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Publication Activities of Russian Universities: The Effects of Project 5–100

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Abstract

We estimate the effects of the Russian University excellence program (Project 5–100) initiated by the Government in 2013 (Project 5–100) on the research performance of those leading Russian universities that received, on the competitive basis, substantial financial support within this program. While the publication output of Russian universities in general has increased in recent years, we estimate whether there is significant added value from the Program, that is, whether the extra increase in productivity takes place in selected universities. We use econometric analysis of longitudinal data applying the linear growth model with mixed effects, with the number of publications (total number, per capita, and publications in high-quality journals) as a dependent variable. We demonstrate that there is a positive significant effect of the Program that appears from the very first years of its implementation—that is, universities that received financial support demonstrate a substantial steady increase in publications measured in both total numbers and per capita (including publications in the top-25% of journals) when compared to universities from the control group.

Keywords

research universities, leading universities, university research performance, scientometrics, publication output.

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The Myth of University Strategy

Market Niches and Organizational Careers of Russian Universities

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Abstract. Many attempts to build a typology of post-Soviet universities are based on the idea that a university development is an outcome of implementation of a strategy chosen by the organization's managers. It is assumed that the choice of strategy is responsible for achievements and failures of a given organization. The article offers and statistically evaluates an alternative, non-voluntarist model of university evolution inspired by Carnegie School theory of organizations and a Lamarckian approach to organizational development. The model rests upon three assumptions: (i) organizations are economically motivated; (ii) they have no consolidated will, rather representing a conglomerate of internal agents that make decisions independently; (iii) organizations differ not so much in the nature of their decisions as in the chances for their successful im-

plementation. These chances are predetermined by the starting points of university evolution: legal status (state/private, main/branch campus), belonging to a major "organizational family" (teacher training universities, colleges of arts and culture, etc. and geographic location. Universities do not choose a development vector but find themselves in a narrow corridor imposed by the environment. The data of the Monitoring of Education Markets and Organizations survey is used to demonstrate how an awareness of these elementary characters allows correctly predicting distribution of 75% of universities across four main types of university economies existing at the time. The 2013–2014 Monitoring of Educational Institution Performance indicates further that the distribution of gains from the "research turn" in state science policy can also be largely predicted from the universities' ascriptive characters.

Keywords: organizational theory, sociology of higher education, higher education in Russia, university management.

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A number of people and institutions contributed to the creation of this article. Analysis of the data obtained from the Monitoring of Education Markets and Organizations was made possible with the support of Isak Frumin and Ivan Pavlyutkin. University Effectiveness Monitoring data was collected thanks to the skilled work of Anastasiya Kincharova and Nikita Shalaev. Tuition fees were analyzed by Tamara Kovaleva.

The data on transformation of the organizational population of universities were retrieved by Anna Grigoryeva, Ekaterina Dyachenko, Vladimir Korshakov and Asya Mironenko. I am

A widespread idea about universities is that they develop—or at least can and must develop—by consciously implementing a specific strategy adopted by the management and approved by the staff and/or external stakeholders. Giving credit to this idea, universities elaborate all sorts of master plans and roadmaps¹ declaring their intention

¹ Of course, roadmaps have other applications as well: for example, they represent explicitly assumed obligations, where the management can be held

to move in a specific direction, which they post on their websites and send out to their trustees and ministerial bureaucrats every year. But to what extent is a university actually able to select willfully what we can define as its strategy (understanding strategy as one of the possible lines of action, which an institution will keep to, once selected), and to what extent can this choice influence its further development? In other words, is it true that the prosperity of some universities and the decay of others can be attributed to better strategies selected by the former?

There is a simple way to answer this question. If the trajectory of university development can be predicted quite accurately knowing its starting point and some external context characteristics beyond the university's control, any official strategy adopted while moving along this trajectory was either a purely ritual act addressed towards the external context² (if the university had declared an intention to move in one direction but moved in another instead) or a documentation of the only possible behavioral policy under the given circumstances (in this case, the university closely predicted where it would be without being able to influence anything). Either way, when we try to explain university development by willful *selection* of a trajectory, we get involved in what social psychologists refer to as "fundamental attribution error", i. e. the tendency to attribute behavior to internal characteristics of the agent rather than external factors [Ross 1977; Gawronsky 2004].

This article attempts to evaluate the free will the degree to which the will of the post-Soviet university administrators was free and identify the accuracy of predicting the niche of a university with only its basic characteristics at hand: whether it is public or private, main or branch campus, and which of the big "families" it belongs to in the case of it being a public one. This way, the importance of strategy choice will be evaluated *a contrario*, i. e. by testing an alternative model where the economic behavior of a university is largely determined by external factors.

The article is structured as follows. First, it provides a short overview of studies devoted to the classification of Russian universities based on their selected economic strategies. Next, the external constraints which universities encountered on their development path and which determined its trajectory, according to our alternative model, are analyzed. Further on, two arrays of data are explored: (i) information on the structure of educational institution budgets in 2006 retrieved from the Monitoring of Education Markets and Organizations (MEMO) and (ii) the basic economic performance indicators of uni-

grateful for the important observations made by Irina Abankina, Katerina Guba, Aleksey Klyuev, Dmitry Semenov, Igor Chirikov and other discussion participants in the workshop on university typologies held on October 20, 2016 as part of the 7th International Conference of the Russian Association of Higher Education Researchers. I would also like to thank Harley D. Balzer, Andrew Wachtel, Natalya Forrat, Andrey Shcherbenok and Andrey Yakovlev for their feedback provided at the round-table conference on the evolution of post-Soviet universities held on November 21, 2015 as part of the Convention of the Association for Slavic, East European, and Eurasian Studies (ASEES), as well as the anonymous reviewers from *Voprosy obrazovaniya*.

accountable for their non-fulfillment. However, strategic plans are often developed by institutions without external pressure, as a response to purely in-house drivers.

² Or similar to plans for the year which we make rather to reduce our fear of uncertainty than to actually implement them.

versities obtained from the 2014 University Performance Monitoring conducted by the Ministry of Education and Science. The MEMO data allows for analyzing the results of university development during the first 15 years of the post-Soviet era. Effectiveness monitoring studies will provide the opportunity to assess the effectiveness of nearly a decade of vigorous government interventions carried out as part of the “research turn” in a context where a demographic decline began to undermine the existing university economy. In conclusion, research findings, their limitations, methodological and practical implications will be discussed.

1. Classification of universities based on their organizational strategies

The existing studies on the classification of Russian universities have some features in common. All of them use government statistics indicators (Form No.3-nk³ and the University Performance Monitoring data) as the most reliable and accessible for all universities. These indicators are interpreted as signaling the choice of economic adaptation strategy allegedly made by the university. A typical example is the study by Tatyana Klyachko and her colleagues, the first of its kind, where university strategies are classified based on three presumably deliberate choices: (i) seeking to ensure the ultimate quality or financial stability; (ii) engaging in academic or non-academic activities; (iii) relying on intensive or extensive development [Klyachko et al. 2002: 99–100]. To understand what choices were made by specific universities, Klyachko and her colleagues used Form No.3-nk statistics. A high percentage of PhD degrees among faculty members was interpreted as a focus on quality, a large proportion of rental revenues as orientation towards non-academic activities, and growing enrollment rates as an indicator of expansion trends [Ibid.: 109–110]. However, there is an arguable point in these speculations: events that occurred to an institution are explained as a result of its choice, not as effects of the external context in which that choice was made. Take expansion, for instance: it has been commonly believed, at least since Max Weber’s times, that any bureaucracy seeks expansion and only stops growing under the influence of external, not internal factors. Universities are not ordinary bureaucracies, and one can cite examples showing that they sometimes impose enrollment limits voluntarily to guarantee a high-quality student body. Still, we cannot reject by default the hypothesis that non-expanding universities were simply unable to expand because they were denied government-funded places or did not attract a sufficient pool of candidates—and not because they decided against expansion.

³ The format of the document containing information on state and municipal higher education institutions

Despite the arguable nature of some of the underlying assumptions in the study by Klyachko and her co-authors, they were often reproduced in a number of studies that followed. An important book by Nadezhda Titova [2008] refers to a similarly conceived solution tree: a university decides in the first place whether it will develop rapidly, slowly, or will not develop at all (just imagine a university management that makes a willful decision not to develop at all!), then whether it will develop in one or more directions, intensively or extensively, with a focus on quality or financial standing, engaging in activities within or outside their specialization [Titova 2008: 129]. Titova makes a number of interesting remarks on statistical correlations between the types of strategic behavior and the specialization and region of a university [Ibid.: 224–250] but does not allow for the possibility that universities rather find themselves forced to stagnate than deliberately refuse development. An updated version of this classification can also be found in [Abankina et al. 2010].

The same bone can be picked with the most recent publications devoted to university classification. A complex three-tier classification is built in the monumental article by Yaroslav Kuzminov, Dmitry Semyonov and Isak Froumin [2013], which provides a comprehensive picture of the evolution of higher education in Russia from the first Soviet five-year plans until today. At first, universities are classified into research universities, industry-specific universities and infrastructural universities, and then each of the categories is divided into subcategories specific to the category. For example, universities are divided into subcategories depending on whether they exercise a monopoly in their region and whether they have managed to ensure selective admissions, while industry-specific universities are subcategorized based on their selectivity and commitment to the specialization, etc. The only thing this comprehensive picture lacks are hypotheses on the reasons behind assigning universities to this or that category. In fact, such hypotheses only take place with industry-specific universities: those supplying cadres for successful industries maintained both selectivity and specialization. Apart from that, however, nothing is said about why some universities manage to diversify and maintain their specialization, monopoly and selectivity while others do not; neither is it explained why some universities become research universities while most never do. Again, the reader may have an impression that this is all about the strategic choices made by the university administration⁴.

This article does not seek to argue with the valuable empirical generalizations offered by the cited studies. Instead, it seeks to comple-

⁴ There is one work that stands out though. In particular, [Abankina et al. 2010] is interesting for the important methodological innovation in hierarchical cluster analysis it offers. Again, there is a typology built around six official statistical indicators, but these are partially new indicators, and the typology is based on purely formal criteria. New types emerge as a result, but they

ment them with some statistical observations and propose a different interpretation of their findings. This is an attempt to identify *to what extent* the “innate” characteristics of a university (type of ownership, location, specialization) determine its development trajectory. This data can be used to provide a critical assessment of the very idea of describing this trajectory in terms of a strategy.

2. The “organizational career” metaphor and the overall research design

The choice of this approach was inspired by sociological research on social stratification. Since the publication of Blau and Duncan’s book [Blau, Duncan 1968], social inequality has largely been studied through investigating individual careers, or career trajectories, defined as shifts between positions within an organization, in the labor market, or in the class structure as a whole⁵. The key question raised by this career research perspective is about the factors boosting and inhibiting career success. Do women face a glass ceiling? To what extent will an upper-class child be more likely to finish his or her life in the same upper class than a child from a family of low-qualified workers? The general pathos of many—if not the majority—of such studies consists of demonstrating that an individual’s career is largely predetermined by the starting point; deliberate decisions made by individuals add little to the predictive power of the starting point of their career. Pierre Bourdieu’s studies [Bourdieu, Passeron 1990] are probably the most famous example of such rhetoric in sociology of education. This article seeks to find out to what extent this logic can be applied to research on development trajectories of educational institutions.

Traditional sociological techniques in career analysis will be applied in this article to universities instead of individuals. In this regard, this study can be classified as research on organizational careers⁶. Like individuals, institutions move up or down the career ladder, sometimes falling down⁷. As with individuals, an organization’s career de-

are never given any meaningful interpretation in terms of strategies or in any other way. It also remains unclear which processes make a university fall into a specific category.

⁵ Statistical research on shifts between classes had been born long before Blau and Duncan’s book was published. It is represented, in particular, by Pitirim Sorokin’s works of the 1930s. However, Blau and Duncan were the first to popularize the use of multivariable regressions in social mobility research, which have since become the main method of evaluating the determinants of mobility.

⁶ In the traditional usage, *organizational career* denotes an individual’s career in an organization, not an organization’s career [Glaser 1968]. However, the term has no established usage in Russian, allowing us to use it with a different meaning. In addition, at least when it comes to public universities, we can approach the whole system of public higher education as a single super-organization with individual universities shifting between positions within it.

⁷ The metaphor has some limitations, though: basically, universities can engage in transformations that are unavailable to individuals, e. g. by merging

velopment may be explained by the starting point, situational variables, deliberate decisions, or even interactions between all the three (the same behavioral policy may result in success for some organizations under specific conditions and failure for others, or under different conditions). Describing an organization's trajectory in terms of a deliberate strategy will inevitably bring the factor of administrators' decisions to the foreground. This paper offers an alternative model to allow for the effects of the starting point and situational variables. In order to identify the variables that can play a role in such an analysis, let us begin with what has been known about the general organizational behavior of post-Soviet universities so far. Keeping this in mind, are able to hypothesize the determinants affecting university career development trajectories.

2.1. What are the determinants of organizational careers of Russian universities? A few hypotheses

The first important consideration will be that organizational behavior of a university—economic in the first place, but other types of activities as well—is largely economically driven [Cohen, March 1974; Garvin 1980; Winston 1999]. The fact that a university is a non-profit organization does not mean it is not concerned with profit maximization⁸. Non-profits need to avoid bankruptcy too. This was obvious-

or dividing. However, it does not depreciate the very logic of research on organizational careers.

⁸ This aspect is somewhat sophisticated as it remains unclear which economic parameters a university seeks to maximize. In their behavioral theory of the firm, Richard M. Cyert and James G. March [Cyert, March 1963] agree that there is no unambiguous answer to this question even in the seemingly obvious case of for-profit organizations. Different stakeholders may have different visions of an organization's goals (owners think profit, management think market share, trade unions think increase in production and jobs, etc.). The uncertainty is even higher with universities. A university may maximize total funding, profits, number of FTEs, salaries for specific staff categories, or cost of their services. This article confines itself to the assumption that post-Soviet universities had maximized the income opportunities of their staff before the Ministry embarked on active interventions around 2006 (see below). "Income opportunities" may be interpreted in three different ways: (i) opportunity to earn more for the same work; (ii) opportunity to earn the same for less work; or (iii) opportunity to find additional work in the same university. The hypothesis of this study is that universities adopted any initiative allowing them to increase the earnings of some employees, provided that it would not affect others' earnings perceptibly and in the short term or that the beneficiaries could suggest a viable reallocation solution to compensate for losses of the affected party (side payments). Every word in this under defined explanation deserves an independent article. "Perceptibly and in the short term", for example, means that actions impairing the conditions for other staff members are possible either if the latter are unaware of them due to the existing information screens (e.g. the rector's office affairs are normally considered the rector's preserve and are left to their discretion, so that they can hire their relatives or provide individual employees with astronomic bonuses, as compared to faculty salaries) or the effects will be seen in an indefinite period of time (e.g. when colleagues bring down

ly true for post-Soviet academic institutions, which were consistently underfinanced⁹.

The strategy approach implies that every university decides on the development direction so as to satisfy its economic needs. Our alternative hypothesis states that any university would prefer developing in all directions at once, expanding its “foster resources” as much as possible, yet it cannot always succeed equally everywhere. Its evolution is hindered by external obstacles, which shape its individual face. There is no reason to believe that some universities deliberately abstained from leasing premises or engaging in contracted research, and least of all from offering legal education. However, not all of them had leasable premises, or anything to offer to industrial sponsors—and naturally, not all of them were allowed to provide legal education.

The main barriers shape market niches and determine which university will fill which niche. Therefore, an economic typology of universities should be, in fact, a classification of barriers. A retrospective view on the evolution of a university may give the impression that it wanted to fill a specific niche and moved exactly where it wanted to be. However, market niches differ in their attractiveness, and some would hardly be ever consciously picked by anyone. In reality, the “choice” of such a niche means there was no other choice. Forced economic specialization dictates further divergence as universities evolve to adapt as much as possible to their niche and develop different degrees of readiness for change in the outside environment, non-optimal specialization sometimes becoming a competitive edge under new circumstances.

What kind of barriers could play the greatest role in dividing Russian universities into categories and subcategories? Based on what has been said above about the economic rationale behind their behavior, it should probably be constraints to the most important lines of financing, i. e. something that opened or closed incomings from

the standards of teaching beyond all reason). Obviously, these characteristics vary over time as well as from individual to individual, yet they are part of the coexistence principle “live and let live”. This logic may have changed due to the recent political reforms in university, which have inflated the role of the rector and the significance of revenue from the programs supporting the leading research universities, so that the focus has shifted to maximizing profits in areas covered by the University Effectiveness Monitoring and various roadmaps (such as total R&D volume per faculty member). However, whether such changes actually took place and how big they were remains an open question.

