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Discursive Strategies of the Soviet Union in Legitimating the Western "Borrowing": The (Re)Invention of the West and the Case of Programmed Instruction

Introduction: The Reinvention of "the West" During the Cold War

The relations between the United States and the Soviet Union during the Cold War are at times perceived as ones of ultimate antagonism and isolation. Certainly, the decades-long animosity and competition, ideological confrontation, and the partitions of the so-called "zones of influence" separated by the Iron Curtain – the repercussions of which are visible still today – were by no means fictional. However, the Cold War "contract" meant that the adversaries could never really afford the blissful ignorance of isolation: One way or another, both the United States and the Soviet Union were bound by the same predicament and utterly dependent on each other's presence and participation. A football match would not take place with only one team on the field and, apparently, nor would the contest for global domination. Moreover, the USA and the USSR were not only mutually dependent on each other's participation, but they were also inventing and reinventing each other – or to be more precise, the *image* of each other, which they simultaneously used to devise their own image. In other words, unfortunate as it was, the vitality of one Cold Warrior depended on that of another, and this co-dependence was essential for mutual self-definition.

The science and technology historian Slava Gerovitch posited that, "Instead of depicting the Cold War solely as a clash of ideologies, it may be more productive to examine the discursive strategies that were employed to shape the image of the opponent and to build up 'our' ideology against 'theirs'."[1] The framework of "capitalism versus communism", just like the exceptional focus on the two "leaders" in the Cold War, seemed to have exhausted itself in the study the subject: The US–So-

1 Slava Gerovitch, "Writing history in the present tense: Cold War–era discursive strategies of Soviet historians of science and technology," in *Universities and Empire: Money and Politics in the Social Sciences during the Cold War*, ed. Christopher Simpson (New York: The New Press, 1998), 218.

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viet focus has been expanded by the explorations of global scale and impact,[2] and the opposition of the American system to the Soviet system is no longer taken for granted as the point of departure in historical inquiry. On the contrary, the discursive approach offers a more complex picture, where the two seemingly stable opposing systems were not only continually being (re)constructed but were being constructed as against their imagined opponents. Indeed, both the USA and the USSR were defining themselves against the background of their "enemy" and developed discursive strategies to create the image of their opponent – and to further act upon this perception. This kind of discursive maneuvering became an intrinsic feature of Cold War diplomacy, geopolitical interaction, and, subsequently, the two countries' domestic policies, which were heavily impacted by the real, exaggerated, or manufactured threats of the war.

The historian Ron Theodore Robin, in his analyses of the cultural and diplomatic history of the Cold War, explained that "the image of the enemy was derived from an uneven mixture of fragmented information and unauthenticated presumptions. It was a rumor", which was further transformed into "a powerful working hypothesis."[3] These knowledge gaps about the "enemy" were operationalized and eagerly filled by the imagined and desired vision of the opponent both in the USA and in the USSR. The fact that it was impossible "to *know* one's enemy" completely during the Cold War presented an almost favorable setting to the politicians, be it in the USA or the USSR, who could manufacture the enemy as the opposition to their own agenda, thereby underlining the correctness of their path and legitimating the choices of policies. The invention of the "enemy" thus worked on several levels, and on an overarching level, the creation of one's own image as against the invented vision of the enemy ensured that that this enemy was thereby materialized.

This process of enemy invention during the Cold War sheds light on the role of the Cold War, and the Soviet Union in particular, in the (re)invention of the concept of the generalized "West". While the concept of the "West" as a socio-political cat-

2 See, for example, Lorenz M. Lüthi, *Cold Wars: Asia, the Middle East, Europe* (Cambridge: Cambridge University Press, 2020); Lorenz M. Lüthi, *The Sino-Soviet Split: Cold War in the Communist World* (Princeton: Princeton University Press, 2010); Odd A. Westad, *The Global Cold War: Third World Interventions and the Making of Our Times* (Cambridge: Cambridge University Press, 2008); Bradley R. Simpson, *Economists with Guns: Authoritarian Development and US-Indonesian Relations, 1960–1968* (Palo Alto, CA: Stanford University Press, 2008).

3 Ron T. Robin, *The Making of the Cold War Enemy: Culture and Politics in the Military-Intellectual Complex* (Princeton, NJ: Princeton University Press, 2009), 4.

egory is said to have emerged around the nineteenth century,[4] its contemporary working definition was largely shaped during the era of the Cold War, in which the United States is normally placed at the center of the so-called "civilized world", is envisioned as the foe by the former Soviet Union, and is demonized by the Russian Federation to this day. The Soviet Union did not invent the concept of the generalized "West", but through the years of the Cold War, it deepened the divide between the West and the rest by emphasizing (and also manufacturing) its difference from and incompatibility with Western ideals, as well as the potential future of American cultural dominance. The contemporary understanding and use of the term "West" are therefore impossible to grasp without considering the recent – and persistent – context of the Cold War, where it was instrumentalized by the "opposing superpowers".

The most noticeable "invention" of the West can be observed during the times when the Soviet Union "borrowed" Western ideas and technologies, because it was precisely at such moments that the Soviets had to showcase their radical difference from their "enemy", thereby also fashioning a particular image of the latter. The difference was demonstrated by a number of particular legitimating discursive strategies. For example, in his book *From Newspeak to Cyberspeak: A History of Soviet Cybernetics* (2002), Slava Gerovitch analyzed the emergence of a whole new language which enabled the adoption of the Western science of cybernetics into a Soviet context; this became the discursive strategy that legitimated cybernetics in the USSR as different and necessary. Similarly, the Western – American – idea of programmed instruction was legitimated in the Soviet Union through a series of discursive tricks that embedded in the popular imagination a version of the West and the United States that was most favorable to the Soviet Union.

