified the front-line fighters for the planned plant breeding. Prezent emphasised the scale of the enterprise, mentioning 100,000 hectares of vernalisation experiments in the state farms (*sovkhozy*) alone, not counting the collective farms (*kolkhozy*) also involved in the project. He mentioned the plans to use of the world collection of wheat varieties (presumably the one gathered in the Nnikolai Vavilov’s Institute for Plant Breeding), and the vast network of research stations scattered all over the Soviet Union. Soviet people did even more. They not only participated in the evolution by means of extensive research in genetics, plant and animal breeding, hybridisation, metisation, and acclimatisation<sup>32</sup>. They initiated the change of the very “conditions of existence” by means of planned change of the climate. An unnamed physicist from Ashgabat was credited with the invention of the rain-bringing electrified smoke, while irrigation of deserts of Middle Asia and warming of Siberia were mentioned briefly as work-in-progress activities, remarkable but not deserving special attention (Prezent, 1932b, p. 17–19). The socialist planned economy provided a far better environment for the development of evolution theory than the bourgeoisie agricultural practices of Darwin’s contemporaries.

In this programmatic paper, one may see some of the themes which became recurrent in the thirty years to follow: the insufficiency of Darwin’s evolution theory; the “Malthusian mistake”; the role of assimilation and dissimilation in the natural selection; the narrow and slippery path of the “party line” dialectically creeping between the opposing camps of right-wing and left-wing *uklon* (deviation), menshevizing idealists and mechanical materialists; Burbank, Michurin, and Lysenko as true heirs of Darwin; the creative role of plant and animal breeders, etc.

Some of them were downplayed for a while. In the mid or late 1930s, neither Prezent, nor Lysenko stressed the differences of their theories from Darwin’s views staying on the safe ground of selective reading along the lines described above (see section 1)<sup>33</sup>. It was only in the early 1940s that Lysenko dared to attempt a revision and draw some boundaries on this flank. By that time, Lysenko was already at the top of scientific hierarchy, which entitled him to speak more openly on the philosophical issues of biology.

In his 1940 paper on Engels and Darwinism, Lysenko (1940, p. 3–17) started playing with the idea that the natural selection is wrongly perceived by contemporary biologists.

The doctrine of natural and artificial selection is central to Darwinism. The essence of the natural selection is that the organisms that are adapted to life in a given environment survive;

<sup>32</sup> For whatever reason Prezent included in his enumeration of current activities *gibridizatsiia* and *metizatsiia* as two different items (Prezent, 1932b, p. 19).

<sup>33</sup> During the 1936 session of VASKhNIL, Prezent made a passing remark on the “creative renewal” (*tvorcheskoe obnoveniie*) of Darwinism but he did not elaborate on this (*Spornyye voprosy ...*, 1937, p. 385).

those not adapted do not survive or leave no offspring. Darwin saw the cause of the natural selection mostly in the struggle for existence resulting from the over-population. Nobody would deny the fact that, in the plant and animal kingdoms, many more germs of the organisms come into existence usually than there is place available for their survival and development. This is why it is clear that the struggle for existence as a result of over-population does take place in nature. But the main driving forces of the development of the organic world should be sought elsewhere<sup>34</sup>.

Just like Prezent in 1932, relying on some passages from Engels and stressing the importance of metabolism and assimilation, Lysenko maintained that the change of metabolism was the most important part of the natural selection, which could serve well enough without any struggle for existence.

In Anti-Dühring, one may read: "From the metabolism which takes place through nutrition and excretion, as the essential function of albumen, and from its peculiar plasticity proceed also all the other most simple factors of life..." ... *Succeed in changing the metabolism, and their breed, their inheritance will change at once, they will become plastic.* The Engels' doctrine that all the other simple factors of life can be derived from the metabolism, and, among others, of course, the variability of heredity, is confirmed only too well by the I.V. Michurin's doctrine of mentors, of vegetative hybrids<sup>35</sup>.

A most dramatic further step was taken in Lysenko's lecture on the natural selection and the intraspecific competition read before the workers of the state plant breeding stations on November 5, 1945. To begin with, he drew a distinction between two perspectives on the natural and artificial (as Darwin's selection by man was called in Russia) selection. From the viewpoint of "our Soviet biologists", selection (both natural and artificial) was the creator of the new forms. From the viewpoint of biologists sharing the views of "formal geneticists", selection was considered as a mere sieve (Lysenko, 1949, p. 525–526). This distinction was not a novelty in itself (it had been used before in the Lysenkoist criticism of Johannsen's notion of the inefficiency of selection within pure breeds), however what followed from it was a revolution.