⁹ The fact that those concerns were not reduced by a manifold increase in university financing speaks volumes about human psychology. In the case of faculty salaries, it was apparently not so much about the absolute volumes as about university teachers considering themselves part of the middle or even upper middle class, with the traditional Soviet perceptions as well as global models in mind, and thus feeling undervalued if their salaries fell short of this standard.

the key economic sources. As we will see below, tuition fees and the funding allocated for government-subsidized students were the main sources of finance for most post-Soviet universities. So, maximizing the revenues in the early post-Soviet period (up to 2006) meant first of all, and almost only, increasing the student population. It allowed for providing more FTEs, promoting professors to department chair positions, and offering internal secondary employment opportunities. Besides this, it also allowed for an economy of scale in so many ways, from showing one lecture as a few lectures delivered to different groups on the balance sheet to selling a ton of copies of university-published study guides on a “voluntold” basis. The student population could be increased either by requesting higher entry quotas for government-funded places from the Ministry or by attracting students on a tuition basis¹⁰. The chances for having the entry quotas increased depended first of all on the following:

- (a) Public/private status. Although major private universities were granted one or two government-funded places from time to time, the general practice was to distribute those places within the public education system;
- (b) Being part of the right “family”. Subsystems of universities associated with specific ministries were a legacy of the Soviet (and pre-Soviet to some extent) higher education system. There were a few dozen of such subsystems, but many consisted of only one institution serving the ministry or the respective branch of government (e. g. the Moscow State Institute of International Relations run by the Ministry of Foreign Affairs). Other “families” included dozens of universities in various fields: education, agriculture, cul-

¹⁰ Students enrolled in Russian universities consist of two groups. First, all public and some private university universities have a quota allowing them to enroll a fixed number of students the costs of teaching whom are fully covered from the state budget. As institutions, rather than individuals, get funding, these quotas are described as “government-funded places” (*budzhetye mesta*). Until early 2000s, each university could distribute such places among schools and faculties at will. Later, however, witnessing skyrocketing numbers of graduates with law and economics diplomas, the Ministry started allocating quotas to specific majors, so that a university could train only a fixed number of students of physicists, linguists or philosophers. In addition to that, they can enroll a large number of students paying tuition fees (legally, this number is limited only by the university buildings’ capacities). Those receiving public funding have to demonstrate high results at Universal State Examinations, particularly if they apply for a popular major. Those paying tuition also took the same exams, but the entrance requirements for them are much milder. Necessary to add that what is translated as “majors” throughout this text are not majors in the US sense, but a highly specialized courses of studies which are to prepare individuals for particular occupations. Being enrolled in one of such courses, students have little opportunities to choose which subjects to study.

ture and arts, medicine, etc. It was much harder to convince a ministry to increase subsidies for a university that did not specialize in the relevant field. For example, an agricultural university was less likely to be granted additional management places than a classical university. The main “families” are described below;

- (c) Individual status within the “family”. Another practice inherited from the Soviet times consisted of differentiating between “senior” or head (*golovnye*) and “junior” universities. Senior ones were granted subsidies more willingly because they were believed to provide education of a higher quality and supposed to provide methodological guidance for the “juniors”¹¹. In the vast majority of cases, major universities were located in Moscow. There is no official status of a “senior” university today, but a semi-official classification of universities is preserved, correlating with the general territorial and administrative hierarchy of populated localities and affecting, apparently, the government’s willingness to grant subsidies;
- (d) Having competitors in the region. “Regional labor market demand” is one of the key arguments when allocating government-funding places to universities. Consequently, the first university to request subsidies for a major that has not yet been offered in the region will have more chance of getting them than the second one;
- (e) Overall patronage of the Ministry of Education and Science (whatever it may be called) for majors that are given top priority in terms of social and economic development strategies or national defense;
- (f) Popularity, measured by university selectivity. It used to be of prime importance during the early post-Soviet years, when higher education was largely understood as a means of satisfying the need for self-development. However, concerns about economist and lawyer overproduction put an end to interpreting the high popularity of some majors at a specific university as an explicit indicator of the need for heavier subsidies as early as the end of the 1990s. While extremely high popularity does not have far-reaching consequences anymore, extremely low popularity still does: the inability to fill the Ministry’s quota almost inevitably entails a quota reduction the following year;
- (g) Allies in the Ministry. Allocation of government subsidies to a specific university is lobbied by agents: an “academic entrepreneur” promoting a specific major, the rector, and sometimes even the governor—their connections with subsidy-allocating offices is a sizeable advantage for a university;
- (h) Lobbies in accrediting authorities. Before the functions of academic and methodological associations were assumed by the

¹¹ In Soviet times, university seniority was often indicated by the right to be presented theses for defense, which was sometimes granted to only one institution in a “family”, e. g. in culture and arts.

Federal Service for Supervision in Education and Science (Rosobrnadzor), it was vitally important for a university to have friends in the national expert councils who could lobby approval of new degree programs. Today, a lot depends on participation in the Higher Attestation Commission expert councils, journal editorial boards, and other agencies that can promote timely awarding of degrees to the faculty and give them an opportunity to demonstrate high publication rates.

A similar, yet shorter list will predict a university's chances for attracting fee-paying students, determined by major popularity and university prestige.

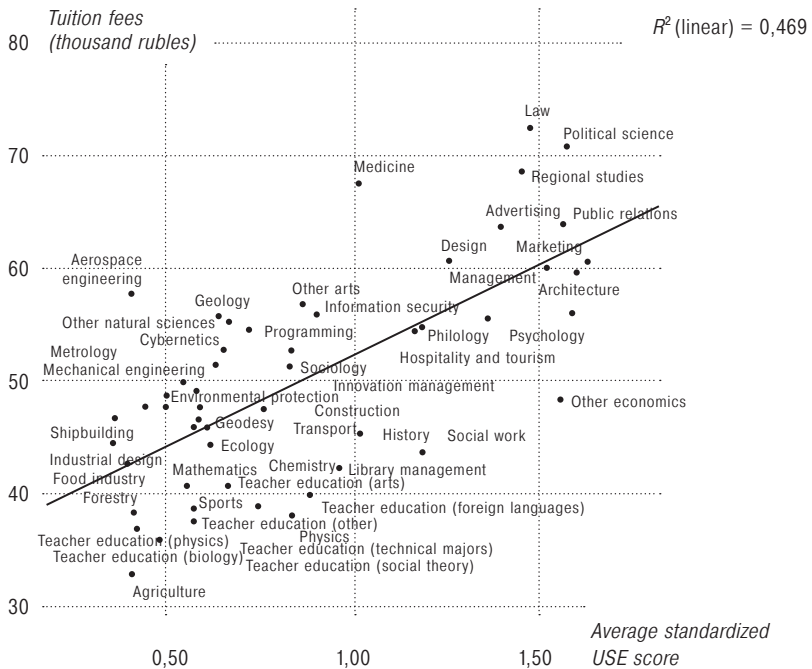
Majors differ dramatically in popularity/selectivity and average tuition fees. Figure 1 presents the relevant contrasts among the 60 largest majors and domains (for details, see [Kovaleva, Safonova, Sokolov 2017]). High school leavers and their families inextricably associate major prestige with the prestige of the respective occupation [Sokolov, Knorre, Safonova 2014]. This is an essential point, which explains why "families" have a prestige of their own, determined by the perceived attractiveness of the occupation they are supposed to prepare students for, from the Moscow State Institute of International Relations, theater and film schools at the top end to teacher training and agricultural universities at the bottom.

Just like the Ministry, students also envisage a status-based hierarchy of universities, which is easy to see when you compare the average USE¹² scores of candidates or tuition fees (when comparing tuition fees, we can conclude, for instance, that the popularity gap between law and physics in 2010 was approximately the same as that between the Bauman Moscow State Technical University, the most renowned technical school in the country, and the Moscow State Institute of Radio Engineering and Electronics, now Moscow Technological University). At the level of everyday knowledge, the main campus is higher than the branch campuses, and public universities are preferred over private ones in this hierarchy. Besides, there is also a hierarchy of regions, apparently the same as the one used by the Ministry, as well as the effects of academic reputation¹³. These considerations become particularly important as students have to constantly calculate in their own minds the relative attractiveness of various degree programs when choosing a university: should they choose the more

¹² Unified State Examination

¹³ Analysis of pricing policies in the 2010 education market revealed no positive effects of university age (the most powerful variable on the U.S. academic stage) on tuition fees or USE score selectivity. Academic reputation correlated significantly with admission selectivity, but not with tuition fees. Finally, the size of university and department showed a significant correlation with both USE score requirements and tuition fees [Kovaleva, Safonova, Sokolov 2017].

Figure 1. **The relationship between average tuition fees and the minimum USE score in 60 subjects in 491 public universities in the academic year 2010/11**



The figure does not include the film directing major with the annual tuition fees exceeding 80,000 rubles.

prestigious major in the less prestigious university, or vice versa, or maybe the more prestigious major in the more prestigious university for a tuition fee? Universities at the top of the hierarchy, which also belonged to a “decent family” (e. g. classical universities), can apply for subsidies for the most popular degree programs, while closing government-funded places and even enrolling some fee-paying students on unpopular majors. Private universities on the other end of the spectrum could only hope for selling the most popular degrees at undercut prices to students unable to qualify for government-subsidized places.

With all their diversity, the circumstances listed above are most often related to three inherent university characteristics that the management is unable to change—they would be referred to as the ascribed status if it was about an individual. These include general status (public/private, main/branch), being part of a “family” (for public universities), and being located in an administrative center (the capital or a large city being the center of a federal district, region, etc.). The status of the administrative center affects both the Ministry’s willingness to provide subsidies and the university’s prestige in the eyes of the students. “Family” determines which majors will be subsidized and how much they will be demanded among school leavers. Thus, these

are the characteristics that appear to be the most probable candidates for independent variables predicting university careers based on their starting points.

Judging from the available data, we can assume that the same variables will be significant in terms of attracting third-party investors. “Family”, obviously, determines accessibility and size of research grants and contracts with industry: in this regard, technical universities should have an advantage over institutes of culture and arts, for example. University reputation within a “family” can be expected to influence a funding agency’s or a customer’s willingness to provide funds to the same extent as it affects a student’s willingness to pay tuition fees. Agricultural universities dispose of vast unused premises that can be leased out or shown as “laboratory areas” on the balance sheet. In addition, the overall regional economy’s health affects the chances of getting industrial contractors too [Sokolov 2013]. Therefore, the list of possible independent variables that are good predictors of university careers looks rather short.

There can be one more variable to this model, affecting not merely the chances of falling into a specific economic category but the extent to which the development trajectory is determined by external factors, i. e. the overall proactivity or reactivity of a university. This variable represents the equivalent of the goal-setting skills and willpower of an individual. People who lack these qualities just go with the flow (e. g. by taking up their parents’ occupation), while those who have them can move up or across the stream, their career trajectories being much less predictable.

The political will of an institution is shaped by a number of factors, including the rector’s personal charisma, for example. However, in-house political regime seems to be the most influential determinant. The economic behavior model described above—expanding in all possible directions until an unsurpassable barrier is faced—goes especially well with decentralized organizational political structures, where economic decisions made by different university divisions are largely independent and university management mainly serves to mitigate conflicts between independent agents (e. g. to decide which department should be entrusted the development of an attractive new degree program¹⁴).

While being unable to evaluate intra-organizational political regime characteristics for all the universities, we still know that the degree of

¹⁴ New majors normally split from the closest existing ones (say, economists offer management, marketing and advertising programs, sociologists and historians introduce political science majors, etc.). It is not always clear, however, which of the existing majors is “closer” to the new one, so conflicts are a matter of course. Consider this good example: geographers, historians, sociologists, economists, designers, and even philosophers dispute the right to introduce the currently fashionable discipline of urban studies in classical universities.

centralization in university administration has increased significantly over the last decade. The image of an autonomous yet decentralized university is probably quite an accurate illustration of the higher education system between 1991 and 2006, in the period when universities were mostly left to their own devices, being encouraged in every possible way to earn their own living. University faculties and schools were often de facto independent legal entities with their own bank accounts in the 1990s and the early 2000s. This practice was later abolished, but what remained was the idea that schools should receive a fixed and, preferably, sizeable portion of their earnings. This often resulted in extremes of economic inequality within a university. In general, however, it was a sensible system that encouraged personal initiatives and was able to exploit them for the public weal. A university would be growing—or trying to grow—in all possible directions without much control exercised by the central authority. Such “organizational anarchy” has been mentioned in descriptions of American research universities [Birnbaum 1988] and confederations of colleges similar to Cambridge. Organizationally, they had very much in common with post-Soviet universities, at least at the early stage of the latter’s evolution.

The end of this early stage may be conventionally dated back to 2006, which saw the first effects of changes in natural trends: the 2006 high school graduates had been born in 1989, the last year of the baby boom. Besides, 2006 was also the start of the growth of governmental initiatives designed to change the existing university landscape radically. A keynote of those initiatives was the so-called “research turn”, consisting of attempts to assess and remunerate universities based on their conformance to the ideal image of a research university. This “turn” implied increasing the research funding distributed among universities on a competitive basis (National Research University Program and Project 5–100 being the major initiatives). Another keynote consisted of boosting the effectiveness of the university administration through amalgamation (beginning with mergers as part of the federal university program) and the rector’s power consolidation. The reforms were supposed to make rectors politically independent from in-house stakeholders and re-enable them to undertake independent initiatives. In theory, the change in accessible sources of finance was supposed to produce new market niches and new types of university economies. In addition, the regaining of free political will by rectors was expected to untie hands of university administrators—universities would finally be able to develop a strategy that would not be restricted to locally initiated creeping expansion. In terms of statistics, development in this direction would be marked by reduced correlations between ascriptive characteristics of universities and their current financial standing. This article seeks to find out whether these changes ever took place.

The analysis that follows is divided in two parts which correspond to two periods. The first describes the market niches that had devel-

oped by 2006 and evaluate the extent to which falling into a specific niche was determined ascriptively. The second part presents an analysis of changes in university careers and their determinants that had taken place by 2014. However, before embarking on this analysis, we will dwell on the variable which has been so far referred to as self-evident but requires careful handling—“families” of universities.

2.2. Pedigree of Russian universities

Soviet universities were affiliated to systems of ministries and governmental agencies whose needs in new cadres they were supposed to satisfy, with the partial exception of universities and polytechnic institutes that reported directly to the ministry in charge of higher education. The same ministry supervised teacher education universities whose graduates were supposed to serve the needs of secondary education, which was also part of the system.

Since the main point of this article is that the development trajectory of a university is determined by its institutional origins, a university classification based on the old Soviet system of sectoral affiliation is used. The most dramatic way to prove this point would be to demonstrate that the current position of a university can be predicted by its affiliation in 1991. However, this appealing plan is complicated by two things: first, institutions existing in 2006 or, even more so, in 2014, cannot always be identified unflinchingly with institutions that existed in 1991 (universities went through mergers from time to time, and it is often hard to identify the predecessor¹⁵); second, many institutions had no university status¹⁶ or did not exist at all (e.g. nearly all municipal universities) in 1991.

The solution developed for this study consists of focusing on a set of features that can help identify a specific present-day university with one of the “families” that have existed since the Soviet times, first of all on name pattern similarities and the fact of affiliation with a specific government department. It is assumed that the institutional environment sets limits on variations in university behavior and organizational

¹⁵ The acquiring university in a merger usually may be determined, but necessary information is often unavailable. For example, it is possible to figure out, by knowing the details, that Northern Federal University was born when Lomonosov Pomor State University (successor to a teacher education institute) was acquired by Arkhangelsk State Technical University (successor to a forest technical institute), not vice versa. Yet, such details are not available on all university mergers and acquisitions.

¹⁶ Further analysis largely uses the database on transformations that organizational nuclei of Russian universities have undergone since 1900. It transpires from this database that public universities were formed in the Soviet and post-Soviet periods in one of four ways: (i) by establishing “from scratch” (a possible but extremely rare case); (ii) by detaching a school (a not infrequent option in large cities); (iii) by granting autonomy to a branch; or (iv) by upgrading a vocational school. Such upgrades were especially common after 1991, giving birth to at least 30% of today’s teacher education and agricultural universities. Therefore, a study that compares the beginning and

structure (an agricultural university cannot get rid of agricultural majors but will find it difficult to introduce legal studies) and that external players (applicants and their parents, officials, prospective customers or research sponsors) are aware of these limits, such awareness defining their attitude towards a specific university.

Many “families” are small, often consisting of only one university, so they have to be grouped into “families” of at least 15–20 members, which is the minimum requirement for the regression analysis to make sense. Using the ISCED classification, “microfamilies” were grouped into two major clusters—engineering and technology opposed to economics and law. As a matter of fact, this classification principle was widely used in the Soviet system. The Great Soviet Encyclopedia of 1974 divides universities into the following categories: universities, economic universities, polytechnic universities, engineering (industrial) universities, agricultural universities, medical universities, teacher education universities, physical education universities, and universities of arts. Economic universities (which included financial and economic universities, engineering and economic universities, institutes of Soviet trade, etc.) and engineering and industrial ones (from architectural universities to river transport institutes) figure here as separate categories although institutions falling to them were affiliated with different governmental agencies¹⁷. The following university categories are identified in this study:

1. Universities
2. Technical universities
3. Socioeconomic universities and law schools
4. Medical universities
5. Teacher education universities
6. Institutes of culture and arts
7. Other public universities

the end of a development trajectory should involve not only higher education institutions but institutions of other types as well, e. g. vocational schools, which would increase their number dramatically.

¹⁷ Most industrial universities and the majority of economic ones have come under the authority of the Ministry of Education and Science. According to the data collected by the 2015 University Effectiveness Monitoring, public non-military universities are affiliated to the following governmental agencies: Ministry of Education and Science, Ministry of Health (medical universities), Ministry of Culture (institutes of culture and arts), Ministry of Sports (physical education universities), Ministry of Agriculture (agricultural universities), Federal Transport Agencies (for air, rail, sea and river transport), Federal Communications Agency, and Federal Fishing Agency. One-university families are affiliated to the Supreme Court, the Ministry of Foreign Affairs, the Ministry of Economic Development, the Ministry of Justice, the Federal Tax Service, and the Federal Service for Intellectual Property. Finally, a few socioeconomic universities are directly subordinate to the Russian government.