The current chapter focuses on the case of programmed instruction (PI) and the making of a particular image of the United States and the West during the "import" of PI to the Soviet Union. First, a general overview of the teaching method of programmed instruction as an emerging innovative technology in the United States will be provided, as well as the context of PI in terms of the Cold War and its impact on education. Afterwards, the trajectory of PI's migration to the Soviet Union will be considered. Further, the specific strategies of legitimation will be analyzed – from the military rationale (i. e., the implementation of PI in the Soviet Union as self-defense against "the imperialist West"), to the psychological distinction and the emphatic difference between the Soviet and American visions of human development. Finally, the last strategy of marginalization will be elaborat-

4 John M. Hobson, *The Eastern Origins of Western Civilisation* (Cambridge: Cambridge University Press, 2006).

ed: The Western origins of PI were described as entirely irrelevant to PI's assumed main purpose of learning optimization and progress. The West, while being acknowledged by Soviet scholars to have advanced PI research, was still disregarded on the grounds that Western scholars had misinterpreted its "real" purpose. Throughout, the image of the United States and the West was thus gradually built in relation to Soviet demands.

Subject: A Short Guide to the Teaching Method

As soon as the scholar James G. Holland joined the Harvard psychologist Burrhus F. Skinner for research into and development of a new instruction method in the fall of 1957, he was restless, burning the midnight oil to stay ahead of students in generating material for the teaching machine. He later described it as "a mechanical marvel, reminiscent of the age of brass instrument psychology, in size and shape like a small suitcase."[5]

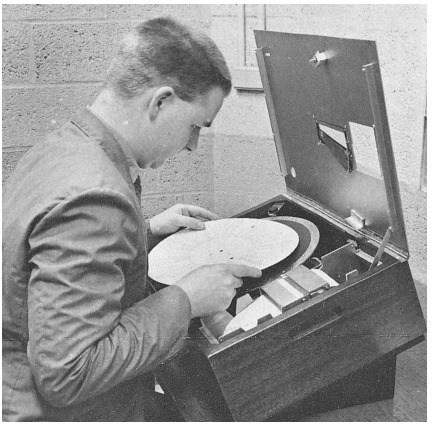

Fig. 1: A photo of a student holding a teaching machine (Skinner Collection of Harvard University Archives, unpublished documents, rights with the author).

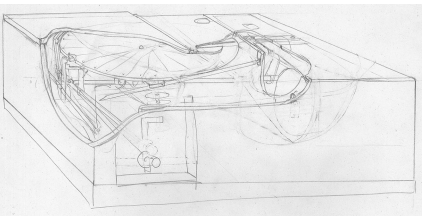

Fig. 2: Skinner's drawing of the mechanism (Skinner Collection of Harvard University Archives, unpublished documents, rights with the author).

The insides of these suitcases, which Holland spent white nights composing, were the sets of frames – later, "a program" – designed after the principles of Skinner's

5 Holland, quoted in Burrhus F. Skinner, *The Technology of Teaching* (Cambridge: B. F. Skinner Foundation, 1968; repr. 2003).

behavioral science. These principles, among others, suggested that a student would learn best through (1) instruction designed in a coherent way, using the smallest units of information; (2) instant feedback about what they got "right" or "wrong"; and (3) at their own individual pace, which made learning enjoyable, economical, and effective. Skinner's new promising teaching method was called "programmed instruction" and could be implemented with or without the teaching machine that he designed.[6]

That very fall of 1957, while a particular kind of reasoning was establishing the link between the Soviet Sputnik 1 launch and the American classroom, summoning the "Sputnik shock" into the heads of the American population and spurring the calls for US education reform, Skinner's programmed instruction research was still largely confined to the "gray, clapboard building of Batchelder House" from Holland's memories.[7] However, soon enough, with the passing of the National Defense Education Act in the 1958, Skinner's innovative method became increasingly popular. It would potentially become a tool to bridge the imagined knowledge gap between American and the Soviet students. A decade later, programmed instruction method (PI) and its teaching machine, acquiring a multitude of meanings and disguises than initially bestowed by the science of behavior, was listed in 65 countries in Africa, Asia, North and South America, Europe, Oceania, and the separate "continent" of the USSR.[8] Visibly throughout the long 1960s, inquiries into research, development, and implementation of programmed instruction became popular many places around the globe. Programmed instruction lay at the heart of the Cold War developments, since it was the Cold War that also reconceptualized the idea of education.

In a new, revised definition, education became one of the tools and weapons for defeating the "enemy" – the process of such a call to arms is generally referred to as "educationalization" – and programmed instruction was believed to bring education to a new level. Programmed instruction also represented the main desires of the time: it was reportedly "the first empirically determined form of instruction" that played "a prominent role in the convergence of science and education."[9] In the recent historiographical accounts, PI is positioned as the precursor in the evolution of technology in the classroom. These definitions call upon PI as a stage-setter and are built from our understanding of media in the classroom today, the popularity of which has been ever-growing. However, these definitions say very little about

6 Burrhus F. Skinner, "Teaching Machines and Programmed Learning," film, 1954.

7 Holland, quoted in Skinner, *Technology of Teaching*, 12.

8 Seth Spaulding, *Programmed Instruction: An International Directory* (Paris: UNESCO, 1967).

9 Paul L. Saettler, *The Evolution of American Educational Technology*, 2nd ed. (Greenwich, CT: Information Age Publishing, 2004), 304.

the conception of PI idea as conceived of by Skinner, and instead come very close to associating PI with technological objects; this immediate association is rather limiting compared to the whole scope of features that PI idea represented – namely, the principles of Skinner's behavioral science. The material was not simply translated from a traditional to a mechanic setting – it followed the principles of Skinner's science of behavior, distilled from his experimental study, and aimed at finally establishing psychology as a "scientific" inquiry with a clear subject and method.