... [T]he notion of *the natural and artificial selection* is much wider and deeper. *Darwin understood the selection metaphorically, allegorically, [the selection] included three factors, acting all the time together: variability, heredity, and over-population* (Lysenko, 1949b, p. 528, italics in original).

Lysenko substantiated this claim with a quotation from Timiryazev, who stressed the metaphorical use of "selection" in Darwin's works, referring in his turn to numerous instances when Darwin himself insisted on its metaphorical meaning. After reminding that plant breeders should not reduce the selection to mere sorting, Lysenko went deeper into analysis of its constituent parts, focusing on the third component.

<sup>34</sup> Lysenko, 1940, p. 3. In the Russian discourse, Darwin's "selection by man" is rather uniformly translated as "artificial selection" (*iskusstvennyi otbor*).

<sup>35</sup> Lysenko, 1940, p. 6–8; the quotation from Engels is given according to the translation from German by E. Burns, see Engels, 1947.

Let us consider the last factor, *the over-population*. As an allegedly most intelligible factor, it usually serves as a point of departure for the exposition of Darwinism. I can not agree with a conventional treatment of it. I do not agree with the treatment of the factor of over-population because, in my view, as a rule, *there was no, there is no, and there can not be any over-population* in nature. This is why I interpret the natural selection as the three jointly acting factors: variability, heredity, and survival potential [*vyzhivaemost'*] (instead of over-population). I believe that such an interpretation agrees better with the reality, as well as with a general truly Darwinist theory of evolution, the creative Darwinism (Lysenko, 1949b, p. 529, italics in original).

Just as before, this innovation in the evolution theory was connected to one of Lysenko's favourite agricultural innovations: the method of cluster planting of some field crops and forest trees. Lysenko stated that plants of the same species growing in a dense cluster do not compete with each other. Instead they cooperate to combat other species, while the differential growth can be explained not by the depression of certain individuals but by their willingness to help other, more powerful conspecific specimens of the same cluster. It was in this paper that Lysenko wrote of hares who did not eat each other, thus exemplifying lack of intraspecific competition in Nature. This renovation of Darwinism provoked sharp criticisms from a wide range of biologists. Petr Zhukovskii (1888–1975), a botanist and plant geographer, responded to Lysenko's lecture with a paper under a symptomatic title *Darwinism in a distorting mirror* published in a central professional journal of plant breeders *Selektzia and semenovodstvo*. A number of meetings organised in 1947–1948 were devoted specifically to the criticism of Lysenko's denial of the struggle for existence. Lysenko and his adherents responded with a series of articles and interviews in the central newspapers (including *Pravda* and *Literaturnaia gazeta*) and journals fully or partly controlled by them. This wave of criticisms, notably the intervention of Yurii Zhdanov (1919–2006), then the head of the Science Section of the Central Committee of the Communist Party, was among the many factors that triggered eventually the August 1948 session of VASKhNIL<sup>36</sup>.

In his programmatic paper of 1947 boldly titled *Soviet Creative Darwinism*, Isai Prezent elaborated on the Lysenko's vague hints at the reformulation of the notion of the natural selection. Again, Prezent came back to the miraculous 1900. Now, he did it to stress that Michurin took up the problem of the origin of the new forms at the very point where Darwin left it. Prezent claimed that Darwin, being limited with contemporary agricultural practice, opposed definite variations to the selection of indefinite variations, thus making a serious mistake. Moreover, among the three forms of selection discussed by Prezent's Darwin (natural selection and two forms of selection by man, unconscious and methodical) all were defective.

A higher, comparing to those named and explored by Darwin, form of selection embraces also certain activities aimed at the creation of the necessary source material, i. e. the creation of "definite variations", and certain systematically-training activities in the course of the creation of the [new] breeds. ... It is exactly this activity that elevates the selection at a higher level, taking

<sup>36</sup> By no means, I would like to argue that this theoretical dispute was the only or even the main cause of the August 1948 session. However, the public debate on the struggle for existence and problems of the evolution theory, involving central press and Yuri Zhdanov, was part and parcel of a complex dynamics that led to the dramatic culmination in August 1948. The controversy over the issue of struggle for existence is duly covered in all standard reference books on the Lysenko affair. A concise but detailed account of the decisive phase of the controversy from the fall of 1947 through the spring of 1948 was given by N. Kremontsov in connection with his interesting hypothesis on the Cold War context of the dynamics of the Lysenko affair (Kremontsov, 2003, p. 851–855).



it still further from the kingdom of necessity to the kingdom of the consciousness of necessity, the kingdom of freedom. Such an interpretation of selection is a *creative*, not dogmatic mastery of Darwinism<sup>37</sup>.