Universities, later renamed as classical universities, are understood as public universities whose names look like “N State University”, supervised by the Ministry of Education and Science¹⁸;

Technical universities are defined as public universities whose names contain the words “technical”, “polytechnic”, “technology”, “university”/“institute”, and/or an indication of a specific industry. Polytechnic universities were going to form an isolated category, but the boundary between polytechnic universities and other technical educational institutions turned out to be extremely permeable: a technical institute could be converted into a polytechnic institute and then to a technical university throughout its history (this is what happened to the Ural State Technical University, formerly polytechnic institute, founded as the Ural Industrial Institute). Meanwhile, crossing the boundary between technical and nontechnical universities is virtually impossible¹⁹. There is much more reason for identifying the following isolated subfamilies within technical universities: (a) architectural universities; (b) transport universities of different types (water, air, and rail transport universities which remain affiliated to their governmental agencies); and (c) telecommunications institutes (supervised by the Federal Telecommunications Agency).

Socioeconomic universities and legal schools represent the most fragmented group that includes a number of old “families”: financial and economic universities, engineering and economic universities, planned-economy universities, universities of Soviet trade, a network of higher party schools that has evolved into a network of public administration academies, institutes of consumer cooperation, and a few institutes founded directly by Ministries and governmental agencies (such as the Moscow State University of Economics, Statistics and Informatics (MESI), which trained specialists for the Soviet Union’s statistical service). The group is complemented with ministerial institutes of legal and law enforcement agencies (Ministry of Internal

¹⁸ The original intention was to discriminate between “old” universities, which lost their additional attributes before 1991, and “new” ones, which entered in 1992 as teacher education or polytechnic/technical universities. Just as vocational teacher education schools transformed into lyceums and then into institutes, they would sometimes become “no-attribute universities”. However, such conversions were comparatively rare after 1991, and the sample of 500 universities comprised less than a dozen examples, thus making statistical analysis impossible. Still, it would be interesting to see in the future whether such origins affect the current status of a university. Anyway, the local public seems to have long memories concerning the recent vocational teacher training past of some universities.

¹⁹ Vladivostok State University of Economics and Service, which evolved from the Far Eastern Technological Institute of Communal Service, may be cited as a counterexample. In this case, the university managed to redefine itself from technical to socioeconomic by re-defining “service”. Yet, this instance is exceptional.

Affairs, Ministry of Justice, and Federal Penitentiary Service) and the Russian State University for the Humanities with its branches²⁰.

One common feature of these universities is that their specialization is recognized as economics or legal studies by both prospective students and governmental authorities. Another common feature is that they retained the core of personnel with degrees in certain area that allows such universities to exploit the market demand for economic and legal majors, on the one hand, and to get subsidies for these majors, on the other. Meanwhile, they do not have the dead load of unpopular majors that cannot be gotten rid of, which is typical of technical universities. Subcategories within this category that could potentially be used in statistical analysis include the system of public administration academies and predominantly legal education universities affiliated to law enforcement agencies.

Medical universities, to which universities of dentistry and pharmacy have been added, remained supervised by the Ministry of Health throughout all post-Soviet transformations. One municipal nursing institute has also been included into this category.

Teacher education universities represent the largest yet well-structured “family”, traditionally reporting to the Ministry of Education. Such universities normally evolved from vocational teacher education schools during the 20th century. Some of them were eventually transformed into classical universities (e. g. Kaliningrad, Pskov and Novgorod State Universities); according to the statistics available, conversions from teacher education universities into universities took place regularly between the 1960s and the 2000s, with approximately five conversions per decade.

Institutes of culture and arts constitute a “family” that can be easily identified as affiliated to the Ministry of Culture. It includes the subfamily of institutes of culture and arts which have been charged with training employees for all cultural institutions in the region since the very beginning, and the subfamily of narrowly specialized institutes and academies which were most often founded as vocational schools designed to prepare artists in a specific field (e. g. Vaganova Ballet School, drama schools, Maxim Gorky Literature Institute, or conservatories).

Other public universities make up a rudimental category which includes one big “family” of sports universities under the auspices of the Ministry of Sport in this study, which, however, was not big enough for a statistical analysis. A number of municipal universities that did not

²⁰ Generally speaking, the Russian State University for the Humanities should be classified in the humanities category according to the ISCED classification, together with institutes of culture and arts. However, this study relies on the Russian tradition that defines history as a social science, and on the descent from the Institute of Archives, which rather resembled MESI than an institute of culture in too many aspects.

identify themselves with any major “family” were added to the category as well.

The following rule was applied to municipal universities: they were classified as part of an existing “family” in cases where they reproduced the exact name patterns typical of that category, e. g. named themselves as conservatories. If, however, the name of a municipal university had no analogues in any of the “older families” of public universities (for example, such fantastic beasts as “technical institute of humanities” or “institute of technical and information technology” were discovered sometimes), it would be ranked among “other public universities”.

3. Types of market niches, 2006.

Since the collapse of the Soviet Union, the sources of revenue for Russian universities have included government subsidies for specific degree programs, tuition fees (including fees for the main educational programs, supplementary and preparatory courses), research funding (public and private), donations, and proceeds from other activities (production, provision of services, leasing, etc.).

The relative proportions of different types of revenues in university budgets have been explored by the Monitoring of Education Markets and Organizations conducted by the National Research University Higher School of Economics (HSE) on a sample of several hundred public and private universities and their branches. Table 1 shows how these proportions were distributed among the major “families” listed above in 2006²¹.

As can be seen in Table 1, the proportion of government funding (not broken down by categories but representing allocations closely tied to enrollment statistics) varies dramatically from category to category. While private universities enjoy little or no government funds at all, subsidies account for almost one third (in socioeconomic universities) to nearly two thirds (agricultural “family” and institutes of culture and arts) of the budgets of their public counterparts. Dispersion is also great in the fee-based higher education sector: from private universities, where Bachelor’s degree tuition fees account for 80% of the budget, to agricultural universities and institutes of culture, where this proportion hardly reaches 20%.

Our next step is to try to identify the main types of university economies using hierarchical cluster analysis. A few economic typologies created this way have been described in the existing studies [Abankina et al. 2013]. However, strictly economic parameters, namely percentages of revenue from different sources, are used as primary scales in this study, contrary to previous experiments which used data on heter-

²¹ The database does not include the answers of respondents from universities where the percentages added up to more than 110% or less than 90%.

Table 1. Average percentages of different sources of finance in budgets of universities of different categories, 2006 (%) (standard errors italicized)

Type of university	Government funding	Tuition fees	Supplementary and vocational training	Preparatory courses	Research and development	Production	Leasing	Sponsors	Other sources
Industrial technology and construction (N = 56)	46.58 <i>19.799</i>	25.05 <i>16.165</i>	6.45 <i>6.726</i>	4.00 <i>7.230</i>	8.56 <i>8.697</i>	1.18 <i>2.466</i>	2.88 <i>4.607</i>	1.47 <i>2.996</i>	2.02 <i>4.203</i>
Agriculture and forestry (N = 21)	63.18 <i>16.990</i>	18.19 <i>11.937</i>	3.68 <i>4.769</i>	2.58 <i>2.811</i>	5.15 <i>10.739</i>	2.00 <i>5.046</i>	1.97 <i>2.510</i>	1.57 <i>2.872</i>	2.41 <i>5.021</i>
Economics and law (N = 69)	32.64 <i>28.784</i>	47.12 <i>31.825</i>	9.86 <i>12.301</i>	2.74 <i>4.042</i>	3.48 <i>5.819</i>	0.20 <i>0.868</i>	0.95 <i>2.812</i>	0.55 <i>1.888</i>	1.64 <i>5.249</i>
Healthcare (N = 17)	52.77 <i>21.379</i>	24.18 <i>13.235</i>	11.27 <i>10.174</i>	6.24 <i>12.243</i>	2.19 <i>3.419</i>	3.09 <i>9.927</i>	1.25 <i>1.799</i>	2.42 <i>5.635</i>	1.50 <i>3.693</i>
Education (N = 37)	58.61 <i>26.494</i>	31.22 <i>26.836</i>	3.81 <i>5.175</i>	1.83 <i>3.087</i>	2.26 <i>3.989</i>	1.18 <i>5.143</i>	0.68 <i>1.481</i>	0.72 <i>1.768</i>	0.52 <i>1.378</i>
(Classical) universities (N = 24)	43.48 <i>19.560</i>	32.93 <i>20.688</i>	6.86 <i>9.901</i>	4.65 <i>9.713</i>	6.55 <i>5.918</i>	1.37 <i>3.371</i>	1.03 <i>2.141</i>	0.51 <i>0.774</i>	2.23 <i>3.525</i>
Culture, arts and film studies (N = 38)	64.27 <i>28.722</i>	18.80 <i>23.058</i>	2.53 <i>3.437</i>	3.11 <i>4.543</i>	1.39 <i>3.209</i>	1.26 <i>3.867</i>	1.78 <i>3.907</i>	0.85 <i>2.059</i>	5.34 <i>14.177</i>
Private universities (N=175)	0.73 <i>5.666</i>	80.43 <i>23.591</i>	9.07 <i>14.722</i>	2.67 <i>5.768</i>	2.91 <i>5.326</i>	0.43 <i>2.077</i>	0.71 <i>4.826</i>	1.35 <i>8.994</i>	0.71 <i>2.508</i>
Other public universities (N=17)	51.99 <i>28.777</i>	16.69 <i>16.320</i>	3.58 <i>3.842</i>	3.79 <i>6.161</i>	1.30 <i>2.012</i>	1.77 <i>3.266</i>	.99 <i>1.662</i>	1.68 <i>3.730</i>	.23 <i>.518</i>
Total (N=459)	30.16 <i>31.683</i>	49.49 <i>34.771</i>	7.43 <i>11.458</i>	3.10 <i>6.076</i>	3.84 <i>6.391</i>	.88 <i>3.397</i>	1.24 <i>3.970</i>	1.17 <i>5.954</i>	1.59 <i>5.438</i>

ogeneous characteristics, mostly obtained from the ministerial statistics. A hierarchical cluster analysis was carried out considering budget percentages as counts and using an inter-group distance minimization algorithm to reduce the heavily right-skewed distribution of almost all variables. An obvious “elbow” was observed between the solutions dividing the data into four and five clusters: the gain in explained variance decreased sharply at the fifth stage—hence, the four-cluster solution was used. Table 2 displays the average proportions of all sources of finance for universities in the resulting four clusters.

The percentage of government funding in university budget grows from about 40% to almost 80% from type one through to type three. Type one, which can be defined as “balanced”, implies approximate-

Table 2. The main types of university economies in 2006. Results of hierarchical cluster analysis of 459 universities (standard errors italicized)

	Cluster				Total
	1 (N=76)	2 (N=67)	3 (N=68)	4 (N=218)	
Government funding	42.44 <i>11.656</i>	58.61 <i>11.011</i>	78.67 <i>14.087</i>	2.59 <i>6.965</i>	30.46 <i>31.823</i>
Tuition fees	35.25 <i>12.393</i>	21.73 <i>7.943</i>	7.09 <i>5.424</i>	79.24 <i>23.389</i>	51.03 <i>34.775</i>
Supplementary and vocational training	10.21 <i>11.486</i>	3.61 <i>6.683</i>	3.36 <i>4.975</i>	8.75 <i>13.397</i>	7.35 <i>11.491</i>
Preparatory courses	2.72 <i>3.334</i>	2.58 <i>2.847</i>	4.15 <i>7.780</i>	2.73 <i>6.266</i>	2.93 <i>5.733</i>
Research and development	5.69 <i>7.179</i>	4.86 <i>4.965</i>	1.94 <i>4.061</i>	3.09 <i>5.889</i>	3.64 <i>5.881</i>
Production	0.88 <i>2.464</i>	.88 <i>2.081</i>	1.31 <i>4.267</i>	0.54 <i>2.464</i>	0.77 <i>2.782</i>
Leasing	0.62 <i>1.308</i>	3.25 <i>4.443</i>	1.01 <i>2.840</i>	0.61 <i>2.214</i>	1.09 <i>2.824</i>
Sponsors	0.65 <i>1.595</i>	1.01 <i>1.947</i>	1.14 <i>2.619</i>	1.34 <i>8.222</i>	1.13 <i>6.037</i>
Other sources	1.67 <i>8.753</i>	3.44 <i>6.684</i>	1.44 <i>4.078</i>	1.08 <i>3.757</i>	1.61 <i>5.546</i>

ly equal proportions of government-subsidized and fee-paying students as well as higher revenues from supplementary education and research activities than in any other cluster. This type is opposed by type three, “public-sector” universities where government funds account for nearly 80% of revenues, all other proceeds being insignificant. The second type occupies a position between these two, yet closer to type one by R&D revenue. Finally, type four—“marketable” universities—is characterized by the overwhelming predominance (almost 80%) of fee-based Bachelor’s degree programs as the primary source of revenues.

To what extent were the types of universities described above “different but equal” and to what extent did they form a hierarchy? Data that can be obtained from the University Effectiveness Monitoring rather supports the assumption that the clusters build a hierarchy from the first one down to the fourth one. There is a consistent reduction in salary size (the proportion of salary expenses in the university budget

Table 3. The distribution of university categories among the four types of economy

	Cluster				Total
	1	2	3	4	
Industrial technology and construction	18 32.1%	21 37.5%	10 17.9%	7 12.5%	56 100.0%
Agriculture and forestry	2 10.5%	8 42.1%	8 42.1%	1 5.3%	19 100.0%
Economics and law	18 28.6%	6 9.5%	8 12.7%	31 49.2%	63 100.0%
Healthcare	6 42.9%	3 21.4%	4 28.6%	1 7.1%	14 100.0%
Education	9 25.7%	10 28.6%	12 34.3%	4 11.4%	35 100.0%
(Classical) universities	12 60.0%	7 35.0%	0 0.0%	1 5.0%	20 100.0%
Culture, arts and film studies	4 10.8%	9 24.3%	21 56.8%	3 8.1%	37 100.0%
Private universities	1 0.6%	0 0.0%	0 0.0%	169 99.4%	170 100.0%
Other public universities	7 41.2%	3 17.6%	5 29.4%	2 11.8%	17 100.0%
Total	76 17.7%	67 15.6%	68 15.9%	218 50.8%	429 100.0%

increasing though²²), popularity and median tuition fees (average tuition fees being higher in type four than in types two and three—see below) from type one down to type four. Universities of the first type appear to be the best-off, embodying the result of a successful development trajectory that any university would be happy to follow. Yet, did all of them have the chance?

3.1. Organizational career determinants in the early post-Soviet period

What determines which economy model a specific university will belong to? Table 3 presents the breakdown of analyzed universities by type of university economy. Classical universities and universities of industrial technology and construction are inclined, relatively clearly, to the “balanced” pattern with diversified revenues, agricultural universities and institutes of culture tend to fill the “public-sector” niche, private universities are almost all “marketable”, and, finally, econom-

²² Back then, government funding was linked first of all to enrollment statistics. Hence, non-budget was that which a university earned *beyond* the guaranteed minimum revenues.

Table 4. Odds ratios of belonging to one of the four types of economy for different university categories. Multinomial regression results

	Chances					
	1/4	2/4	3/4	1/3	2/3	1/2
Industrial technology and construction	0.45	1.06	0.28	1.59	3.79	0.42
Agriculture	0.18	1.29	0.79	0.23	1.63	0.14*
Economics and law	0.21*	0.19	0.14*	1.54	1.37	1.12
Healthcare	0.49	0.44	0.37	1.35	1.20	1.12
Education	0.36	0.78	0.57	0.63	1.37	0.46
Classical university	1.34	1.59	0.00**	+∞***	+∞***	0.84
Culture	0.25	1.16	1.54	0.16*	0.75	0.21*
Private university	0.00**	0.00**	0.00**
Other type of public university (base)						
Main campus	8.28**	26.27**	22.97**	1.08	1.42	0.76
Location outside Moscow	2.78*	3.67*	2.58	0.36	1.14	0.32

* $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$.

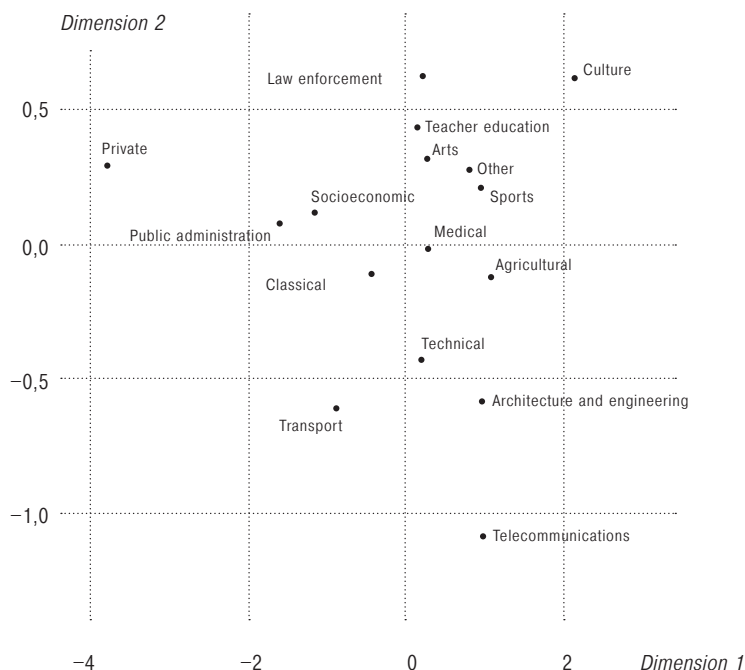
ic universities and legal schools are distributed between types one and four.

The “marketable” economic model is of special interest. This is a coexistence of private universities with a smaller number of public ones, which however offer popular majors in social science (including a pinch of technical, mostly architectural, institutions). Meanwhile, public and private universities of this type differ strikingly in terms of their wellbeing, both in salaries and popularity.