Context: "Educationalization" and the Cold War

The launch of the first artificial satellite by the Soviet Union in 1957 brought about "the shock of the century".[10] The discussion that ensued in the United States attributed this success to Soviet education. The reasoning that connected Sputnik to the Soviet education system and, by implication, admitted the failure of American schooling, soon firmly established itself as a given. It became a self-perpetuating narrative and the basis for the appeals to reform American education in the 1960s (and beyond), the declarations that the Cold War was fought in the classroom, and that education was as much a matter of defense as military missiles. All these beliefs were crystallized in the National Defense Education Act (NDEA) in 1958. Already in 1952, the United States programs for national defense, drafted by the US National Security Council, included education and educational exchanges as an important sphere in international relations.[11] But while educational exchanges laid stress on influence on an international scale, the NDEA emphasised the local scale. In this way, education became not only a matter of influence, as in Soviet–American relations, but also, and most importantly, the matter of defense – the fundamental new development ushered in by the Cold War. The NDEA showed how fast education could wind up in the spotlight of global conflict and become almost entirely responsible for fixing the perceived problems of society, in accordance with the concept of "educationalization". In fact, the NDEA has become one of the most illustrative cases of "educationalization" of the past century and was actually passed at exactly the time when the concept emerged in West Germany as "Pädagogisierung."[12]

10 Paul Dickson, *Sputnik: The Shock of the Century* (London: Bloomsbury, 2001).

11 Liping Bu, "Educational exchange and cultural diplomacy in the Cold War," in *Journal of American studies* 33(3) (1999): 393–415.

12 Daniel Tröhler, "Educationalization of social problems and the educationalization of the modern world," in *Encyclopedia of Educational Philosophy and Theory*, ed. Michael A. Peters (Singapore: Springer, 2016), 698–703.

The recruitment of education to this task raised a series of discussions about its relationship to the state. The launch of Sputnik had liberated and enhanced the ongoing "decades-long battles" – as historian Andrew Hartman put it – and "dramatized" them.[13] Through the NDEA, the government wanted to put education to work for national defense, yet at the same time, the very first section of the document (Title I) included the position that "nothing in the act was to mean control over education by any federal agency."[14] The American educational theorist George Counts, for example, insisted that the heart of the problem lay in education's ties to the government – "did American education serve the purposes of its system better than the Soviet?"[15] The topic of American education "in the service" of the state, throughout the Cold War and especially after Sputnik, was a sensitive one. On the one hand, the US Navy Admiral Hyman G. Rickover claimed that education was too important to leave it to educationalists, implying the strengthening of education-government ties; and, on the other, the discourse on the role of education in social engineering was the part of the "communist camp", from which the "free world" persistently differentiated itself. Sputnik and the NDEA prompted the American scenario of putting education "in service to the state" – of course, never articulated in this particularly "communist" way – it was education "in service to foundations of freedom."[16] The latter thoughts of the American educationalist George Counts were also reflected in the work of Rickover, whose concerns about education led him in 1959 to publish the book "Education and Freedom" (1959), and who persistently argued that education could and should rescue the "free world".

In the Soviet Union, education was conceived to serve the state as the site of indoctrination and the tool for the making of modern society. However, at the same time that the NDEA was passed in the United States, in 1958, the Soviet Union launched its own vast reform of education, intending "to strengthen the ties between the school and the state" even more in its own surge of "educationalization". At the end of the 1950s, the Soviet Union was reinventing itself after the end of Stalin's era and it recruited education for the purpose of revitalizing the Soviet project and enabling it to "catch up and overcome" the West in the Cold

13 Andrew Hartman, *Education and the Cold War: The Battle for the American School* (New York: Palgrave McMillan, 2008), 1.

14 Wayne J. Urban, *More Than Science and Sputnik: The National Defense Education Act of 1958* (Tuscaloosa: University of Alabama Press, 2010), 2.

15 George S. Counts, *Khrushchev and the Central Committee Speak on Education: A Translation of the Russian "Theses" for Education and Dr. George S. Count's Commentary and Analysis* (Pittsburgh: University of Pittsburgh Press, 1959), 21.

16 Counts, *Khrushchev and the Central Committee*, 22.

War. Just as it was in the United States, education was made the center of attention and, in the Soviet state's own "shock", was set on a path of a broad-scale reform meant to fulfil the ambiguous purpose of "connecting school to life" – the reform's main slogan. Khrushchev's plan was to announce the modernization of schooling according to the demands of the time, which included obligatory vocational training as a way to increase manpower for industry, the reorganization of schooling, and the establishment of specialized education facilities with advanced teaching in math and exact sciences. "Strengthening the ties between school and life" in the USSR (1958 education reform) and "education responding to critical national needs" in the USA (the 1958 NDEA) were two seemingly different incentives that nevertheless had very similar implications: Education was being put into service, mobilized by the two states as an instrument and a path towards achieving dominance in the Cold War by means of expanding the potential of their respective national human capital.

The way in which this dominance would be achieved was also strikingly similar and, specifically, stemmed from the unparalleled belief in the power of science for education. On both sides of the Iron Curtain, "educationalization" thus went hand in hand with so-called "scientification", or the emergence of the "scientized discourses and practices" in education at all levels. The growing trust in science after World War II – in which victory was attributed to scientific progress – soon turned into hegemony. The most straightforward popularization of science lay in the promotion of science education as well as the formation of a scientific (rational) worldview in the new generations. Furthermore, scientific methods of instruction were being sought as opposite of traditional "unquantifiable" and "unmeasurable" teaching methods. Finally, in line with scientific methods of teaching, scientific methods in educational research were being encouraged as the future of the field. Both the NDEA in the USA and the 1958 reform in the USSR, in their own ways, activated science for education. The NDEA foresaw the plan for a broad strengthening of science, mathematics, and foreign languages instruction, and the exploration and use of most effective educational media: "Any program that was to come from administration needed to stress science and mathematics, but without seeming to deemphasize or denigrate the social sciences and humanities."[17] The 1958 Soviet reform, in turn, created the platform for the contemporary scientized worldview to assert itself. Both the NDEA and the 1958 Soviet reform enabled different actors to promote their own versions of educational futures, and most of them expressed the primacy of science. Programmed instruction embodied this approach: it was believed to fulfil all these requirements or wishes connected

17 Urban, *More Than Science and Sputnik,* 84.

to education, and therefore also became the ultimate and best method of instruction. PI's "faults" were attributed only to the presumed lack of experimentation – never to the design or the conception of this teaching method.