Again, Prezent stressed the active role Michurin played in the upbringing of the parent plants for crossings, special conditions he created for the seedlings, and the method of mentor. This persistent activity brought guaranteed success, in contrast with the “old” plant breeding “theoretically enriched” with classical Darwinism (Prezent, 1947, p. 12). Again, this plant and animal breeding effort was multiplied by dozens of research institutes, by an army of “experimenters-Michurinists” in the collective and state farms led by the “people’s” Academician Lysenko (Prezent, 1947, p. 13)<sup>38</sup>. Explaining the meaning of the recently invented catch phrase, Prezent wrote:

We should speak [here] of the Soviet Creative Darwinism, because exactly in the *Soviet* country Darwinism was: 1) critically *reviewed* from the angle of the highest method of cognition, the dialectical materialism; 2) *enriched* by inclusion of the results of new findings in the field of plant development, which took place exactly in the Soviet biological science; 3) theoretically renovated according to the new principles and methods of the plant and animal breeding, which were unknown in the time of the old classical Darwinism; 4) resting upon such a new form of selection that includes a planned upbringing of the material being selected, which makes the selection itself *incomparably higher with respect to its creative effect*. (Prezent, 1947, p. 12, emphasis in original)

The renovated and enriched theory of evolution deserved independence. In his keynote address at the August 1948 session of VASKhNIL, *On the situation in the biological science*, Lysenko explicitly confirmed that the doctrine to which he adheres is neither neo-Lamarckism, nor neo-Darwinism, nor even classical Darwinism any more, but a peculiar Soviet Creative Darwinism which managed to overcome the mistakes of all three.

[B]y no means, the Michurinist school can be called Neo-Lamarckian or Neo-Darwinian. It [the Michurinist school. — A.K.] is the Soviet Creative Darwinism repudiating the mistakes of both and free from the Darwin’s mistakes on the part of Darwin’s acceptance of the erroneous Malthusian scheme (Lysenko, 1948, p. 14).

Among these mistakes, there was not only the struggle for existence targeted already in 1941 and overcome by 1945 but also the Darwin’s gradualism and lack of appreciation of qualitative leaps required by the Dialectical materialism as well as Darwin’s skepticism towards the notion of species. Here again Engels came to the stage to help winning against Darwin. Lysenko stressed that Darwin was right stating the variability of species and genealogical relationships

<sup>37</sup> Prezent, 1947, p. 12. The distinction between definite and indefinite variations goes back to Darwin’s *Origin of Species*: “They may be considered as definite when all or nearly all the offspring of the individuals exposed to certain conditions during several generations are modified in the same manner” (Darwin, 1876, p. 6).

<sup>38</sup> One may easily notice here the familiar themes: the mass and planned character of plant and animal breeding in the USSR (see Prezent, 1932) and the praise of Michurin’s creative role in the plant breeding (Prezent, 1935).

between them. The wrong idea was Darwin’s rejection of the qualitative leap that divides species from varieties.

The need has come, the need is ripe to revise the problem of speciation from the angle of a drastic transition of the quantitative increase into the qualitative intraspecific differences. One should understand that the formation of a new species is a transition from the quantitative changes to qualitative ones in the course of historical process. Such a leap is prepared by the organic forms’ own vital functions as a result of the quantitative accumulation of the perception of particular conditions of life, and this is readily available for study and control. ... I think, that, from this perspective, we can rightfully suppose that what brings about the formation of a new specific form, the obtaining of a new species from an old one, is the accumulation of quantitative differences different from those by which one usually discriminates varieties within a species. The quantitative accumulation of changes leading to a spasmodic transformation of an old specific form into a new specific form is a change of a different order (*O polozhenii ...*, 1948, p. 38–39).

According to Lysenko, the species were distinct natural elements of living nature, the “unbreakable links in the great chain of being”.

Species are not abstract entities, they are really existing nodes (links) in the universal biological chain. The living nature is a biological chain, sort of broken into discrete links, species. This is why it would be wrong to say that species do not keep the constancy of their qualitatively-specific determinacy even for short periods. To say so means to perceive the development of the living nature as a flat evolution without leaps (*O polozhenii ...*, 1948, p. 39)<sup>39</sup>.