Multinomial logistic regression is used to evaluate the chances of implementing a specific economy model by universities in every category, while taking due account of other university characteristics, such as the status of the main/branch campus, being located in or outside Moscow, etc. Table 4 shows the odds ratio of having a specific economy model for universities with a given characteristic. For example, the value “1.34” in column “1/4”, row “Classical university”, means that universities will be 34% more likely to have a “balanced”, not “marketable” economy model than “other public universities” (base category), all other variables being controlled—otherwise speaking, the chances of being “marketable”, not “balanced”, will be higher for “other public universities” than for classical universities, all other things being equal.

Significant coefficients are marked with asterisks, but it should be borne in mind that only dramatic differences reached the significance level due to the small size of the sample. Overall, the coefficients look

Figure 2. **The space of university economies**
Multidimensional scaling of the structure of university revenue by university type



quite sensible: in addition to the regularities discussed above, it was discovered that a branch would be much more likely to be “marketable” than the main campus (probably due to the reluctance to subsidize branches and to the overall fact of treating them as “milch cows”), the same as Moscow universities would be “marketable” more often than those outside the capital. The relevant model allowed for sorting out 74% of the cases (Nagelkerke pseudo- $R^2 = 0.718$, McFadden pseudo- $R^2 = 0.413$, adjusted count = 0.474). Despite the roughness of grouping (in addition to creating generalized “families”, the whole Russia was divided into Moscow and non-Moscow), the three simple variables were enough to predict accurately the position of about three quarters of the universities²³.

²³ Significance assessment is merely illustrative due to the matrix singularities. Ellipses indicate indefinite values, and positive infinity stands for an indefinite very large number. High coefficients generally point to the presence of private universities as a large category that demonstrates the same economy model almost unflinching. As private universities are removed and only public ones are left, the coefficients shrink, the Nagelkerke pseudo- R^2 to 0.4 and the McFadden pseudo- R^2 to 0.24. Still, more than half of the universities are classified correctly by the model.

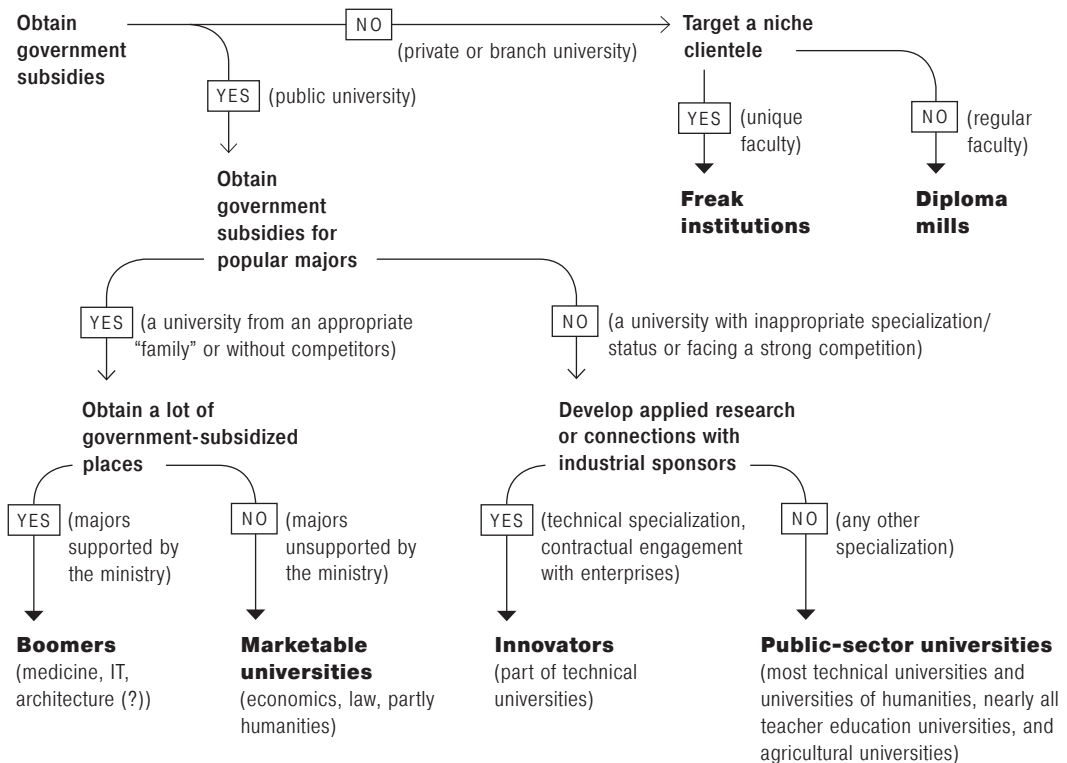
The same body of data was used to assess to what extent our principle of grouping subfamilies into “families” corresponded to their economic peculiarities. Average proportions of different sources of finance were estimated for groups of schools that were merged in single categories in the previous analysis. A line was drawn between universities of culture (unspecialized, 20 institutions) and those of arts (specialized, 19 institutions); transport universities (8 institutions), universities of architecture and engineering (6 institutions) and telecommunications universities (3 institutions) were singled out from technical universities; public administration academies (11 institutions) and mostly legal education universities affiliated to law enforcement agencies (9 institutions) were separated from socioeconomic universities; finally, sports universities (9 institutions) were singled out from “others”. Next, average data on the distribution of sources of finance in their budgets was analyzed using multidimensional scaling. Figure 2 shows the resulting two-dimensional solution²⁴.

The first, horizontal dimension corresponds clearly to the percentage of revenue from fee-paying students, from very high values on the left to low ones on the right. The second dimension corresponds to the proportion of revenue from non-teaching activities, i. e. research and development, contracts, and leasing. High values are at the bottom and low ones are on the top. Universities grouped into “families” in this study are obviously gravitating towards one another: technical, engineering, transport and telecommunications universities form a group at the bottom; public administration academies are close to socioeconomic universities, both types being drawn to private institutions; universities of arts market their educational services slightly better than former institutes of culture, yet the distance between them is not too big. Law enforcement universities, however, fall out of the classification, being “marketed” apparently less actively than predominantly economic ones. The predictive power of “family” grouping could be increased if law enforcement universities had been added to teacher education universities, but they were left where they were to preserve conceptual clarity.

How can this data on university trajectories in the early post-Soviet period be interpreted? A graphic representation is the simplest way to answer this question. Figure 3 shows a tree of decisions that could be considered to be made by universities if all of them had not been made by someone else. The first decision fork is between getting admission quotas and not getting any. Hardly any university would deliberately refuse subsidies, yet private universities had no chance of receiving them at all, and the chances of branch universities getting any were rather limited. Next, non-subsidized universities had two op-

²⁴ The two-dimensional solution has a stress value of 0.061 and an RSQ value of 0.989, which makes it virtually perfect.

Figure 3. **The forks in the development trajectories of post-Soviet universities**



tions—and here is where something of a conscious choice appears. They could either sell degrees in the most popular majors to the least demanding students at bargain prices or try to target a specific audience or clientele that public universities were unable to satisfy due to whatever intrinsic limitations: e. g. offer religious education or invite teachers who could bring money for their own salaries and only needed an ultimately friendly environment that would allow them to be referred to as professors while presenting themselves to international audiences. The most recent statistical data of the 2014–2016 University Effectiveness Monitoring shows that extreme positions in most dimensions—both positive and negative—are occupied by private universities, which surround the monolith of the public education system. The first behavioral pattern generated “diploma mills”, thus actualizing the fourth-type economy model in its low-cost version. The second behavioral pattern produced freak institutions of all sorts (e. g. a private university that obtained the best part of its revenue from research activities), which fitted badly into the statistical clusters.

Moving to the right, i. e. in the opposite direction, a public university that qualified for government subsidies found itself facing the next fork. The subsidized places it could claim for using its status (“fami-

ly” and location) could be in popular or unpopular majors. Further on, even if places were granted, their number varied depending on whether the Ministry treated that major as a top priority. If a lot of places were subsidized, the university would simply grow, diluting its subsidized student population with fee-paying students as it preferred. Although no requests were ever satisfied completely by the Ministry, universities or schools²⁵ that trained IT experts, architects and physicians came closest to this ideal state. If, however, the Ministry inhibited the expansion of a popular major, it took place anyway but at the expense of tuition fees. The former scenario yielded “boomer” universities oscillating between models one and four, while the latter produced model four—“marketable universities”—in its pure, “high-end” version.

If quotas were granted for unpopular majors, enrollment of fee-paying students was low, and sometimes even subsidized enrollment was close to failure. In this case, additional revenue could be obtained from available resources: premises (quite often, leasing was not the result of voluntary diversification but a signal of distress indicating the inability to fill the audiences), research, and contracts with industrial sponsors. The majority of such resources delivered the economic model of “innovators”, distributed between types one and two. Where there was no room for innovation (universities of culture, agricultural universities, parts of teacher education universities), government funding remained not only the main source of revenue but often the only one.

4. “The research turn” and its winners and losers

This is what the system that had naturally evolved over about 15 years looked like. The key vector of university development was determined by the desire to introduce popular majors, try to obtain government subsidies for them and recruit fee-paying students—the channel that supplied at least 80% of revenues to the system; all other sources of finance were merely small supplements, putting to the side private freak institutions and individual technical universities like Moscow State Technological University “Stankin”. The following decade was marked by three changes: (i) the end of expansion and the shrinkage of the education market due to a population decline; (ii) the development of a national policy of encouraging research activities and penalizing universities for insufficient involvement in it in different ways; (iii) the transformation of internal management models to vest more discretion in rectors.

However, did all those changes invalidate the existing hierarchy and provide all the universities with equal chances in competing for

²⁵ Especially in the case of large classical universities, individual schools or faculties rather than universities as such would fill a specific niche. In the same university, the department of applied mathematics and information technology could be a “boomer”, while the law department was “marketed” and the department of physics was teetering on the brink of the “public sector”.

Table 5. **Selectivity, research funding and average salaries of universities** (means, medians (*italicized*), and total number of cases). The 2014 University Effectiveness Monitoring, with no data on branch universities

Belonging to one of the university categories	Average USE score of students applying for government-subsidized places	Average USE score of students applying for tuition-based places	Revenue from research and development per faculty member from governmental sources (thousand rubles)*	University salaries as compared to the mean salary in the region (%)
Classical universities	67.45	60.96	111.61	135.93
	<i>67.62</i>	<i>61.10</i>	<i>69.64</i>	<i>134.96</i>
	88	88	88	88
Polytechnic and technical universities	66.60	58.79	237.98	131.58
	<i>65.66</i>	<i>58.35</i>	<i>76.85</i>	<i>126.25</i>
	137	137	139	138
Teacher education universities	65.45	58.68	76.86	120.09
	<i>65.27</i>	<i>58.27</i>	<i>34.54</i>	<i>116.46</i>
	41	39	41	40
Agricultural universities	57.07	54.47	37.19	113.37
	<i>56.77</i>	<i>54.15</i>	<i>35.40</i>	<i>110.69</i>
	54	55	55	55
Socioeconomic universities and law schools	77.25	63.45	73.61	118.74
	<i>77.30</i>	<i>62.17</i>	<i>26.18</i>	<i>114.23</i>
	50	54	59	59
Medical universities	83.84	67.34	50.27	117.41
	<i>85.56</i>	<i>67.47</i>	<i>33.42</i>	<i>113.44</i>
	48	48	48	47
Universities of culture and arts	66.67	63.15	75.45	103.11
	<i>66.25</i>	<i>62.35</i>	<i>41.25</i>	<i>103.61</i>
	70	59	70	71
Law enforcement universities	58.60	53.42	47.77	119.06
	<i>58.73</i>	<i>53.71</i>	<i>24.53</i>	<i>100.62</i>
	18	19	20	20
Private universities	72.01	58.37	24.44	77.47
	<i>69.55</i>	<i>57.98</i>	<i>0.00</i>	<i>72.24</i>
	31	241	298	296
Total	68.26	59.69	83.59	106.04
	<i>66.62</i>	<i>59.15</i>	<i>26.83</i>	<i>109.86</i>
	537	740	818	814

*This indicator was obtained not from the monitoring but through a series of calculations. The monitoring made an allowance for revenues from research and development per faculty member that came from non-governmental sources but specified neither the total revenues from R&D nor the number of faculty members. However, the latter could be estimated using the percentage of faculty members with postgraduate degrees per 100 students. The size of university revenues from R&D was calculated based on the proportion of R&D in the overall university revenues and the indicator "University revenues from all sources per student". Errors must have occurred somewhere in that series of estimations (or have been contained in the source data), as negative values were obtained in about 5% of the cases (almost exclusively in small private universities). Nonetheless, the overall picture looks sensible and agrees with other data, e.g. the total volume of R&D in a university, which was contained in the source statistics.

leadership? Analysis of statistical data collected as part of the 2013 and 2014 University Effectiveness Monitoring rather suggests otherwise (Table 5).

As we can see, it was mostly two categories of university—technical ones and, to a much lesser degree, classical universities—that benefited from the government capital injections as part of the “research turn”. These university categories remained not very popular among students: the average scores of students applying for government-subsidized places were still considerably higher in socioeconomic and private universities (to the extent to which private universities could obtain any subsidies at all—note that the value in this cell is as low as 31). However, low student interest and, consequently, low revenues from tuition fees, were compensated for by the inflow of research funding. The median revenues of technical universities from government research funding were thrice as high as the respective indicator for the whole university population (the mean value exceeding the median by more than three times, which means that only few lucky universities were getting the lion’s share of such funding). As a result, salaries in technical universities almost reached the levels of those in classical universities and broke away significantly from salaries in universities of all other types, particularly such traditional losers as the universities of culture and arts or agricultural universities. Apart from receiving direct capital injections, technical universities (or respective departments within universities) stood to gain other advantages, too. In particular, they profited from the launch of effectiveness monitoring, which largely introduced assessments of university effectiveness based on the activities (large-scale studies, contracts with industrial sponsors) that mainly technical universities had engaged in, out of necessity, over the previous decade. What used to be the partial and imposed substitution of the opportunity to offer popular majors to students, in the best-case scenario, suddenly became the key to further expansion. From the moment the Ministry declared its intention to allocate admission quotas as a proportion to research performance monitoring scores, the new hierarchy of universities became a fait accompli.

That was a small revolution, if we understand revolution as a takeover of the best part of resources by a previously subordinate category. It is important, however, that even though the winners swapped places with the losers, the boundaries between them have remained the same. “Families” as a legacy of the Soviet era have preserved their significance, and being part of one of them probably plays a greater role today than ever before.

As a final illustration, let us consider the list of universities that have been converted to national research universities and/or have been made part of Project 5–110. Out of 29 national research universities, 19 belonged to the category “Industrial technology and construction”, 8 were classical universities (of which two were converted from pol-

ytechnic universities after 1991), one university was medical and one socioeconomic, and 11 were located in Moscow. Out of the 21 universities participating in Project 5–100, 9 are technical (2 used to be technical not long ago), 11 classical, and one medical (6 were located in Moscow). None of those universities were private and none were located in a city with a population of less than 500,000.

5. Discussion and conclusions

The analysis conducted in this article demonstrates that economic strategies identified in exhaustive studies devoted to typologies of Russian universities—expansion, diversification, etc.—in fact describe different niches, and falling into one of them is largely determined by inherent university characteristics. The choice of a strategy indicates not so much university administrators' intentions as the availability of opportunities for development in each of those variously attractive directions. Throughout the early post-Soviet period, the preferred direction obviously consisted of introducing majors popular among students and obtaining government subsidies for those majors. Public universities that were able to introduce such majors, especially those located in migrationally attractive regions and bearing no stigma of a “branch”, evolved into “marketable” academic economies, prosperous by Russian standards. Public universities that were unable to move in that direction had to make do with the miserable government funding or experimented with alternative sources of finance. Private universities, with few exceptions, mostly had to survive by selling education in the most popular majors at undercut prices. The key factor that predicted the development trajectories of public universities was being part of a specific “family”, which allowed or did not allow them to be identified as lawful suppliers of popular education in the eyes of officials and high school leavers. To push the analogy with social stratification further, universities may be pictured as divided into a number of unequal dynasties, those being born at the bottom of the pyramid hardly having a single chance of moving to the top.

“The research turn” became the cherry pie for universities which had had to experiment with alternative courses of revenue, such as grants or contracts with industry. However, it did not eliminate structural determinism, as an inclination to such experimenting was determined by whether the university entered the 1990s with a high percentage of internationally recognized researchers, whether it had connections with the surviving industries, and even the region where it was located²⁶. Gaining from the “reorientation toward research” was also predicted by inherent university characteristics, and there is every

²⁶ Thus, analysis reveals that university development is affected by the economic wellbeing of a region and its economic specialization [Sokolov 2013]. It is hard to cooperate with industry in a nonindustrial region. The model's predictive power could be increased by adding new variables to the existing ones.

reason to believe that the contrasts that had emerged in the past were only exacerbated by government capital injections.

Why is there no indication that the emancipation of rectors from the administrative control has made university careers less predetermined by their ascriptive attributes? There are two circumstances that could make organizational behavior difficult to be changed by expanded rector's discretion. First, university development requires tacit approval, as a minimum, or initiative, as a maximum, of the faculty. Rectors can do little with sabotaging their decisions from the bottom; meanwhile, they cannot provide a high employee turnover because of the very low faculty mobility rates and the comparatively high level of employee rights protection. With formal authority or without it, rectors mostly have to develop a *modus vivendi* to coexist with the current faculty. Second, and most importantly, both the numerous decentralized decisions and the rector's centralized decisions will inevitably bump into the same external barriers. Only initiatives that make allowance for external constraints have a chance of being successful, and the list of such initiatives will not change following an in-house political regime transformation.