Programmed Instruction in Translation

Programmed instruction was first used to train the US army in the 1950s and as such became the subject of strong interest for the Soviet Union's military.[18] American military applications of PI began to be reflected in Soviet military journals starting in the 1950s.[19] The military and technical periodicals like *Voennyi Zarubezhnik* (Military foreigner), *Radioelektronika za rubezhem* (Radioelectronics abroad), *Elektronika* (Electronics), *Novosti zarubezhnoi voennoi tradioelektroniki* (The news of international military radioelectronics) and others were publishing pieces on the uses of the complex "trainers", models, and teaching machines for the training of the American military. Most of the time these were unattributed, highly technical articles explaining the construction and design of the US training units in scrupulous detail. The translated texts were not always cited as such, the Soviet practice of anonymous texts went along with the fact that the Soviet Union was not a part of the Universal Copyright Convention until the 1970s.[20] From the traceable references to their American sources, these were, among others, the American military and technical periodicals like *Military Review*, *Army Information Digest*, *Computers and Automation*, and the *Proceedings of the Institute of Electrical and Electronics Engineers* (IEEE).

Edited volumes of translated American articles by the Soviet military followed, which compiled a variety of sources in an attempt to convey a general overview of the topic. Unlike the technical articles in the journals, the edited volumes included a guiding message motivating the military, educators, and the wider public to make themselves aware of such training undergone by the "imperialist armies

18 US Civil Service Commission Bureau of Training, *Programmed Instruction: A Brief of its Development and Current Status. Training Systems and Technology Series No. III.* (Washington D.C.: US Government Printing Office, 1970); Leslie J. Briggs, "Teaching machines for training of military personnel in maintenance of electronic equipment," in *Automatic Teaching: The State of the Art*, ed. Eugene Galanter (New York: Wiley, 1959), 131–145.

19 Viktoria Boretska, "Johnny and Ivan learning in a programmed way: The Soviet reinvention of one American technology," in *IJHE Bildungsgeschichte – International Journal for the Historiography of Education* 9 (2019): 29–46.

20 Christopher D. Hollings, *Scientific Communication across the Iron Curtain* (Cham: Springer International, 2016), 58.

of the capitalist states," since it increased the threat of further escalation in the Cold War. The first edited volume of this kind, *Aviatsyonnye trenazhery* (Aviation trainers) was issued in 1959 and included articles from a wide range of the American journals with material on the "complex trainers" of US Air Force pilots and personnel.[21] The Soviet Ministry of Defense and the All-Union Institute of Technical-Economic Research and Radioelectronics Information commissioned translations of selected American sources on trainers and educational models in the military (as in, for example, *Trenazher – imitator boevykh deistvij na more dlya prenirovki ofitserov*, 1961; *Modeliruyushchee ustroistvo dlia tselei issledovaniya i obucheniya*, 1961). The All-Union Institute for Scientific and Technical Information (VINITI), in addition to its Journal of Abstracts, issued an "Express Information" and included the entries on teaching machines in its series "Calculating technology".[22] The early years of Soviet military "acquaintance" with American technological innovations at the end of the 1950s turned into a landslide of military and public interest in teaching machines and programmed instruction.

Characteristic of the Soviet interest in PI was its initial detailed attention to the technical side of the models and "complex trainers" from an engineering perspective, which later shifted towards the intention of understanding the educational principles upon which such machines were built. The following volumes of translations, like the one assembled by Kyiv Engineering and Radio Technology Academy (KVIRTU) in 1962, included contributions by the behavioral psychologist Burrhus Skinner alongside MIT scholar Richard Smallwood's monograph *A Decision Structure for Teaching Machines* (a mathematical approach to the matter), and the technical information about the PLATO teaching machine from the American journal *Institute for Radio Engineers: Transactions on Education* (*Sbornik perevodnykh statei po obuchayushchim mashynam*, 1962). KVIRTU, together with an identical institution in Minsk (former Republic of Belarus), and the Energy Institute in Moscow, dominated early Soviet publications on the topic of developing and implementing the first programmed material, as well as manufacturing their own teaching machines for military training. Later, large edited volumes of translations by the Soviet lieutenant colonel I. D. Ladanov (1966) and I. I. Tikhonov (1968) included a wide range of works, from 1950s articles to contemporary research. The early works by the American applied psychologists Arthur Lumsdaine and Robert Glaser were included in these publications.

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21 Yuri Kirilenko, *Aviatsyonnye trenazhery. Sbornik perevodov i obzorov* [Aviation trainers: The collection of translations and reviews] (Moscow: Inostrannaya literature, 1959).

22 Since their emergence, the "computer" in the Soviet Union had been called "vychislitelnaya mashyna" ("a calculating machine" in Russian).

The American and international sources chosen for the collected translated volumes, included book chapters, brochures, and articles from twenty-two different American journals, varying between educational (e. g., *Phi Delta Kappan*), and technical (e. g., *Computers and Automation*). The list of the American journals as well as their categorization in the chart below shows that technical journals were used by the Soviet side the most. This technical emphasis also shaped the particular image of the teaching machine and programmed instruction in the Soviet Union as a primarily technical innovation, rejecting the psychological traces of Skinner's behaviorism. The technical orientation of the Soviet translations, among other factors, connected to the specific conditions of censorship in the Soviet Union, under which the authors preferred the technical "import" to educational or psychological content that demanded more resources and ideological reworking.[23] While the translations on the topic were mostly technical, the steep rise in public interest changed the situation.