All this maneuvering at the session did not pass unnoticed. Boris Zavadovskii (*O polozhenii ...*, 1948, p. 281–302) boldly criticised Lysenko’s departure from the orthodox Darwinism and selective reading of Engels (in his speech, Zavadovskii mentioned the presence of a copy of “Anti-Dühring” at hand and did not mind to use extensive quotations from Marx and Engels). He prepared a special diagram showing the relationships between traditional Darwinism, neo-Lamarckism, and neo-Darwinism, and several times explicitly alluded at the analogy between the Communist party line running between right-wing and left-wing deviations and the orthodox Darwinism of Timiryazev and Michurin. In his speech, Lysenko was portrayed as a renegade betraying the best part of Darwinism and sinking in the depths of a progressively accumulating pile of mistakes<sup>40</sup>.

The saltationist views of Lysenko lacked theoretical background except “dialectical” rhetorics until he “deepened” the theoretical understanding of the sudden transmutation of species using the Olga Lepeshinskaya’s (1871–1963) theory on the spontaneous generation of cells from unstructured living matter. The way to this theoretical alliance was uneasy. Although Lysenko wrote a favourable half-page foreword to Lepeshinskaya’s 1945 monograph on the origin of cells from the unstructured living matter, he did not refer to her theories in print before 1950. In the fall of 1948, at the meeting of the Academy of Medical Sciences where the results of the August session of VASKhNIL were discussed (September 9–10, 1948), Lepeshinskaya suggested her

<sup>39</sup> In a more popular format, the species were compared to the chemical elements of the nonliving nature. The absence of transitional forms was explained by the “impossibility of semi-qualities” (Dmitriev, 1952, p. 8).

<sup>40</sup> The B. Zavadovskii’s attack was unexpected and most disturbing for the organisers of the session to the extent that it seemed to provoke an asymmetric response (see Kremensov, 2003, p. 869–871 for details).

theory as an analogue of Michurinist doctrine in medical science (Krementsov, 2003, p. 890). It took another year and a half for Lysenko to publicly recognise its implications for the theory of transmutation of species, first at the special session of the Academy of sciences in May 1950 and then in a paper on the new developments in the science of biological species originally published in the central Soviet newspaper *Pravda* on November 3, 1950 and reprinted several times in other places, including the Big Soviet Encyclopedia (see Lysenko 1957, p. 3–17)<sup>41</sup>.

Lysenkoists reported on numerous cases of transmutation of different species of wheat into each other (usually, *Triticum durum* into *Tr. vulgare*), wheat (*Triticum sp.*) into rye (*Secale cereale*), rye into rye brome (*Bromus secalinus*), oat (*Avena sativa*) into common wild oat (*Avena fatua*), spruce (*Picea abies*) into pine (*Pinus sylvestris*)<sup>42</sup>. There is some anecdotal evidence that Lysenko went as far as to claim that a leaf-warbler can transmute into a cuckoo being better fed or fed with “hairy” caterpillars<sup>43</sup>. Not surprisingly, the whole theory of transmutation met another agricultural problem, that of explaining the failure to exterminate weeds even in the elite seed plantations. Just like the case of the amendment of the Darwinian principle of intraspecific competition, Lysenko opened himself to criticism. Moreover, in contrast to a rather sophisticated case of the struggle for existence, the sudden transmutation of species was ridiculed, not just criticised.

The Soviet Creative Darwinism of the 1950s was itself a product of a long evolution and differed from the earlier versions of the Michurinist doctrine in several respects. After the “philosophical” debates of 1939, Lysenko started using Engels to correct Darwin. The first step of the revision of the “classical” Darwinism (1940–1945) began with the notion of natural selection. The selection both natural and “artificial” became all-encompassing and all-explaining concept. The scope of selection was broadened to include variation (and metabolism as its source, and the work required to change metabolism too), heredity, and over-population. The latter member of the triad was at once dismissed and replaced by survival potential and mutual aid. The second step of the revision (1948–1950) included the redefinition of species as “unbreakable links” in the chain of life separated by qualitative leaps and the incorporation of the Olga Lepeshinskaia’s theory of the formation of cells from unstructured “living matter”. The latter theory was used to explain the origin of the cells of one species within the body of the other from the granules [*krupinki*] of the living matter. Like the dogmatic selective reading of Darwin’s works in the 1930s, both steps of the revision were connected with Lysenko’s agricultural innovations. The denial of the struggle for existence was used to justify the cluster planting, while the theory of the sudden transmutation of species was used as a theoretical basis of plant breeding and of the control of weeds. The revision of the principle of the struggle for existence was envisaged already in the 1932 pamphlet by Isai Prezent but it took years for it to find its way into the mainstream Lysenkoist discourse. The theory of the sudden transmutation of species was not a pure novelty. It was logically compatible with the primitive “dialectical” rhetoric and followed, not preceded the established Lysenkoist practice of “retraining” of the varieties and species of wheat and other crops into each other. Rather, it was a *post hoc* rationalisation of the Lysenkoist “experience”.