"Mostly", of course, does not mean "always". This article was not seeking to demotivate those who would like to change their university for the better. More and less successful institutions can be found in any "family" of public universities. Some non-Moscow polytechnic universities became national research universities and made part of Project 5–100, while others did not. There have been examples of universities investing heavily in the development of new majors and becoming leaders in their field, especially when the field itself was booming²⁷. The example of private universities can be even more eloquent. Private universities are mostly like as two peas in a pod, occupying the niche that has been disrespectfully referred to as "diploma mills" above; on the whole, they demonstrate the lowest performance in all research and international activities (number of grants, proportion of private research funding per faculty member, percentage of foreign students, etc.). However, there are a few exceptions to this rule. In fact, it was also private universities that performed the best in all indicators according to the monitoring studies of 2014–2016. There is, at least, obviously a multiplicity of market niches that only private universities can fill. One of these ("diploma mills") is comparatively large and others are small, but in any case the fathers and mothers of a private university could choose between them.

The pathos of this text was not to refuse outright the idea of free will and oppose a career as something completely determined from the

²⁷ The example of the ITMO University is the most prominent one. A higher education analyst trying to predict its trajectory in 1991 would hardly envisage it would become the hotbed of Russia's programming talent. However, this case is unique in too many aspects.

outside by strategy. The word “career” has no such connotations, and they were not implied here. However, career denotes approaching an individual trajectory as the result of contact between internal decisions and external constraints, where external factors are often decisive.

Two practical implications can be drawn from these findings. The first one is essentially methodological. Attempts to build an economic classification of universities, including those contained in this article, are largely irrelevant. The plaques by the main entrance contain the information that is crucial for understanding what type of economy a university will have, which market niche it will fill, and what position it will take in effectiveness monitoring. Such plaques usually indicate the public/private status, the main/branch status, the “family” the university belongs to, and the city it is located in. Development trajectories can be largely predicted using this data²⁸, which probably renders any other descriptive categories unnecessary.

The second implication bears upon the educational institution effectiveness assessment practices, which came to full fruition with the “research turn”. A piece of old sociological wisdom says that a fair competition among unequal participants aggravates the gap and only serves to legitimize the winner’s supremacy as gained “in a fair competition”. This is the case with any assessment of effectiveness that does not make allowance for individual factors that affect an organization’s behavior. It can reinforce the existing hierarchy or create a new one by reallocating resources radically (which was the case when the palm tree was passed to technical universities), but it cannot do what it is supposed to do, which is provide a reasonable assessment of management effectiveness in a specific institution²⁹.

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²⁸ Of course, information on the plaque must not be taken literally. A teacher education university may in fact offer economic and legal education of no premium quality; “teacher education” rather predicts the demand for offered degrees than their actual specialization here, with all the consequences that come with it.

²⁹ The only way to build a ranking of management effectiveness that comes to mind consists in measuring this effectiveness by regression residuals, i. e. the percentage of deviation from the statistical prediction that can be made for a specific institution, knowing its inherent characteristics. A similar experiment with the 2013 monitoring results produced an entirely new ranking topped by Irkutsk and Tomsk universities. The Ministry has been trying to deal with the problem of inherent differences to some extent by introducing thresholds, rather weirdly adjusted though. As recently as in 2016, the thresholds were tied to regions, not “families”, even though the latter represent a much more important determinant of university trajectory.

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On Possible Reasons for University Resource Base Decline

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Abstract A number of national higher education systems have been facing consistent resource decline lately, which cannot but affect the resource base of particular universities. Importantly, while some universities suffer from resource decline, others demonstrate an improvement in or expansion of their resources. This is where a question, both theoretically and practically essential, is raised about the reasons for the dynamics of a university's resource base and its specific components. The article explores the Russian higher education system as well as particular Russian public universities in terms of resource base dynamics. Financial, intellectual and infrastructural resources are analyzed as components of the university's resource base. As a result, a group of universities characterized by the declining resource base has been identified and described in detail. Interviews with the representatives of those universities as well as a review of relevant foreign studies have provided the basis for the identification of the possible reasons for the resource base decline of particular universities, which include organizational, contextual and technological factors.

Keywords university resource base, financial resources of the university, intellectual resources of the university, dynamics of university development, decline of the resource base.

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Foreword to the collection of topics from the proceedings of the International Symposium “Lev Vygotsky and Modern Childhood”

Last year saw the 120th anniversary of the birth of Lev Vygotsky. The event was widely celebrated by academic communities who rely upon his work in their research—the range of his interests and the fields of humanities that he contributed to is amazingly wide. General psychology, special needs education, issues in education, psychology of art, problems of consciousness, developmental psychology—it is hard to name a field in humanities that has not been influenced by Vygotsky’s ideas and insights at least in some way.

A major event—the International Congress for the 120th Anniversary of Lev Vygotsky—was held last November in Moscow. This incorporated a series of simultaneous academic events at various academic venues: the National Research University Higher School of Economics (HSE), Moscow State University, the Russian State University for the Humanities, Moscow State University of Psychology and Education (MSUPE), etc. This event can probably be described as unique: a number of Russian and foreign researchers in different Moscow academic institutions discussed the heritage of the maestro, who had passed away more than 80 years ago. It is particularly important to point out that the focus of scientific discourse in those discussions was not so much memorial (although memorial events were quite numerous) as it was insightful. The new reality calls for a scientific and empirical rethinking of Vygotsky’s heritage, which is the only way to preserve his life’s thoughts and resoundingly vibrant ideas.

Modern reality makes us view many things from a different perspective. Many theoretical patterns of the past are studied today as part of the history. The only way to save Vygotsky’s ideas for today’s science is to try to combine respect for his heritage with present-day topics and relevant research. The paramount question that researchers tried to answer in the course of the congress was, to what extent can the assumptions of cultural-historical theory become a tool for interpreting the new empirical data of today? It appears that what Vygotsky’s ideas need is not protective replications but a substantial revision as applied to the new findings.

We are happy to introduce the reader to a collection of articles representing the research issues discussed during the International Symposium “Lev Vygotsky and Modern Childhood”, which took

place on 15–16 November 2016 at the HSE Institute of Education and the MSUPE (as part of the Congress). These works give some insight into how powerful the opportunities for the development of Vygotsky's ideas on modern data can be.

The selection includes six articles. They all actualize to a greater or lesser extent Vygotsky's fundamental idea that environment is the source, not a condition, of development. This smart and, let's be honest, somewhat provocative statement needs to be reinterpreted, especially in the context of the rapid evolution of neuroscience. It has to do exactly with the construct of “development” as opposed to “maturation” and “growth”. This issue is discussed in the most detailed and scrupulous way in the first article called *Trajectories of Personality Development: A Reconstruction of Lev Vygotsky's Views*. In spite of the name, this is not only a “reconstruction of views” but in fact a positive psychology development program that draws on neoclassical cultural-historical psychology.

Four articles tackle the same problem of environment. With all the diversity of topics and focuses in these studies, they can be conventionally brought together under a common concept of “development environment”, which derives from Vygotsky's ideas of “social situation of development”. Special attention must be paid to the radical expansion of this concept: originally, it used to denote the age period and children's relations with the world around that were specific to that period; however, the most recent studies, in particular those included in this topic collection, approach the development environment as a huge number of relations that constitute development. Three articles are devoted to environments accessible to school students, i. e. the city as a whole and children's playgrounds. Environment is analyzed not only and not as much in the context of its physical characteristics but mostly as a condition for development, a place that offers opportunity for playing and interacting with strangers, and a “habitat” that generates options for activities—play, communication, etc.—which encourage development in the first place.

One of the main questions raised at the symposium was, to what extent can modern childhood be described using the constructs proposed over 80 years ago? In this regard, interesting findings are made in *Fifth-Graders Moving into Adulthood: The 1960s vs. the 2010s*, an article that presents a replication of a classical clinical study of younger adolescents conducted in the 1960s. The article identifies the age universals and the processes that are different today.

The evolution of the online environment “inhabited” by modern school students is a new trend that disturbs educators and psychologists. The novelty of this world, more familiar to children than their parents, begets a mythology of its own, which can be either distressing (What is going on there?) or comforting (The online world is accessible to all, so it will reduce the inequality of real-life interactions). We present the article *What's in My Profile?* which analyzes the environ-

ment of school students' personal profiles in the social networking service Vkontakte as a development environment. An integration of profile characteristics allows them to be considered as an environment of interests revealed in online interactions among adolescents. Hopefully, this article will promote an understanding of these new dimensions regarding the social situation of development.

Over 80 years have passed since Lev Vygotsky ended his mortal life, but his thoughts and perspective on development are still relevant and exciting—even more so now that new studies and facts emerge, the understanding of which requires another interpretational dimension of the psychologist's ideas.

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Pathways of Personality Development: Following Lev Vygotsky's Guidelines

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Abstract. The paper presents a theoretical reconstruction of Lev Vygotsky's project on theory of personality development and highlights Vygotsky's relevance and heuristic value for the personality psychology of our days, especially positive psychology. The authors focus on several aspects of Vygotsky's heritage. 1. The general concept of personality within a non-classical framework. 2. The idea of self-mastery as the central explanatory concept and its relation to the modern concept of agency. 3. The role of self-reflective awareness

in personality development. 4. Personality development pathways in challenging conditions. In Vygotsky's works personality was implicitly constructed as the most integral higher mental function, while self-mastery or self-regulation was its central feature. Vygotsky's principle of mediation states that the structure of human activity is mediated by physical or mental tools that break the S—R links and make it possible to master one's own behavior and mental processes. By utilizing speech as a system of signs that enables the process of mastering the psychosocial reality, self-reflection makes a new basis for more complicated forms of higher mental processes that possesses more degrees of freedom as compared with the lower ones. The law of compensation is discussed in the context of aggravated conditions of personality development, where personality answers to social boundaries, and thus achieves alternative trajectories of development. The sociocultural paradigm is thus consistent with modern thought on positive and personality psychology.

Keywords: sociocultural psychology, higher mental functions, self-regulation, personality development, self-mastery, compensation, aggravated development, positive psychology.

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Introduction Lev Vygotsky is nowadays acknowledged as one of the cornerstone psychologists of the 20th century who played the critical role in introducing a sociocultural dimension into modern psychology. He is mostly known for being a developmental psychologist with a focus on the development of cognitive functions. However, in the context of child development issues, Vygotsky stressed that “only radical transcending the methodological limits of traditional child psychology can direct us to the study of development of the highest psychological synthesis than can be called with full reason the child’s personality. The history of cultural development of the child leads us to the history of personality development” [Vygotsky 1983a: 44]. In the final years of his very short life he paid more attention to the issues of personality and personality development, though failed to elaborate a comprehensive theory. His fragmented ideas on personality have mostly been published posthumously; no wonder that his contribution to this field seems to be underestimated or even not read at all.

The aim of this paper is to reconstruct Vygotsky’s project on personality theory. It is less of a personality theory; however, it still maintains great heuristic value for the personality psychology of today.

We focus on several aspects of Vygotsky’s heritage: 1. The general concept of personality within a non-classical framework. 2. The idea of self-mastery as the central explanatory concept and its relation to the modern concept of agency. 3. The role of self-reflective awareness in personality development. 4. Personality development pathways in challenged conditions. All of these highlight the relevance of Vygotsky’s approach to the positive psychology of the 21st century.

Personality and higher mental functions The starting point of Vygotsky’s theory was the idea of the social nature of the human mind; in other words, the idea of the principal difference between animal and human psychological functioning. While an animal lives in the world of nature, all its functions, including psychological functions, are subject to natural laws alone. In the human being, the natural evolutionary process is not abolished but rather complemented with a developmental process of some other kind. Qualitatively different social laws govern the process of the development of consciousness in the course of social interaction. This idea was not new at that time, although it was not widely accepted. Its sources were both the French sociological school, especially the works of Pierre Janet, on the one hand, and the philosophical works of Marx and Engels, on the other. Being very enthusiastic about Marxism, as the methodological foundation for the new post-crisis psychology, Vygotsky shared Marx’s idea that the human essence lies in social relations, “brought inside and transformed into personality functions, representing the dynamic parts of its structure” [Vygotsky 1984a: 224].

The concept of higher psychological functions, introduced by Vygotsky, expressed this idea in the most articulate form. It was as-

sumed that besides natural psychological functions (e. g., perception, memory, attention, etc.) analogous to those existing in animals, there are specifically human twin psychological functions—object perception, voluntary attention, mediated memory, etc.—developing through the mastery of distinctively human instrumental ways of organizing one’s own psychological processes. A. R. Luria [1969] best summarized the distinctive features of higher psychological functions, specifically during the course of social interaction, as: (1) social by their origin, (2) mediated by their structure, and (3) voluntary, and deliberate because of their functioning abilities.

The *general genetic law of development* of the higher psychological functions was articulated by Vygotsky in the following way: “Every function in the cultural development of the child enters the stage twice, on two planes—first the social, then the psychological; at first, as a form of cooperation between persons, as a collective and interpsychological category, then as a means of individual behavior, as an intrapsychological category” [Vygotsky 1984a: 223]. This citation depicts the essence of the process called interiorization, the emergence of an individual psychological function through the internalization of the original function (i. e., its transference into the mental plane), changing from the outer control over this function to the inner control. Vygotsky [1989] stated that “for us to speak about the external process means to speak of the social. Any higher psychological function was external. This means that it was social before becoming a function; it was a social relation between two people. The means of acting upon oneself is originally a means of acting on others and the action of others on one’s personality” [Vygotsky 1989: 56].

According to Vygotsky, originally, the human child is not an agent of development, he or she gradually becomes the agent of their own development through the acquisition of social “sign tools”. If we consider the mother-child unit, at the first stage of development the mother reacts towards the child, at the second stage the child acquires the idea of communicating their wishes and acts in the corresponding way towards his or her mother, at the third stage the child uses the same strategy to act towards him/herself in an external observable way, and the fourth stage comes when the former child, now grown up, acts towards him/herself in an internal way, unobservable from the outside.

The principle of “interiorization”, introduced by Vygotsky, states that human mental functions develop genetically from external processes, which were originally distributed between individuals. Mental attention grows from pointing at something by another person, memory from distant communication, volition by obeying another person’s commands, and so on. Once interiorized, a higher psychological function becomes subject to voluntary control. A. Asmolov [1986/87] has stressed that the interiorization process is not merely a transposition of a function inwards, but rather the process of building the inner (mental) structure of consciousness. The word “interiorization” should

thus be considered as a metaphor depicting the result rather than the process of development of higher psychological functions.

Lev Vygotsky's thoughts consistently combine an explanation of development as an essentially internal process with the consideration of the social situation of development as one of the leading developmental mechanisms. In his view, the social situation of development is an age-specific system of relations between a child of a certain age and the social reality that "defines strictly lawfully the child's way of living, or his/her social being" [Vygotsky 1984b: 259]. Personality development cannot be isolated from the general mental development, and the latter is, in fact, a psychosocial process, in many respects conditioned by the external social situation. This statement follows the idea that "the human psychological nature is a sum-total of social relations transferred inwards and transformed into personality functions, or dynamic parts of its structure" [Vygotsky 1984a: 224].

Self-mastery through mediation

Mediated structure is the second indication of higher psychological functions. Vygotsky's idea of the voluntary nature of specifically human forms of mental activity is based on the idea of the specific structure of these processes. As derivatives of social activity, higher mental processes maintain the principal features of human intentional activity, first of all, its tool-mediated nature.

This helps to explain the mechanism of voluntary regulation of higher mental functions. The principle of mediation states that the structure of human activity is mediated by tools—be it physical tools or mental signs—that break the S—R link and make it possible to master one's own behavior and mental processes.

Using tools while interacting with nature has been considered an essential characteristic feature of a human being long before Vygotsky. However, according to Vygotsky, human beings actively deal with their own nature in the same way. Higher mental functions are mediated in a similar way by special "mental" tools. Moreover, it is the mediated structure of higher mental functions that causes them to be deliberate, self-controlled, and self-organized. That is especially true for volition as a form of such a relation. "Voluntary action begins only when mastering one's own behavior with the help of symbolic stimuli" [Vygotsky 1984a: 50]. The most comprehensive of such symbolic systems created by human culture (though not the only one) is language. Thus, it is not surprising that various aspects of language functioning, and related issues (the genesis and forms of speech, inner speech and thinking, concept development, meaning and sense, etc.), became Vygotsky's main research interest in the late 1920s, just after the idea of higher mental functions had evolved into a research program (see [Vygotsky 1934/1987]).

When one is making some effort traditionally described as volition or, in newer terms, when one feels self-determined, autonomous, and

authentic, in no way is one a self-sufficient entity. On the contrary, one needs some external point of support in order to transform the external reality, according to the well-known idea by Archimedes: give me the point of support, and I will turn the Earth upside down. This is the best symbol of the idea that it is mediation that gives us self-determination and self-control. "It is impossible to relate directly to oneself; however, indirectly it is possible" [Vygotsky 1989: 61]. Any effort must be a mediated effort in order to be effective; mediation multiplies effort in human action, as in mechanics and technology.

For Vygotsky, self-mastery or self-regulation was the key feature of personality. Though Vygotsky never tried to give a strict definition of personality or a systematic analysis of this problem, he pointed out that the concept of personality, historical as it is, "covers the totality of behavior, specified by the attribute of mastery" [Vygotsky 1983a: 315]. "Only when we see the mastery over one's own behavior,"—wrote Vygotsky elsewhere,—"can we speak of the shaping of personality" [Vygotsky 1984: 225]. In the above citations, as well as in many other places, Vygotsky treated personality analogously to higher mental functions, applying both concepts to the same scheme of a genetic explanation. "Mastery," with respect to personality, essentially meant for him the same as deliberate control over one's mental processes. It seems as if Vygotsky considered personality to be the most integral "higher mental function".