With the growth of interest in programmed instruction in the Soviet Union, publications on the topic started emerging in the Soviet pedagogical and psychological journals, including *Sovetskaya Pedagogika* (Soviet pedagogy), *Vestnik Vysshei Shkoly* (Herald of higher education, *Voprosy psykhologii* (Questions of psychology) and others. Unlike the technical and military journals, these journals never published the translated articles about teaching machines or programmed instruction; they did, however, include the articles criticizing the American "origins" of programmed instruction.[24] These articles argued against behavioral psychology as the theoretical foundation for programmed instruction and insisted on the development of the Soviet model instead. In contrast to the pedagogical journals, which

23 Samantha Sherry, *Discourses of Regulation and Resistance: Censoring Translation in the the Stalin and Khrushchev Era Soviet Union* (Edinburgh: Edinburgh University Press, 2015).

24 See, for example, Andrei I. Shestakov, "Opyt primeneniya obuchayushchikh mashyn v SShA" [The implementation experience of teaching machines in the USA], *Sovetskaya Pedagogika* 12 (1962); Y. I. Birilko and G. G. Saburova, "Realizatsyia nekotorykh psikhologicheskih printsypov v obuchayusgcgikh mashynakh SShA" [Realization of some psychological principles in teaching machines in the United States], *Voprosy Psychologii* 4 (1962); E. I. Mashbits and V. M. Bondarovskaya, "Osnovnye napravleniya programmirovannogo obucheniya za rubezhem" [Main directions of programmed instruction in the USA], *Radyanska shkola* 9 (1963); I. D. Ladanov, "Programmirovannoe obuchenie i biheviorism" [Programmed instruction and behaviorism], *Soviet Pedagogy* 7 (1964); L. V. Botiakova, "Obsuzhdeniye problem programmirovannogo obucheniya" [Discussion of the problems of programmed instruction], *Sovetskaya Pedagogika* 10 (1964); T. A. Il'ina, "Novyye tendentsii programmirovannogo obucheniya v SShA" [New trends of programmed instruction in the USA], *Sovetskaya Pedagogika* 6 (1965); I. Ya. Braslavsky, "O nekotorykh zarubezhnykh kontseptsiyakh programmirovannogo obucheniya" [On some international conceptions of programmed instruction], *Vestnik Vysshey Shkoly* 2 (1965); O. K. Tikhomirov, "Nekotorye tendentsyi v amerikanskoy psikhologii" [Some trends in American psychology], *Sovetskaya Pedagogika* 10 (1965).

made up a certain "ideological front" when it came to the American uses of programmed instruction, by the end of the 1960s some edited volumes and bibliographic collections, like O. A. Bondin and V. Ya. Fridman's guide to international literature on PI, mentioned this in the foreword to their books. Admitting that "the scientific organization of pedagogical work in capitalist and socialist countries differs fundamentally in the general goals of the educational system", the authors asserted that the United States had "valuable experience" drawn from their experimental phase of programmed instruction.[25]

Defensive Rationale: The Making of the Antagonistic West

The Cold War, as described above, turned the classroom into one of its battlefields. Both the US and the USSR brought education into their service to help win this war, launching major educational reforms. This large-scale mobilization effectively blurred the boundaries between the military and public education, reconceptualized education's role in society, and turned public education, along with the military, into a matter of defense. This particularly applied to new methods of instruction like PI. The necessity to study and implement PI in the Soviet Union was preliminarily motivated by the military rationale, as the principles of PI were used in US military training. The use of the new methods in complex simulators for the training of the US Armed Forces alarmed Soviet military educators, who called for awareness on the part of both the military and the wider public regarding pedagogical and technological innovations. Starting in the 1950s, the military and technology journals in the Soviet Union, such as periodicals *Voennyi Zarubezhnik* (Military foreigner) or *Radioelektronika za rubezhem* (Radioelectronics abroad) were publishing articles about the uses of such teaching simulators in the United States and other countries.

The wide selection of translated articles culminated in 1959 in the collected volume on the topic of aviation trainers in the US Air Force (*Aviatsyonnye trenazh-*

25 O. A. Bondin, and V. Ya. Fridman, *Programmirovannoe obuchenie i primenenie obuchayushchikh mashyn. Putevoditel' po zarubezhnoi literature* [Programmed instruction and the implementation of teaching machines: A guide to foreign literature] (Moscow: Mir, 1969), 5. This annotated bibliography volume with over 500 entries was the Russian combined translation of two American and English bibliographies: Wilbur Schramm, *The Research on Programmed Instruction: An Annotated Bibliography* (Washington D.C.: US Dept. of Health, Education, Welfare Office of Education, 1964); and Ralph D. Gee, *Teaching Machines and Programmed Learning: A Guide to the Literature,* 2nd ed. (London: Hertis, 1965).

ery, edited by Yuri Kirilenko in 1959). These trainers were designed as indoor models of real-life piloting conditions, promising to optimize pilots' behavior and decision-making through employing the principles of programmed instruction. Kirilenko prefaced his translated volume with the following statement: "The analysis of the articles in this book shows that the development of educational technology in the West serves the interests of the ruling imperialistic circles, which are waging the unstoppable arms race, standing on the brink of war, and threatening the peace and safety of all peoples."[26] Kirilenko further added, referring to one of the translated articles, that the American military was learning from the experience of Nazi Germany in World War II, when educational media and special trainers reportedly helped the Nazi soldiers in the advance of their military offensive. Similarly, Kirilenko asserted, educational technology would help the Western capitalist countries in the prospective war in the future.[27] Kirilenko, like other authors on military education who followed, popularized the knowledge about the techniques and technologies of military training in the USA, motivating their thorough study by raising the threat of a possible active phase of the Cold War. This threat was further enhanced by the comparison of the West (in general) to Nazi Germany in the training of its armed forces, adding to the particular image of the "enemy" capitalist states that the Soviet Union constructed. The study of American educational technology became the defense strategy, and the materials about US military education did not belong exceptionally to the Soviet military intelligence but circulated among the wider public in journals and publications like Kirilenko's.