<sup>41</sup> For more details on the case of Olga Lepeshinskaia see a paper by A.E. Gaissinovitch and E.B. Muzrukova (1991)

<sup>42</sup> Useful reviews were published by Dmitriev (1952) and Lysenko (Lysenko, 1957, p. 18–63); for a detailed critical analysis of the cases of alleged transmutation (based mostly on inaccuracies and bare-faced falsifications, including grafting) see Soyfer (1994).

<sup>43</sup> See a story on an early 1950s conversation between cytologist Dmitrii Nasonov (1895–1957) and zoologist Valentin Dogiel (1882–1955) reported by T. Ginetsynskaia (1991).

## Conclusions

An analysis of identity statements and passages explaining the differences between Michurinist visions of evolution, Lamarckism, and Darwinism, whether neo- or not, reveals a complex dynamics of rhetoric. From the early 1930s through late 1950s, Lysenkoist positioning in relation to these identity markers have undergone significant changes.

Early in his career, in the 1930s, Lysenko and his adherents presented themselves as most orthodox Darwinists using Darwin’s writings as a source of not only theoretical inspiration but also of empirical data. This allowed them to use the stigma of anti-Darwinism against their adversaries. After Lysenko strengthened his positions in the controversy against geneticists, he tried to develop a revised version of his evolutionary theory, relying on Engels to correct Darwin. Again, it took years to develop rhetorical tools, which allowed to distance the Soviet Creative Darwinism from its “classical” precursor. Revisionism made Lysenkoists vulnerable to criticism from the vantage point of Darwinist orthodoxy and geneticists managed to use this at their advantage, even though, at first, without major success. During the 1950s – early 1960s, the issues in evolution theory in which Lysenko departed from Darwin (the struggle for existence and, more importantly, the species problem) were the only legitimate excuse to openly attack Lysenkoists. It should be stressed also that throughout the whole history of the controversy Lysenkoists distanced from Lamarckism. At first, they rejected it outright. However, about the time Lysenko started his revision of Darwinism in 1940, Lamarck’s evolution theory was analysed into its constituent parts. The principle of the inheritance of acquired traits was segregated from other elements and proclaimed to be truly Darwinian while the internal drive, “direct” influence of the environment and the “psychogenic” factors were considered as erroneous.

The causes of the tempo and mode of Lysenko’s evolution are obscure. However, certain conclusions can be drawn. First, there is no evidence that Lysenko had been at all interested in the evolution or realised far-reaching theoretical implications of his views before he met Prezent. Given the Prezent’s involvement with the history of evolutionary thought it is more than plausible that he played the leading role in the development of the early ideologemes. Second, in all cases, the Lysenko’s evolutionist speculations were aimed to support his favoured ideas in practical agriculture (intravarietal cross-fertilisation of self-fertilising plants, “vegetative hybrids”, cluster planting, “good agricultural technique” [*khoroshaia agrotehnika*] as a remedy against the transmutation of useful plants into weeds). So, some of the theoretical fluctuations can be to a considerable extent explained as rationalisations behind the agricultural innovations. On the other hand, the exact timing of some innovations can be tied to the political dynamics of the controversy. A strange five (or, at the very least, two) year lag in the reception of Olga Lepeshinskaia’s theory can be explained by the vagueness of Lepeshinskaia’s position within the Soviet scientific hierarchy. It was not until her teachings were officially approved as a theoretical basis for the Soviet cytology that Lysenko openly linked his ideas about the dialectical leaps from one species to another to the Lepeshinskaia’s theory of the ongoing origin of cells from the unstructured living matter.