Vygotsky's idea of mastering one's own behavior, as the distinctive feature of personality, was not original. However, it was in no way speculative, like most other theorizing in this field. What makes this idea really important in Vygotsky's case is its solid experimental basis. Psychological mechanisms of mastering one's behavior represented the subject matter of the 12th chapter of his "History of development of higher mental functions" [1983a: 83]. Vygotsky started with the traditional notion of human choice, considering it to be the key issue for the problem of mastering one's behavior. The most crucial point related to human choice is the situation of the 'Buridan's ass', which represents the choice between several equally attractive alternatives. According to the medieval tale, the animal died unable to choose between two equal bales of hay lying at the same distance from each other. Vygotsky stated that a human being would solve this problem by making a choice, or drawing the solution from a hat. In Vygotsky's experiments, children had to solve similar problems by "choosing" between different motives, with different options available. Based on these experiments, Vygotsky listed several conditions allowing the children to make their own choices. In these cases, a child masters his/her behavior by creating additional mediational stimuli. Vygotsky himself evaluated his experiments described above as proof of the possibility to solve purely philosophical problems, and to empirically trace the genesis of human free will during experimental psychological investigations.

**Self-reflection
and inner
dialogue**

One of the most influential mediating instances of human conduct is conscious awareness, or self-reflection. Vygotsky analyzed this important issue in his final lecture on adolescent pedagogy [Vygotsky 1984a: 220–242], referring to the publications of his contemporary, German educational psychologist Adolph Busemann, that are all but forgotten these days [Busemann 1925; 1926]; however, Vygotsky found some very inspiring points in them. “What is used to be called the self is nothing but self-awareness (...) a new behavior of the person becomes behavior-for-oneself, the person becomes aware of oneself as a definite unity” [Vygotsky 1984a: 227].

Vygotsky considered Busemann's great merit to be his overcoming the nature-nurture convergence paradigm by William Stern and introducing a new agentic factor—the adolescent's person. An important point is the differentiation between the acting person and the reflecting person. “If we look at the significance of self-reflection for mental life at large, we shall see a profound difference between a non-reflective, naïve personality structure, on the one side, and a reflective one, on the other” [Vygotsky 1984a: 238].

The general genetic law of development mentioned above, the law of interiorization, suggests that reflective self-awareness also develops the same way. Here Vygotsky also refers to Busemann who described six directions of the development of self-reflection, starting from external acting upon the parts of one's body that can be found even in lower animals [Ibid.: 228]. However, with social relations, human communication plays a more important role in the development of self-awareness, this is why Vygotsky, following Busemann, defined self-awareness as social awareness, transposed inwards [Ibid.: 239]. By utilizing speech as a system of signs that enables the process of mastering the psychosocial reality, self-reflection makes a new basis for more complicated forms of higher mental processes that possess more degrees of freedom as compared with the lower ones.

This is the point where Lev Vygotsky's cultural historical account converges with Mikhail Bakhtin's dialogical one. Bakhtin's focus was the dialogical nature of consciousness, in what is sometimes termed autocommunication in contemporary studies. Autocommunication makes the ontological basis of self-awareness as its cognitive side. The term “autocommunication” unites various forms of intrapersonal dialogue. Inner dialogue suggests two or more semantic centers or intentions. During the inner dialogical activity, a person can represent various points of view (e. g., the interviewer and the interviewee, the past Self and the future Self, the judge and the defendant). While Bakhtin [1984] revealed multivoicedness of human consciousness, discussing the heterarchical (democratic or anarchic) polyphony of “inner speakers”, a hierarchical view on relating to oneself is also possible [Leontiev, Salikhova 2010], which is more in line with Vygotsky's idea of self-mastery. Present-day empirical studies of self-reflective processes demonstrate their role as the inter-level moderators capa-

ble of modifying the structure of relations between different levels of regulation [Karpov 2004].

From a sociocultural viewpoint, inner dialogue is considered as an interiorized external dialogue. It was empirically shown, e. g., that there is a mutual overflow of internal and external dialogues that is especially noticeable in childhood [Kuchinsky 1988]. The possibilities for an adult in the creation of inner dialogue considerably extend owing to the cognitive development and general purposefulness of dialogical activity. At the same time, there are also conflicting forms of inner dialogical activity, which can support and develop the inner conflict [Oleś 2009; Astretsov, Leontiev 2016].

Personality development in aggravated conditions: the bypass pathways

The existence of aggravated conditions, i. e. any kind of physical, social, material or other deficit, presents a challenge to personality development. The latter can be notably inhibited due to the fact that searching for and implementing alternative developmental trajectories require bigger time expenses. Personal features resulting from such collisions with the social world emerge despite difficult vital circumstances rather than by virtue of harmonious developmental background. Being connected to a cultural context, the same personality features may become both a sign of mental health, and a form of overcompensation due to some deficiency. Such a situation “does not set borders to developmental opportunities but rather requires investing extra efforts and resources, as compared to situations of regular development” [Leontiev 2014: 98].

If we take into account the development of personality, treating norms as typical and abnormalities as atypical loses its sense. The same developmental conditions can be experienced as facile by one person and as difficult by another one. The criterion of such discrepancies is partly socially determined but also rooted in individual developmental history.

According to Vygotsky, a biological developmental deficit (defect) is only a prerequisite of its secondary manifestation, a social “dislocation”. Secondary consequences of biological deficits imply problems with the acquisition of culturally typical higher forms of behavior. At the same time, the developmental delay or impediment plays a role of “damming” and causes an increase in the concentration of psychological energy at the point of deficiency [Vygotsky 1927]. The impediment “is not only the main condition of goal achievement, but also an indispensable condition of the emergence and existence of the goal itself” [Vygotsky 1983b: 158]. In other words, the existence of an impediment generates a condition of need, which in turn acts as an energy source of compensation processes. The latter account for the further complication of higher mental functions, from infancy onwards. “The law of compensation is equally applicable to the normal and complicated development” [Vygotsky 1983b: 10], which in both cases proceeds in

the conditions of inevitable collisions with restrictions. These obstacles generate alternative developmental trajectories.

The situation of physical disability itself cannot be considered as strictly determining hindered psychological well-being (see [Leontiev, Aleksandrova, Lebedeva 2017]). A. N. Leontiev [1978] pointed out that the same physical features can be differently related to personality proper, and differently built into the structure of activity. It is the person that defines the influence of physical disability on subjective well-being and psychological health.

This statement was confirmed in our studies of students with disabilities [Lebedeva 2012]. Different personality variables in this group did not reveal the same correlations as those in a control group. However, satisfaction with life measures did not differ between the groups. We explained this in terms of Vygotsky's "bypass pathways" of development. The term refers to alternative developmental trajectories and cultural instruments that implement the current tasks of development bypassing disability conditions. According to Vygotsky, difficult life circumstances lead to "radical reorganization of all personality that brings new mental forces to life and directs them" [Vygotsky 1983b: 563]. Moreover, it is not obligatory that favorable conditions will lead to positive consequences, and vice versa. Owing to the fact that the person is capable of manifesting one's autonomy through the responses to challenging life circumstances, a person achieves an opportunity not to lose but to find the source of creative energy in difficult circumstances, and to reorganize their personality and their life

**Conclusion:
Cultural-historical
roots of positive
psychology**

Vygotsky pointed out the necessity for a "positive" view on psychological development both in aggravated conditions:

"... the new point of view prescribes the consideration of not only the child's negative characteristic, not only his/her "minuses", but also a positive offprint of his/her personality presenting first of all the picture of complicated bypass pathways of development" [Vygotsky 1983b: 173],

and normal ones:

"Empirically based study reveals that the negative content of the development in breaking periods is just the reverse, or shadow side of positive personality changes that make the main and principal meaning of any critical age" [Vygotsky 1984b: 253].

These quotations suggest that Vygotsky's views belonged to predecessors of the theoretical agenda of the 21st century known as positive psychology that stresses that the development of positive pro-

cesses are the key to psychological sanity and wholeness at all the levels [Seligman 2002]. However, the positive psychology of today departed from positive emotions and positive character traits (strengths and virtues) before it shifted the emphasis to more profound and complicated processes of self-regulation and psychological resilience (see e. g. [Sheldon, Kashdan, Steger 2011]). Vygotsky's emphasis of self-mastery is highly relevant to the latter. Indeed, contemporary views on self-regulation have much in common with the cultural-historical approach. Some of Vygotsky's followers in the USA treat self-regulation through the prism of the concept of higher mental functions [Kinnucan, Kuebli 2013]. The cultural-historical approach states that self-regulated activity initially emerges as an interpsychological process, gradually transforming itself to the reduced intrapsychological regulation. At every stage these processes are mediated primarily by signs.

The specificity of Vygotsky's version of nonclassical positive psychology as the psychology of emerging mastery over oneself and over one's psychological functioning is precisely expressed in his own slogan of *height psychology*. “Our word in psychology: away from surface psychology—a phenomenon in consciousness is not equal to being. But we oppose ourselves also to the depth psychology. Our psychology is height psychology (it defines person's “heights”, rather than “depths”)” [Vygotsky 1982: 166]. Interestingly enough, Victor Frankl in 1938 independently of Vygotsky (the above quotation was written in 1933 and not published until 1968) expressed his views in identical terms: “Existential analysis is something opposite to the so-called... depth psychology. Depth psychology forgets that its opposite is height psychology, rather than surface psychology... “Only human heights are human being” (Paracelsus)” [Frankl 1987: 86]. Frankl identified height psychology with his existential analysis, and Vygotsky with his cultural-historical psychology of higher mental functions and deliberate actions. Both viewed the human being in terms of multi-level organization, where the lower levels are fully causally determined by uncontrollable physiological and psychological mechanisms, while through the higher levels the human being may master one's own behavior.

It follows that the person's developing capacity to take control over one's own development and well-being and to invest oneself in these processes should be treated as the central issue of the advanced version of positive psychology. Vygotsky's cultural-historical approach allows us to establish theoretically consistent relationships between the ideas of 80 years ago and the views of the psychology of personality of this century. New developmental challenges allow us to make sense of Vygotsky's heritage in a present-day context and contribute to the integration of diverse theories within a common theoretical field.

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Life Outside the Classroom: Everyday Mobility of School Students

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Abstract. A number of studies have emphasized the importance of the educational potential of cities and revealed that home district characteristics influence children's educational identity and access to educational resources. However, little attention is paid to the conditions and limits of children's access to the city environment as well as the geographies of their outdoor activities, i. e. how far from home they travel when hanging out, how this distance can change as a child grows up, how often children attend specific places, and how the geographies of their mobility depend on their personal characteristics. A survey of Moscow school students of grades 5–10 is used to explore the basic characteristics of

children's independent mobility, including their everyday mobility, i. e. frequented places and the distance to them. It is shown that children normally travel within a radius of 1 km from home; the central part of the city and the neighboring districts are visited less often than places within the home district. A comparison of everyday mobility of high- and low-performing students has proved that the proportion of children whose most frequented place is centers for after-school education is higher among high-performers. Yet, no correlation was found between the size of the "habitat" and academic performance. Moreover, places for leisure, including leisure education, of families have been described based on a survey of over 700 mothers of school students. Families with high levels of cultural capital and good financial standing have demonstrated greater diversity of shared leisure activities and comprise a higher proportion of those attending family courses, public lectures, or other urban events. Such families exploit the educational leisure opportunities provided by the city more actively than others.

Keywords: school students, children in a city, children's everyday mobility, education geographies, educational leisure, geographies of unstructured leisure activities.

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The number of studies on geography of education has been growing recently. The focus of research includes geographical factors of education inequality reproduction. In particular, researchers exam-

ine the effects that spatially-rooted factors (social relationships, culture, material factors) can have on the educational attainment, expectations and choices of school students [Butler, Hamnett 2007; Garner, Raudenbush 1991; Raffo 2011; Kerr, Dyson, Raffo 2014; Lupton 2006], as well as the role of home-school distance and in-district school placement in education inequality reproduction and growth [Butler, Hamnett 2010]. distance from school has now become the primary means of allocating

Other studies take a broader perspective on the influence of urban environment, e. g. by investigating the positive effects of unstructured outdoor activities and the importance of environment as a “third teacher” [Matthews 2001; Strong-Wilson, Ellis 2007], as well as the influence of urban mobility on the social, cognitive and emotional development of children [Kytta 2004; Rissotto, Tonucci 2002]. Jane Jacobs has stressed repeatedly in her works that city streets are an important learning environment for children, providing a natural and healthy space for their unstructured activities [Jacobs 2011]. The importance of public life for child development [Soenen 2004] is also justified by the growing effects of various short-term social relationships that occur in “non-places”, as defined by Marc Augé [Augé 1995]. On the whole, although the street and the city do not resemble learning contexts in the traditional sense, they are regarded today as an informal, or extended, learning environment [Eshach 2007].

If that is the case, what environment do school students have access to, and what does the city mean for different types of students? Most studies dedicated to the effects of spatially-rooted factors examine those districts where specific schools are situated, but the natural boundaries of spaces explored by children remain vague. One of the points in this article is that urban mobility of children, including their daily movements, has been understudied despite the fact that researchers emphasize the value of independent mobility and the benefits of unstructured leisure activities. In particular, research on children’s mobility implies measuring the “habitat” of school students and identifying the types of frequented places.

Researchers rarely separate children into a category of their own when analyzing mobility patterns; they rather tend to use mixed-type data that is hard to divide based on age cohorts. For instance, the large-scale study *The Archeology of Periphery* points out that the ultra-importance of Moscow center in terms of daily commuting has been exaggerated. A considerable proportion of commutes—two thirds, according to GPS tracking data—is limited to Muscovites’ home districts [Bogorov, Novikov, Serova 2013]. Only 35% of citizens travel to the city center every day, whereas 42% commute only from one suburb to another or use the Moscow Ring Road [Ibid.]. Studies on the relationship between children, specifically, and the urban environment investigate children’s outdoor leisure activities [Bochaver, Korzun, Polivanova 2017] and the specific features of a children’s

world in the city [Osorina 2004]. Meanwhile, the everyday mobility of school students has never been a subject of research to date. Special attention should be paid here to places where children and parents share their leisure time, including leisure education activities.

The focus of this study is on the structure of the urban mobility of school students, in particular on what can be defined as a children's "habitat" in terms of their everyday mobility. Differences in daily mobility are analyzed in the article depending on children's personal characteristics of age and academic attainment.

1. Street children vs children in the parental environment

The most widespread perspective on the relation between adults' and children's environments, according to Roger Cox [Cox 1996], consists in constructing children as human beings in-the-making. In this context, the lack of autonomy from parents and other adults is considered to be a normal format of preparing a child for grown-up life. The inverse approach, proposed by Jens Qvortrup [Qvortrup et al. 1994], implies isolating childhood into a period of its own and analyzing children separate from their parents. This results in a paradox: on the one hand, focus is placed on the process of growing up in subordination to adults and together with them; on the other hand, childhood has its own timeframe and its own, specifically "designed" space [Qvortrup 1995].

In real life, this paradox manifests itself in the socio-spatial landscape, which includes adjustable barriers between the children's and adults' environments [Matthews 2001]. These barriers put childhood into clearly predefined places and situations, where growing up may have varying degrees of autonomy from parents. Meanwhile, complete autonomy often implies restricted access to a place (e. g. school), which means that the periods and schedule of attendance by children and strangers are regulated. Other variants of restricting children's engagement with social life represent quasi-autonomous situations that take place with the direct participation of adults or under their (remote) supervision.

This study is premised on the opposition of two modes of children's involvement in social relationships: (1) children in the parental environment, or children inside families [Ennew 1995] and (2) street children, or children in the extended environment [Hart 1997; Matthews 1992].

The parental environment may imply more out-of-school classes and greater parental involvement in the children's education and unstructured leisure activities. A high level of parental involvement is associated with "concerted cultivation" as a cultural logic of child rearing [Lareau 2002]. Living mostly within the parental environment may improve the academic attainment of children due to greater parental involvement, active attendance in after-school classes, and leisure

education¹ activities, as well as through the positive experience of interacting with professionals in formal contexts (e. g. with educators during after-school classes) [Lareau 2002].

The “children in the extended environment” mode suggests breaking the strictly regulated situations; it rests upon multiple services and opportunities offered to children by the urban environment outside the zone of parental control. The extended environment implies higher independent mobility of children and a space for their unstructured activities. On the one hand, natural growth [Lareau 2002] with a lot of unorganized spare time is regarded as reducing the educational chances of children, while on the other hand, in the absence of regulations and time structuring the urban environment may become children’s “third teacher” [Matthews 2001], which will create situations necessary for them to mature and accumulate social experience. The extended environment [Ennew 1995] denotes a more large-scale space for children’s unstructured outdoor activities, whereby they spend less time on after-school classes and their life is under less control. High-performing students who are loaded with homework and after-school classes probably have smaller spaces for their unstructured activities. The focus of the study in this regard was on finding out how mobility patterns differed between children with different levels of academic performance.

Two major objectives are determined for this study. The first one consists in examining the structure of children’s urban mobility (ranges of explored urban environment). Robin C. Moore’s conception [Moore 1986] is used to describe the everyday mobility of children. Moore identifies three ranges of explored urban environment: habitual, frequented and occasional. Habitual range is shaped around the child’s home and includes local everyday destinations. Frequented range increases as the child grows up, depending on parents’ restrictions and physical barriers. Places within the frequented range are usually visited during a specific season or on specific days of the week. Occasional range forms the boundary between the explored and the unexplored outdoor environment in the child’s mind. As a rule, children only visit such places once under peculiar conditions. The density and spread of every range depend not only on the children’s age or gender but also on the spatial configuration of the populated locality [Matthews 2001]. We are interested primarily in the habitual range and the everyday mobility within it, i. e. distances to the most frequented places, types of places, who accompanies children as they go there, and how habitual range and everyday mobility differ depending on personal characteristics (gender, age, academic attainment).