Soviet military educators and officials started getting actively involved in the educational matters traditionally considered as the area of competence of education workers, psychologists, and pedagogues. Like Admiral Hyman Rickover, who in his book *Education and Freedom* (1959), written in the wake of National Defense Education Act (1958), described education as a national security matter, the Soviet Navy admiral Aksel Berg, for example, became one of the most influential actors in revising the role of education in the USSR as defense. In this sense, former military figures and military educators played a key role in an overall "mobilization" of education in the Soviet Union, which, consequently, also became a defense matter. The former military educator I. D. Ladanov, for example, issued a volume of translated articles including international, but mostly American, journals about the implementation of PI in the US military. The volume aimed at, according to Ladanov, "familiarizing the readers with two most important directions of optimizing learn-

26 Bondin and Fridman, *Programmirovannoe obuchenie*, 6.

27 Bondin and Fridman, *Programmirovannoe obuchenie*, 6.

ing in the armies of the main imperialist states – programmed instruction and the automatization of the learning process."[28] In particular, he turned his readers' attention to programmed instruction, as it was used by "American militarists to improve the combat readiness of their armed forces in their aggressive wars."[29] Addressing the general public, Ladanov sought to raise awareness about the uses of PI, reporting on it as if it were a special weapon of the "enemy" that the Soviet Union needed to study thoroughly in order to "overtake and surpass" in the Cold War.

The Soviet military educators seemed particularly keen on promoting and popularizing programmed instruction. They compiled bibliographies, developed programs, and constructed teaching machines while the discussion in the pedagogical journals was only just starting to gain momentum. One such example was the Kyiv Engineering and Radio Technology Academy (Kyivske Vyshche Inzhenerne i Radiotekhnichne Uchylyshche – KVIRTU), which in 1962 began preparations for transitioning its courses to the format of programmed instruction. The Academy's director and the lieutenant general of air defense, Tymofiy Rostunov, was a persistent advocate of the new method, envisioning that it could potentially result in developing the general objective "logical-mathematical theory of learning."[30] Thanks to their close cooperation, KVIRTU, the Institute of Cybernetics, and the Institute of Mathematics at the Academy of Sciences in Kyiv became a powerful cluster in the popularization of knowledge about programmed instruction, the promotion of PI beyond military use, and the construction of teaching machines. In this way, Soviet military schools and military educators implemented and experimented with making programmed materials and teaching machines, and contributed to opening the space for a broader public discussion of this technology. The integration of military thinking into public life, and of military education strategies and technologies into public education was creating a unified line of "defense" desired by the Soviets, as also expressed in the militarized perception of education workers, often called "the armies of teachers."[31] The necessity of programmed instruction in the Soviet Union was thus, in this instance, motivated by a defensive rationale and the "West" was depicted as the aggressor in the utilization of programmed instruction for the cause of a coming war.

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28 Ladanov, *Programmirovannoe obuchenie*, 4.

29 Ladanov, *Programmirovannoe obuchenie*, 5

30 Timofey I. Rostunov, "Est predpossylki k perekhodu na novye metody" [There are preconditions of adopting new methods], *Vestnik Vysshei Shkoly* 1 (1963): 12–18.

31 M. P. Pavlova, "Pedagogika, sozdaiushchaia tip novogo cheloveka" [Pedagogy which makes the new type of man], *Nachalnaya shkola* 3 (1963): 11–18.

Psychological Rationale: The Making of the Unorthodox West

The "Western" idea of programmed instruction went through the process of dissociation from its "origins" at the hands of anyone who wanted to work on it in the Soviet Union. As the "origins" of the American version of programmed instruction were situated in the field of behavioral psychology, the latter became the main target of Soviet scholars and political elites. Soviet scholars, while willing to work with the "import", demarcated their distinction from American scholars, thereby devising a particular image of their American colleagues.[32] Even though Burrhus Skinner was known to have been a keen follower of the Soviet psychologist and physiologist Ivan Pavlov, whose work reportedly inspired Skinner to develop the field of behavioral psychology, neither this nor his active correspondence with the Soviet psychologist Aleksandr Luria prevented crushing criticism of Skinner's methods from Soviet authorities and scholars. On the official political level, for example, a clear distinction was made, as the Deputy Minister of Education in Russian Socialist Republic, Nikolai Aleksandrov, announced in 1965: "The original idea of programmed instruction, developing in the USA, is based on the data from zoological psychology [animal psychology], is grounded on the methodological conceptions of behaviorism, and heavily relies on pragmatist pedagogy. In other words, it builds upon pedagogical and psychological grounds that are unacceptable for the Soviet school."[33] Aleksandrov derogatively referred to behavioral psychology as "animal psychology" on account of its transposition of experiments on animal behavior onto human behavior.