Given the empirical data presented in this paper, the controversy between geneticists and Lysenkoists can be better understood not as a controversy between neo-Darwinists and neo-Lamarckians but as a rhetorical battle for the right to define, interpret, and revise Darwinism. In the 1920s – mid-1930s geneticists pretended to be the true heirs of Darwinism. They attacked Lysenkoists and blamed them with Lamarckism. Lysenkoists, in their turn, claimed to be most authentic Darwinists and denied the Lamarckist charges. In the 1940s–1950s Lysenkoists tried to monopolise the right to revise Darwinism, and started blaming geneticists with Lamarckism, while geneticists and the allied forces of a wider range of biologists now tried to

defend what they proclaimed to be the authentic Darwinism. After the closure of the controversy in the 1960s, the winning side affixed the label of Lamarckism of a kind to the Lysenkoist doctrine, thus saving Darwinism at last from an undesired revision.

Should Lysenko be considered a neo-Lamarckist then? A Darwinist? What does it mean, after all, to be a Darwinist? Is it enough to just call oneself a Darwinist? to share certain beliefs with Darwin? which share is enough? and, if different groups share with Darwin different subsets of beliefs, which subset is more important? Being put in such a way, the question of whether Lysenko and his followers were Lamarckists or Darwinists becomes a political issue, not an issue in the history of science. Which means, in the first place, that historians of science should refrain from picking up questions of this sort and, probably, even from making passing remarks labeling the parties of a controversy with nametags supplied by the winning side<sup>44</sup>. Instead, they should start asking different questions. The focus on identities allows to distance from the conflicting parties by turning the distinctions drawn by the sides of the controversy into a subject of empirical research<sup>45</sup>. A study of remarkably persistent debates of what was Darwinism and what was not, what was compatible with the original Darwin's writings and what was not, what revisions could fall within acceptable limits, etc., would reveal the ways in which Darwinism was both constructed and used as a powerful cultural resource. And I believe that the perspective of identity and boundary building is of more heuristic value in this enterprise than the old good essentialist notion of "schools of evolutionary thought"<sup>46</sup>.

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<sup>44</sup> Presentist and partisan accounts of the history of science were criticised more than once on different grounds. See, e. g., D. Bloor's (1976) discussion of impartiality principle or a more recent discussion of "Whig historiography" by N. Jardine (2003); anthropologists studying the present-day scientific labs write in similar vein: "... we attempted to examine the operation of microprocesses without committing ourselves to either a realist or relativist position. The main reason for our not wanting to ally ourselves with one or the other side of these distinctions is that we found that these distinctions provided a resource for participants in the laboratory. It seems inappropriate to use such distinctions in order to understand laboratory activity when they were themselves found to be constituted through this activity." (Latour, Woolgar, 1986, p. 187–188).

<sup>45</sup> This approach was inspired to a large extent by constructivist science studies and, in particular, by a seminal paper by Th.F. Gieryn (1983) where he introduced the concept of boundary work. While treating in his paper the symbolical boundaries scientists construct between science and non-science, Gieryn suggested that the same approach can be just as fruitful in considering symbolical boundaries constructed between different scientific subdisciplines. I believe, the perspective of "boundary work" provides a right framework for the analysis of the flexible positioning of "Michurinist doctrine" to Darwinism / Lamarckism as well.

<sup>46</sup> When this paper was already submitted I was pleased to receive a copy of a recent publication by N. Kremensov (2010) which explores the topic of the struggle for the right to interpret Darwinism and Marxism in Soviet Biology much in line with the principles I am trying to advocate here.

a database of journal articles and shared with me some unpublished results of their quantitative studies of the Soviet biological periodicals; to two anonymous reviewers and to Elena Aronova and Nikolai Kremensov for their criticisms and helpful suggestions, even though, at my own risk, I failed to follow some of them in the present paper.

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## Советский «творческий дарвинизм» (1930–1950-е гг.): от избирательного прочтения трудов Дарвина до превращения видов

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Анализ программных заявлений Т.Д. Лысенко и его ближайших сторонников в 1930–е–1950–е гг. показывает, каким образом эволюционные представления «мичуринской биологии» соотносятся с «дарвинизмом» и «ламаркизмом». Анализ практики цитирования указывает на способы, которыми работы Дарвина использовались лысенковцами в 1930–1950–е гг. Обсуждаются преимущества рассмотрения «дарвинизма» в историко-научных исследованиях как идентификационного маркера, а не целостной системы представлений.

**Ключевые слова:** Трофим Денисович Лысенко, Исая Израилевич Прозент, ламаркизм, идентичность, агробиология.