¹ See, for example, [Jordan, Murray Nettles 1999; Roth, Malone, Brooks-Gunn 2010; Hansen, Larson, Dworkin 2003]; [Griffin 2004; Greene, Kisida, Bowen 2014; De Witt, Storksdieck 2008; Beghetto, Kaufman 2007]—on the effects of consistent after-school attendance on academic achievement.

The second objective consists in analyzing the differences in exploiting urban places for shared family leisure activities, including leisure education (parent-child classes, public lectures, and other urban events), between families with different characteristics (financial standing and cultural capital). There is empirical evidence that families with sustainable incomes, high professional status and great cultural capital exploit more urban opportunities than other social groups living in the same neighborhoods, which is true even for public spaces [Karsten, Felder 2015]. The parenting styles of families with high socioeconomic status imply busy after-school schedules for children [Arendell 2001; Vincent, Ball 2007; Holloway, Pimlott-Wilson 2014]. This is where a question arises: how does the access of children to leisure education differ depending on family characteristics?

2. Research method

2.1. Sample

A survey of students from four schools in different suburbs of Moscow (Kapotnya, Dmitrovsky, Yaroslavsky and Yasenevo) was conducted using the continuous sampling method. It covered all of the students in grades 5–10 who were present on the day of the survey and whose parents had given their permission for their children to complete the survey. Out of 3500 fifth- to tenth-graders from four schools, 1711 proceeded to complete the questionnaire. After removing the empty, incomplete and invalid questionnaires, the final sample included 819 respondents (about 23% of the total student population).

A survey of parents of school students in grades 5–10 was conducted in the same schools and classes. This was also continuous: the questionnaire could be completed by any adult member of a child's family. All in all, around 3500 questionnaires were distributed either in paper form, handed to parents by their children, or as links to online questionnaires. The response rate was 24%. Most returned questionnaires (89%) were completed by mothers; only the mothers' answers were sampled for further analysis in order to ensure a higher level of sample homogeneity, resulting in a total of 749 questionnaires.

2.2. Data and survey method

The student survey was conducted using dedicated software in the ICT rooms of the schools. The respondents were asked to plot their homes (to measure the home-school distance) and frequented places (apart from home and school) on a map of Moscow. Next, the students were asked to indicate how often they attended each specific place (number of times in a month) and with whom. The questionnaire was tested using a pilot survey, where children were offered to find and mark their home and school, draw their route from home to school, and indicate the frequented places on a paper map of the district (within a 1.5 km radius of the school) as well as on the map. These tasks did not present any difficulties.

Everyday mobility is hard to plot on a map. A considerable portion of daily movements are probably “purposeless” hanging out [Pyyry,

Tani 2016; Horton et al. 2014], i. e. a matter-of-course, pretty unconscious activity that is difficult to translate into distinct places. The respondents quite often marked areas that we dubbed “areas of attraction”. These are areas with fuzzy boundaries (streets, metro stations, etc.), where children seem to spend time “just walking” without any destination or purpose, so the respondents indicated such places by binding them to urban place names: “my district”, “Kapotnya’s District No.5”, “Yaroslavskoe Highway”, etc.

Student attainment data was provided by the schools. The respondents were identified using codes instead of real names, so as to ensure anonymity. At the beginning of the survey, the students entered the same codes so that their data could be matched with their answers on the map.

Parents were surveyed using online or hardcopy questionnaires (whichever the school administrators believed would ensure better sample coverage).

The student and parent questionnaires were marked with the same codes. However, the low response rate (23% among students and 24% among parents) resulted in a low proportion of matching student-parent pairs (mothers’ answers were available for 26% of the students only), which made using family characteristics and other parent survey variables in student survey analysis and vice versa impossible.

2.3. Description of variables

Home-place distance: the distance from home to each of the places that a student plotted on the map.

Distance from home to the most frequented place: students were asked to specify the number of times they visited each of the places plotted on the map over the last month; next, the most frequented place was determined and the distance to it was measured.

Type of place: with each of the places marked, students were asked an open question about what kind of place this was; the answers were encoded.

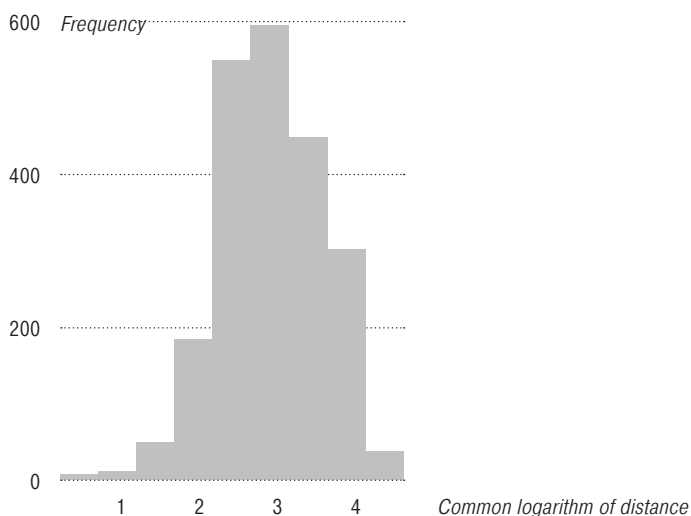
GPA: the average result of all the school grades achieved in all subjects during the academic year 2015/16.

Places attended with adults. Parents were asked about how often they had engaged in any of the following activities together with their child over the last two weeks: street activities (sports, active street games, roller skating, cycling, etc.); walking in a park or a zoo; exhibitions, theaters, etc.; urban events and public lectures; parent-child classes; cafés and restaurants; shopping; going over to someone’s house; cinema; entertainment complexes, arcade games and amusement rides.

Family’s cultural capital: frequency of going to theaters, museums and exhibitions, classical music concerts in 2015 (index, the total number of times).

Family’s financial standing: whether a child has a room of their own; family income (encoded ranges of average household monthly income per person).

Figure 1. **The distribution of the common logarithm of distance to the places marked**



3. Findings

3.1. The structure of children's urban mobility

Let us first analyze the structure of children's urban mobility by considering all the places plotted on the map, not only the most frequented ones. The distribution of distances to the places marked is non-normal, being skewed to the dots that are closer to home. Distances to places were translated to a common logarithm of distance, which was used to estimate the mean values and obtain a normal distribution. To make interpretation easier, the common logarithm values were translated to meters/kilometers after the means had been estimated. Half of the places marked are located within 870 m of their home (common logarithm of distance = 2.94, see Fig. 1). The median distance from home to the places marked by the youngest respondents, i. e. fifth- and sixth-graders, is 560 m.

Hierarchical cluster analysis with a single variable (distance to the place marked) was performed to identify the main ranges of children's mobility or group the places by their distance from home. Next, the optimal number of clusters was determined (using the "elbow method") to be 3, both for the total sample and for each of the key home districts. Figure 2 displays all the dots marked by students, divided into the identified clusters. Students marked on average three places they attended with an average frequency of eight times per month.

The first cluster includes the places that are the closest to home, on average within 650 m. These are visited by school students more often than others, on average nine times in a month² (Table 1). This

² The differences between the first cluster and the second and third ones are

Figure 2. **Place visiting frequency (over the last month) and distance from home**

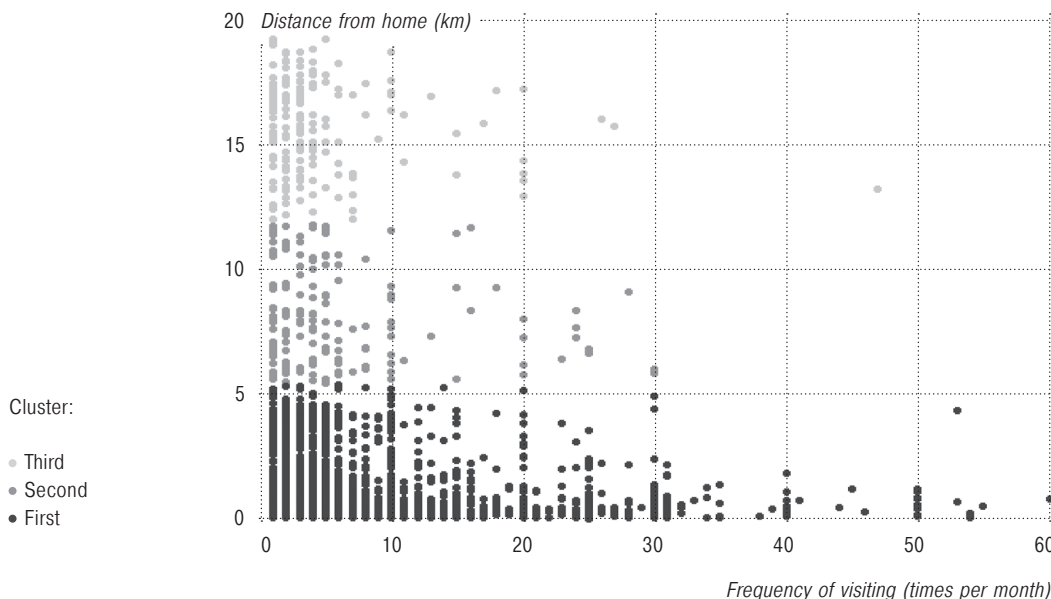


Table 1. **Characteristics of the clusters identified**

Cluster	N	Average frequency of visiting (times per month)	Average distance from home (km)
1	1,836	9	0.65
2	164	6	8
3	176	4.6	15

cluster is the largest one, comprising 84% of all the places marked. Such places as playgrounds and street pitches, soccer fields, sports grounds, shopping malls, stores/shops and other schools can be found statistically significantly less often in this cluster than in any other (Table 2).

The places that were included in the second cluster are situated farther from home (within 8 km on average) and visited less often³. Finally, the third cluster includes the least visited and the most remote places. After-school classes and parks can be found statistically sig-

statistically significant both for the distance from home and for the frequency of visiting (*t*-test, *p*-value<10⁻⁵).

³ Statistically significant differences with the third cluster in the frequency of visiting (*t*-test, *p*-value=0.04) and distance (*t*-test, *p*-value<10⁻⁵).

Table 2. The distribution of types of places visited by students across clusters

	Cluster			Proportion of all places marked (%)
	1	2	3	
After-school classes	12%	21%	5%	12
Playgrounds and street pitches	9%	2%	0%	8
Friends' or relatives' houses	6%	9%	7%	6
Shopping malls	25%	8%	9%	22
"Areas of attraction"	12%	14%	28%	13
Stores and shops	15%	5%	2%	13
Parks	10%	34%	30%	14
Sights	1%	3%	18%	2
Other schools	5%	2%	0%	4
Soccer fields / sports grounds	6%	2%	2%	6

nificantly more often in the second cluster than in the first or third ones, while the third cluster includes "areas of attraction" and sights (most often museums, theaters and Red Square) statistically significantly more often. These are places that "pull" school students out of their home districts.

As we can see, children actively explore their home districts, i. e. the playgrounds, street pitches, stores/shops and shopping malls closest to their homes. Such behavior patterns largely resemble those typical of adults aged over 40, whose mobility is also mostly restricted to their home and neighboring districts, journeys to the city center accounting for only a third of their movements [Bogorov, Novikov, Serova 2013]. The spatial range of this explored area is relatively short, being 650 m from home on average and not exceeding 870 m in half of the cases. The rest of the city districts remain virtually unexplored: only one in seven places marked by school students is located outside the close range, and students visit them statistically significantly less often than the places within the close range.

3.2. Habitual range: distances and types of places

Habitual range includes the most frequented places. Half of these are located within 800 m of home (the median value of common logarithm of distance being 2.9, see Fig. 2).

The most frequented places include, primarily, after-school classes, playgrounds, street pitches, soccer fields, sports grounds, and shopping malls (Table 3). There are few age-related differences: sixth- and seventh-graders prefer playgrounds and pitches, while older students tend to favor shopping malls (the mean age in these cohorts be-

Figure 3. **The distribution of the common logarithm of distance from home to the most frequented places**

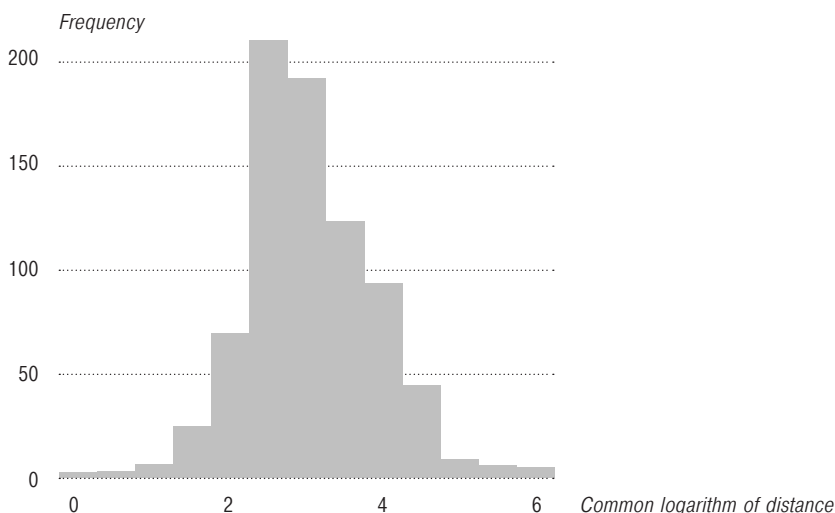


Table 3. **Habitual range: characteristics of the most frequented places** (the largest categories)

	Percentage of respondents (%)	Mean distance from home to the place (km)	N
After-school classes	21	1.01	139
Playgrounds, street pitches, sports grounds and soccer fields	17	0.33	116
Shopping malls	14	2.2	92
“Areas of attraction”	13	1.85	86
Stores and shops	11	0.47	73
Parks	11	1.89	75
Friends’ or relatives’ houses	7	3.56	45
Other schools	6	0.35	40

ing 13.3 and 14 years, respectively). The results obtained confirm the existing findings that shopping malls are the new hangoutplaces for children [Pyry, Tani 2016].

A positive correlation is revealed between student age and distance to the most frequented place, yet the correlation coefficient is low (Pearson’s correlation coefficient = 0.19, $p < 0.0001$). Age has a statistically significant influence on the range of “habitat”, but the lat-

Table 4. **Academic attainment and types of the most frequented places**

Type of place	GPA	N	Standard deviation
After-school classes	4.17	111	0.57
Playgrounds, street pitches, sports grounds and soccer fields	3.96	95	0.52
Friends' or relatives' houses	3.88	34	0.51
Shopping malls	3.96	76	0.63
"Areas of attraction"	4.01	73	0.66
Stores and shops	3.92	59	0.59
Parks	3.71	52	0.65
Other schools	3.95	29	0.66

ter increases insignificantly as children grow up (in the age cohort of 11–16 years).

No relation was found between distance to the most frequented place and academic attainment. Therefore, the size of "habitat", if we define "habitat" as restricted to the most frequented places, does not differ depending on academic performance or age (in the age cohort of 11–16 years).

Statistically significant differences are observed in the frequency of visiting different types of places depending on academic attainment of school students (Table 4). After-school classes account for a higher proportion of the most frequented places among higher-performing respondents. The mean academic attainment of children who indicated after-school classes as their most frequented places is 4.23 grade points, as compared to 3.99 among students attending other types of places more often (statistically significant differences, $p < 0.0001$).

Meanwhile, the overall number of places plotted on the map is not smaller among high-performers than among other respondents. On the contrary, there is a weak yet significant positive correlation between academic performance and the number of places marked (Spearman's correlation coefficient = 0.13, $p < 0.005$). It can therefore be assumed that students with better academic performance have more time-structuring dots on the map (after-school classes), but it does not mean that their urban mobility patterns are less diverse.

Beside the distance from home and the types of places, we were also interested in who accompanied children to the places they marked on the map. It transpires that children visit about 33% of the places on their own, 21% with their parents or other adult family members, and the rest of the places with their friends or siblings (47%). Shopping malls, stores/shops and parks appear to be the most pop-

Table 5. Mean distances to frequented places depending on whom students attend them with

	N	Mean distance from home (km)
On one's own	219	0.77
With friends	326	0.82
With parents / other adult family members	147	2.74

Table 6. Differences in academic attainment between children categories identified based on whom they visit their most frequented place with

	On one's own	With friends, siblings or cousins	With parents
Grades 5–7	4.05	4.02	4.28
Grades 8–10	3.90	3.97	4.14

ular places visited together with parents. The mean distance to the places visited with parents is statistically significantly greater than the distance to places visited with friends or on one's own⁴ (Table 5), these differences being preserved in high school (grades 8–10).

High-performing students go out more often with their parents, which is true for various age cohorts (Table 6). Students were divided into two age cohorts (grades 5–7 and 8–10), as academic attainment normally declines with growing up, and so does the proportion of places visited with parents. Both cohorts demonstrate statistically significant differences between those who visit their most frequented place on their own and those who do it with their parents (*t*-test, $p=0.013$ for students in grades 5–7, $p=0.037$ for students in grades 8–10). There are also differences among fifth- to seventh-graders between those who visit this place with their friends and those who do so with their parents (*t*-test, $p=0.003$).

3.3. Shared family activities: differences depending on cultural capital and financial standing

Shopping malls and parks/zoos are the most popular places for shared family leisure time. On the whole, the higher cultural capital of a family, the more shared activities parents and children engage in (Pearson's correlation coefficient = 0.292, $p<0.0001$). The number of shared leisure activities also correlates with a family's financial standing, being statistically significantly higher in families where chil-

⁴ The differences were assessed using the *t*-test, $p<0.0001$ for children in grades 5–7 and $p=0.001$ for children in grades 8–10.