The "unacceptable" conceptions of behaviorism were often condensed in the idea of a mind as a "black box". In his behavioral psychology, Skinner deliberately refused to deal with the mind and picked behavior as his main object of research, thinking that the experimental study of behavior would finally grant psychology the status of a "science". This kind of approach in psychology allowed Soviet scholars to claim that the American conception of PI was fundamentally flawed.[34] Labeled in the Soviet Union as "bourgeois psychology", behaviorism was claimed to reduce all psychological activity to diverse forms of reflexes and, thereby, to

32 For example, Mashbits and Bondarovskaya, *Zarubezhnye*; Piotr Ya. Galperin and N. F. Talyzina, "V osnove – upravlenie protsessom usvoenia znanij" [The control of usvoenie at the basis of PI], *Vestnik Vysshei Shkoly* 14 (1965): 19–26; Braslavsky, "O nekotorykh zarubezhnykh kontseptsiyakh."
33 Nikolai V. Aleksandrov, "Problemy programmirovannogo obucheniya" [The problems of programmed instruction], *Sovetskaya Pedagogika* 6 (1965): 5.
34 Mashbits and Bondarovskaya, *Zarubezhnye kontseptsii*, 128–129.

deny the cognitive function of the psyche. Contrary to Skinner's intended aim of gaining psychology the status of a "real science", Soviet scholars asserted that "antiscientific nature of such an approach to mental activity was obvious."[35] The Soviet psychologists thus discarded the behaviorist "black box approach", reportedly due to its indifference to what was happening "inside the mind". They claimed that the internal processes – and not the external behavior emphasized in the "black box approach" – were the main stage of an educational process. "For a behaviorist," explained the Soviet psychologists Piotr Galperin and Nina Talyzina, "the purpose of education is to shape the system of external reactions, which is planned beforehand. [...] In all instances, at the center of this conception stands the correct reaction (correct answer) and, in all instances, the orientation [or activity] of a student is overlooked."[36]

Soviet psychologists insisted on the fundamental difference of the Soviet concept of human "activity" from the American concept of "behavior", desperately trying to prove that their "activity", unlike "behavior", included something more that the external action. They connected this difference to the larger difference in the Soviet approach to human development and learning. Soviet scholars claimed that the behaviorist conception of human development was based upon the idea of adaptation to the environment, while Soviet psychology envisioned a human being as an active agent of change. This allowed them to claim that the American idea of teaching amounted to "training", while the Soviet model was about "upbringing" and "education". This strategy of differentiation led Galperin to publicly denounce also some local "physiological" views upon learning:

> The authors of PI abroad know only one thing: Repetition, repetition, and again repetition. [...] I must admit that in our country too, many think that *usvoenie* (learning) consists of blazing of the nerve path, in the deepening of the "rail track", which is being laid in some synapses of the brain. Not knowing the mechanism of *usvoenie*, these psychologists and pedagogues mechanistically imagine its physiological foundations.[37]

At the same time, it should be mentioned that the Soviet image of Americans as unorthodox behaviorists persisted, despite the actual developments across the Atlantic. By 1960, American scholars were already starting to consider that very 'internal' aspect emphasized by the Soviets – the benchmark here being Jerome Bruner's *The Process of Education* – and were living through what was then called the

35 Braslavsky, "O nekotorykh zarubezhnykh kontseptsiyakh," 25.

36 Galperin and Talyzina, "V osnove," 21.

37 Piotr Ya. Galperin, *Programmirovannoe obucheniye i zadachi korennogo usovershenstvovaniya metodov obucheniya* [Programmed instruction and the tasks of fundamental improvement of the teaching methods] (Moscow: Ministry of Higher and Secondary Specialized Education, 1964), 7.

"cognitive revolution" in psychology, the move away from behavior towards mental functions. This transition was persistently and conveniently ignored by the Soviet scholars, eager to keep the behavior vs. activity dichotomy, through which the difference between American vs. Soviet programmed instruction would be expressed. And even when the "cognitive revolution" was mentioned in the Soviet sources, it was still described as an extension of the "mechanistic approach to a human being":

> In the American psychological literature, there's the following paradoxical position: The justly criticized ideas about behavior, based on the concept of reflexes, are getting replaced by the new, more complex ideas, but still mechanistic, because they are the product of direct transfer of the principles of automata – no matter how complex – onto behavior. The main limitation of such approach is that the important problem of specificity of human behavior is not distinctly articulated.[38]

The Soviet scholars fashioned their own image against the one they constructed of their American colleagues. They claimed the exceptionality of the Soviet approach in its intention to focus on the "specificity" of the human being and human learning without resorting to animal experiments or technological metaphors. They planned to attend to precisely that which they believed the Americans deemed unintelligible (the mind as black box) and approach it through the idea of human development/learning as *active internalization*, or *usvoenie* in Russian – the central concept of Soviet education and educational psychology. Programmed instruction in the Soviet Union promised to steer this process. "Active internalization" was positioned as the opposite of American "repetition", which again was used as an argument for the differentiation of Soviet and American PI: "the American approach, which does not deal with the governance of 'internalization' or 'phased formation of mental actions', is instead focused on systematic repetition of all the same units (of information), resulting in memorization rather than understanding".[39] Against this perception of American psychology, the Soviet scholars eagerly imagined themselves as having the "moral high ground" since they approached the human being and human learning from a humanistic, as opposed to an "animalistic" or "mechanistic", perspective. They claimed to be alone in prioritizing the human being and its internal, rather than external, processes of learning.

38 Tikhomirov, "Nekotorye tendentsyi v amerikanskoy psikhologii," 144.

39 B. V. Gnedenko, "Simvol progressivnyh idei i motodov v pedagogike" [The symbol of progressive ideas and methods in pedagogy], *Vestnik Vysshei Shkoly* 5 (1965): 15.

Historical-Educational Rationale: The Making of the Irrelevant West

The strategy of attacking behaviorists in order to decouple PI from its "origins" was soon complemented by another approach. This approach to programmed instruction described the new method not as the invention of behaviorism, but as a legacy of "the best pedagogues of many epochs aiming at improving the efficiency of pedagogical labor, both the teachers' and the students'."[40] Programmed instruction, thereby, was turning into a "natural" development, the inevitable and ultimate step in the evolution of educational ideas. The former Soviet Navy admiral and cybernetics promoter Aksel Berg started defining PI as the successful end product that summoned the wishes of pedagogical thought through all places and ages, suggesting that all the developments in education were directed towards rationalizing the process of teaching and learning. This globalizing and deterministic argument, in line with the Soviet Marxist-Leninist conception of the development of history, cast the behaviorist origins of programmed instruction aside, as well as the obligation of Soviet scholars to criticize behaviorism every time they intended to work with PI. Through this perspective, PI became larger than behaviorist theory, soon considered by the Soviets as just a provisional "host" for the new method and the "didactic system" that it created. As such, PI became seen not as a momentary trend, but the materialization of centuries of work towards the rationalization of education.

This thinking was later condensed in Nikolay Nikandrov's monograph on the history of PI (1970), where he argued that behaviorism could have never been the original theoretical foundation for PI. Nikandrov used examples from scholarship done in the 1920s and 1930s, particularly by Sidney Pressey in the US and Célestin Freinet in France, to argue that these researchers did not need to adhere to behaviorism to share the set of principles about learning on which behaviorists had based their work. "This fact," continued Nikandrov, "is very important to us since it shows PI in a different perspective: PI as the result of work by different psychologists and educators having different departure points and united by the same goal – to optimize learning."[41] Like Berg, Nikandrov claimed that PI, being popularized as a behaviorist invention, in fact emerged from the sum of all previ-

40 Aksel I. Berg, "Teoria i praktika programmirovannogo obuchenia. Navstrechu Vsesoyuznoi konferentsii" [The theory and practice of programmed instruction: Towards the All-Union conference], *Vestnik Vysshei Shkoly* 11 (1965): 66.

41 N. D. Nikandrov, *Programmirovannoye obucheniye i idei kibernetiki* [Programmed instruction and the ideas of cybernetics] (Moscow: Nauka, 1969), 21.

ous work on pedagogical thought and was set to rationalize the process of education.[42] To prove the irrelevance of behaviorism for programmed instruction, Nikandrov mentioned the cyberneticians Gordon Pask in England and Helmar Frank in West Germany, who were likewise working in the direction of PI but through different means: Pask, by devising teaching machines guided by the theory of governance, and Frank, by establishing cybernetic pedagogy upon the work on information psychology, reportedly approached the topic of PI even before programmed instruction had spread to Europe.[43] Nikandrov selected these examples to create the impression of a converging evolution of ideas in education, despite cultural or national differences, framing the optimization of education as the ultimate need and reason for international movement.

Nikandrov, like Berg, eliminated the necessity of discursive "destruction" of behaviorism, turning it into an insignificant aspect in the overall development of PI. This supported his further active calls for international exchange and his enthusiasm for learning from the experiences of other countries, specifically highlighting West Germany. West Germany seemed to Nikandrov to be a successful case of a "natural" replacement of behaviorism by cybernetic pedagogy – the direction that West German cyberneticians and educators were working on before the spread of PI in Europe. When PI finally became the topic of conversation in West Germany, information processing psychology[44] and cybernetic pedagogy soon integrated it into their subject of study. Nikandrov referred particularly to Frank's work on the formalization of educational processes, emphasizing the parallels with the Soviet cybernetician Viktor Glushkov, whom Frank often cited. Nikandrov saw a lot of potential in this collaboration for the Soviet style of PI to establish itself exceptionally upon the foundations of cybernetics as well, without the need for a psychological theory. The international popularization of PI based on cybernetics, and not behaviorism, made it possible to imagine an ideology-free exchange among countries, which Nikandrov keenly encouraged.

The history and development of education was constructed by Soviet scholars as a linear progression towards the most "optimal" system and methods, with the rationalization of education as its ultimate purpose. The example of Nikandrov, and his writing of the history of PI, shows that this approach was used to recon-

42 Nikandrov, *Programmirovannoye obucheniye*, 9.

43 Nikandrov, *Programmirovannoye obucheniye*, 35.

44 With the emergence of cognitive psychology, the new field of information (processing) psychology was coined by communication and information theorists who envisioned the thinking process as being similar to the processing of information by computer, as can be seen, for example, in Claude Shannon and Warren Weaver, *The Mathematical Theory of Communication* (Urbana: University of Illinois Press, 1963).

sider programmed instruction and deny its status as the American behaviorist "invention", placing it within the linear progression of educational thought instead. Programmed instruction was thus seen as the embodiment of the optimization attempts by educational thinkers through the centuries. Such a historiography effectively removed the "threat" of behaviorism in the framework of programmed instruction in the Soviet Union, and created the space for imagined intelligibility among the countries working on PI as an objective and rational technology. The role of the "West" as the origin of PI became irrelevant and invisible.

Outlook: Soviet Discursive Strategies and the Making of the "West"

The implementation of programmed instruction, originally an American idea, in the Soviet Union was accompanied by different strategic processes – from radical differentiation from the "West" to the marginalization of the "West". Programmed instruction was introduced into Soviet military training institutions with the rationale of defending against the "imperialist armies" of the West, when the latter were believed to use PI in the training of their military personnel so that they would be ready to wage "aggressive wars" against the rest of the world. This invented image of the "West" as the aggressor complemented the manufacturing of the Soviet self-image as the country that would adopt programmed instruction exceptionally, to "safeguard" world peace. This antonymic approach also conveniently enabled the Soviet Union to build the desired image of itself as the only actor with humanistic and human-oriented psychology. The Soviet psychologists and officials, criticizing the behaviorist foundations of programmed instruction, were opposed to behaviorist scholarship while at the same time placing "activity" at the center of their psychological school of research. Such a radical differentiation between American "behavior" and Soviet "activity" is yet to be researched. The American behaviorists were described by the Soviet scholars as ignorant brutes – even after the cognitive revolution, the Soviets conveniently stuck to the definition of American psychologists as behaviorists. This is perhaps the most illustrative case of how the "enemy" (i. e., the "West") was, in fact, created to serve the domestic purposes of the Soviet Union, to deepen the antagonism and generate extra tension that would keep the Cold War going. Finally, the discussion of Soviet legitimation strategies concluded with the outright denial and marginalization of the behaviorist foundations of PI by Soviet scholars, who claimed programmed instruction was the "natural" development of centuries of "pedagogical thought".

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