Table 7. **Shared family leisure activities**

	Percentage of respondents (%)
Stores/shops and shopping malls	66
Parks and zoos	41
Street activities	36
Going to someone's house together	35
Cafés and restaurants	35
Cinema	33
Exhibitions, theaters, etc.	19
Entertainment complexes, arcade games and amusement rides	11
Urban events and public lectures	9
Parent-child classes	3

dren have a room of their own (2.97, as compared to the mean value of 2.64; t -test, $p=0.02$).

A relatively small percentage of the respondents mentioned leisure education activities: 19% have been to exhibitions or theaters; 9% have attended urban events, and 3% have engaged in some parent-child classes.

The effects of cultural capital are perceptible in nearly all types of shared leisure activities, the level of cultural capital being higher among those who mentioned a specific shared leisure activity than among those who did not, which is true for nearly all types of such activities (except entertainment complexes, stores/shops and shopping malls). However, differences in financial standing were only observed among families who mentioned three types of shared leisure activities with different frequency: parks/zoos, exhibitions and theaters, and entertainment complexes (and only in one indicator of financial standing, namely whether a child has a room of their own or not).

These results are consistent with previous findings that social class differences affect not only the likelihood of attending after-school classes (due to parents' willingness to invest in education, and availability of resources to invest [Vincent, Ball 2007; Lareau 2002; Karsten 2014]) but also the ways families share their leisure time in the city: households with higher socioeconomic status and cultural capital exploit urban opportunities more actively than other social groups [Karsten 1998; Karsten, Felder 2015].

4. Conclusion This study was meant to investigate the extended learning environment of modern school students. There is no doubt that children develop and learn not only in various educational institutions but outside of them as well; besides, numerous studies report positive effects of urban mobility [Kyttä 2004; Rissotto, Tonucci 2002] or emphasize the importance of the educational potential of the urban environment [Matthews 2001; Soenen 2004; Jacobs 2011]. However, the everyday mobility of Russian children still remains understudied.

Our research was focused on investigating the characteristics of urban mobility, including daily movements, of fifth- to tenth-graders from four Moscow schools located in different suburbs, namely, the distance to the most frequented places, the types of such places, and whom children visit them with. It has been established that children actively explore their home districts within a radius of about 1 km from home, while visiting the neighboring districts and the city center much less frequently. The “habitat” (distance from home to the most frequented place) changes little as children grow up, at least in the cohort surveyed (11–16 years).

High-performers indicate after-school classes as their most frequented places more often and are more likely to go out with their parents. These differences are typical of different age cohorts, which fits into the cultural logic of “concerted cultivation”. Meanwhile, the overall number of places marked by high-performing students is at least the same as marked by other respondents (there is a weak but significant positive correlation between academic attainment and the number of places marked). The distance to the most frequented places does not differ depending on student performance. Therefore, the available data does not provide strong evidence that high academic performance predicts less active exploration of the urban environment.

Another goal of this research was to describe the places for shared family leisure activities, including leisure education (parent-child classes, public lectures, and other urban events). The survey of mothers of fifth- to tenth-graders from the same schools was used to demonstrate that the frequency of engaging into nearly all shared activities, including leisure education, depends on the cultural capital of a family.

Naturally, the urban mobility of children needs to be analyzed in more detail and on a larger sample. In particular, this is necessary to find out how children with different levels of academic achievement explore the city: although no clear differences in the distance to the most frequented places were revealed between higher- and lower-performing students, they could still be found in the time spent outdoors, ways of engaging with the environment, its perception, and the experience obtained. Another prospective avenue of research consists in drilling down on the joint effects of social class and city district on children’s exploration of the urban environment. The existing

studies devoted to the influence of family characteristics on city exploration seem to put the factor of these effects on the back burner. In a situation where learning environment is growing beyond school and traditional after-school classes, research on children's everyday urban mobility is essential to understanding the differences in the educational opportunities of children depending on their family characteristics and where they live.

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What's in My Profile: VKontakte Data as a Tool for Studying the Interests of Modern Teenagers

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Abstract. Children's interests play a key role in their psychological development. However, research in this field is associated with serious methodological problems, as it has traditionally used questionnaire surveys that cannot adequately describe the diverse and dynamic world of interests of a developing person. The article suggests using the information on VKontakte communities followed by teenagers, in order to explore their interests. Apart from being comprehensive, vkontakte data is, unlike questionnaire answers, also uncensored. The method's potential demon-

strated through the example of a Moscow school with 674 students following 20,203 various VKontakte communities. It reveals that teenagers' interests vary depending on their gender, age, and academic performance. The degree of such variance is demonstrated on an extended set of data on the interests of 290,182 VKontakte users. It transpires that communities followed by teenagers predict with high accuracy not only their gender (97%) and age (98%) but also the performance of the schools they attend (83%). The findings point to the heterogeneity of age-related behavior patterns, in particular to their correlation with gender and academic achievements. Acknowledgement of the heterogeneity of interests and the diversity of age-related behavior patterns creates conditions for the further development of student-centered education, in the absence of which education is becoming more and more alienated from real life, ignoring the interests of real people. **Keywords:** social networking services, VKontakte, adolescence, interests, machine learning.

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Changes in interests and their development are the fundamental nature of adolescence, according to Lev Vygotsky. The chapter *Development of Interests in the Age of Transition* of his *Pedology of the Adolescent* begins with an often quoted sentence: "The problem of interests in the age of transition is the key to the whole problem of mental development of the adolescent." [Vygotsky 1984a: 6] And further:

“Research in this area should begin with recognizing that not only skills and psychological functions (attention, memory, thinking, etc.) of the child develop; mental development is based first of all on the evolution of children’s behavior and *interests*, i. e. changes to the structure of their behavioral orientation.” (italics added) [Ibid.] Vygotsky argued that Russian research tradition defined age as a social situation of development, as attitude toward “reality, social reality first of all.” [Vygotsky 1984b:258] Therefore, attitude (at least as applied to adolescence) and interest are at least close notions, if not synonyms. In the period of adolescence, attitude assumes the shape of interest. Hence, adolescence can be described through the structure of interests.

Another basic assumption of Vygotsky, important for this study, is the uniformity of age-graded behavior patterns. Age is described as a universal characteristic by Vygotsky as well as other classical age-periodization researchers: Piaget, Freud, and Erikson. In fact, developmental psychology as such is premised on the idea, or metaphor, of the universal “ladder” of age-bound stages. Any deviation from this universal trajectory of growing up is interpreted as acceleration or a delay in development, but never as diversity. Erica Burman is critical of this viewpoint: “A normal child—an ideal type constructed from the results of empirical research of different age periods—thus becomes a myth, or fiction.” [Burman 2006: 30] As Burman believes, the concept of “normal” behavioral patterns dominates real-life manifestations of individuality.

By combining the two ideas—that of interest as the fundamental nature of age and that of uniform age-graded behavior patterns—we raise the following questions: to what extent are the interests of one age cohort, namely adolescents, uniform and with uniform objects, to what extent can these objects be identified as uniform, and if they cannot be at all, does it indicate a deviation from normal development or just various types of development?

Interest research methods

Interests and related constructs—needs, motives, inclinations, and orientations—have been traditionally studied using the survey method, most often fill-out questionnaires [Lubovsky 2003]. In preparing such questionnaires, psychologists and social researchers always (except when using projective tests) predetermine a standard, “normal” pattern of the phenomenon, function, or process, i. e. the object of research. This pattern is operationalized, and then criteria are set to determine the compliance of real values with the standard (average) ones (usually at the validation stage). When individual tests are analyzed, researchers assess compliance of empirically observed values with the standard ones. However, on the one hand, questions asked to respondents may be irrelevant for an individual, who may be indifferent to the issue, which will produce random and useless answers [Bertrand, Mullainathan 2001]. On the other hand, researchers risk miss-

ing out on something that really matters to an individual. This problem becomes especially acute when it comes to research on interests as a significant private domain of an individual’s life.

An alternative solution is offered by projective methods [Sokolova 1980], which are based on Freud’s idea of projecting one’s feelings upon exterior objects. The methodology consists in presenting stimuli that allow infinite interpretations; interpretations provided by the respondent are treated as induced by the individual’s unique system of inner experiences. Analysis of adolescent behavior on social networking websites can be regarded as an investigation of an individual’s unconscious projections. The very choice of content (from a virtually infinite set of options) is a projection of personal interest, which becomes manifested to both the individual and the researcher, if the latter succeeds in explicating these choices.

Regardless of the methods selected—qualitative or quantitative, objective or projective, etc.—there is another problem that distorts the potential results of adolescence research significantly: censoredness (social acceptability) of answers. As soon as research involves an issue that really matters to a respondent, there will be a high risk of elusion and disguise, which even the respondent will not always recognize. This is especially important when applied to adolescents, because one of the characteristics of this age period is the emergence of one’s own “zone”, deliberately concealed from external observers [Osorina 2011].

Thus, theoretical efforts are focused on the key characteristic of interest, which is, however, inaccessible for observation or empirical research. As a result, a critical need is encountered requiring new methods that can reveal the interests of adolescents *per se*.

We believe that the investigation of adolescent online behavior can be a step in the right direction towards the development of such methods. Social media has become a natural habitat for modern adolescents, who use mobile devices all the time [Koroleva 2016a]. When a school student creates a profile, they add friends, post content, join communities, etc.—independently, at their own discretion, choosing from a virtually infinite number of options. This study proceeds from the assumption that adolescents’ profiles represent maps, of sorts, of users’ interests which provide the unique opportunity to study them objectively.

Vkontakte communities

Checking their inbox and scrolling through newsfeeds on social media regularly have become an everyday ritual for adolescents [Koroleva 2016b]. Vkontakte (VK) seems to be largely prioritized among school students: 86% of the respondents reported having their primary social media accounts on this website [Koroleva 2016a]. The Vkontakte newsfeed is made up of the content posted by the user’s friends and

the communities that he/she follows. Social media communities afford a unique opportunity to investigate the interests of adolescents, which cannot be revealed by any traditional empirical study [Lewis et al. 2008]. There are over 26 million communities on VK, the most popular of them being followed by hundreds of thousands of users. Communities may be dedicated to a popular computer game, movie, book, actress, performer, politician, etc. Most organizations and brands, from Mariinsky Theater to tattoo studios, have a VK community of their own. Extremely diverse interests and hobbies, from embroidery to quantum physics, are represented on VK. Nearly every school has a community called “Overheard in ...”, where students share gossip. Communities can also be devoted to sexual relationships, one-sided love, or a specific lifestyle or mood (e. g. “Warm blanket, cocoa and fireplace”).

As we can see, social media content can be regarded as stimuli for users to project their interests, and communities that users follow as maps of their personal interests.

Research data and methods

A dataset on 674 students from a Moscow school was used, including their academic performance (GPA for the last academic year), gender, grade (5–10), and VK communities that they follow. The overall number of communities followed by at least one student was 20,203. As soon as the communities followed by no more than ten students were removed, there were 883 left for analysis.

A special software application making requests to an API (application programming interface) was used to collect data. The software is launched by a school representative who inputs the list of students. Using this list, the app identifies students with their VK profiles. To enhance coverage, the app scans not only through users who disclose their school information but also through their VK friends. In addition, the app uses an extensive set of name variations (Anna, Anya, Anechka, Anyutka, etc.). As soon as all the profiles have been identified and the information has been uploaded, the app removes all the names and other VK identifiers. The anonymized data then undergoes further investigations. Approach effectiveness and the lack of significant bias were demonstrated by Smirnov, Sivak & Kozmina [2016].

In order to assess the diversity of interests among students of the same school, we produced maps of their interests. At first, the ratio of female and male followers for each community, their mean GPA, and their mean age were determined. Next, community names were plotted on a coordinate plane depending on the values obtained. The X-axis shows the age of students (expressed in their grade), and the Y-axis indicates their academic performance.

Interest maps

Figure 1 presents communities where over 50% of the followers are girls, and Figure 2 presents those where over 50% are boys.

Figure 1. Map of students' interests. Communities with the percentage of girls of over 50%

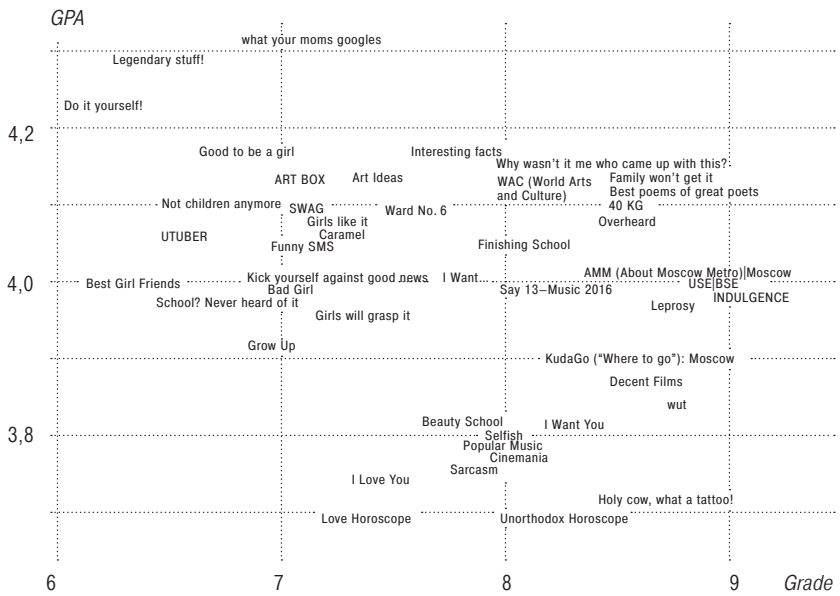
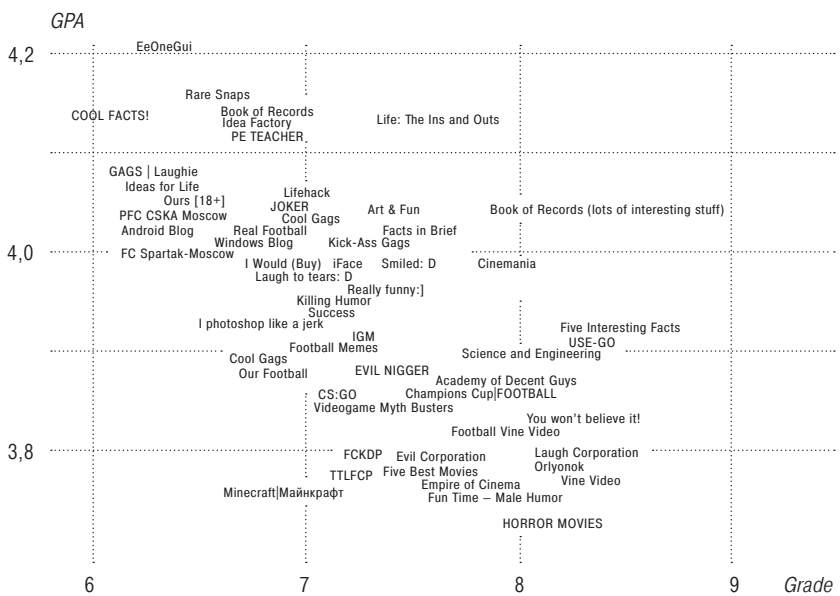


Figure 2. Map of students' interests. Communities with the percentage of boys of over 50%



This qualitative data alone is enough for some preliminary discussion and judgments. The communities followed mostly by boys form a diagonal that crosses the map from the upper left corner to the bottom right one, i. e. from high-performing sixth-graders to low-performing ninth-graders. The girls' map has a less defined structure in this regard. Such distribution of the communities has to do with the natural trend of academic performance declining from grade 5 to grade 10, boys normally showing a steeper drop.

The maps demonstrate quite clearly that the choice of communities changes from middle to high school. Girls join communities on average later than boys (fewer communities in the left part). Low-performing girls (bottom right corner) follow such communities as “Love Horoscope”, “Unorthodox Horoscope”, or “Holy cow, what a tattoo!”. Their better-performing female peers join learning-related communities, like “USE/BSE”. An even higher level of academic performance is observed among girls following “40 KG”, the community devoted to healthy eating, fitness and sports. Noteworthy, girls begin to join “Not children anymore”, a community about sex, using rather coarse language, as early as in their sixth grade; fewer boys of the same age are observed among the followers. “Fun Time—Male Humor” only appears in grade 8 among low performers. Higher-performing boys are also members of USE and BSE communities, similar to their female peers.

Gender- and performance-based differentiation

Tables 1 and 2 present “girlish” and “boyish” communities with the highest percentages of the dominant gender, while Tables 3 and 4 contain communities with the highest and lowest GPA among their followers, respectively. The communities singled out using this technique were studied more closely (at least 15 most recent posts). They were grouped into categories describing typical content of their posts. Some communities could not be assigned any specific category due to the high degree of content heterogeneity, so they were classified as “Other”. All of these communities largely post images and videos. Text posts are short and usually serve as descriptions for images and videos; purely text posts are extremely rare.

The most popular communities include those dedicated to romantic relationships (including sex), computer games, football, and various “ideas”, whether it be smart inventions or tips for unusual uses of everyday items. Nearly all the posts, except for purely romantic ones, contain jokes and “gags”. However, there is also a dedicated “Humor” category.

The texts often feature obscene language (sometimes abbreviated or with one letter replaced with a symbol); meanwhile, the romance-related communities use words like “cuteness”, “hugs”, etc. as well as “cute” images a lot.

Table 1. Communities with girls accounting for over 80% of the followers

Percentage of girls,%	Community	Category
100	Finishing School	Girlish
100	Best Girl Friends	Girlish
100	Good to be a girl	Girlish
97	Girls will grasp it	Girlish
96	Caramel	Girlish, dreaming about family, fidelity, etc.
95	40 KG	Weight loss, healthy eating, sports
95	Girls like it	Girlish
93	Family won't get it	Girlish, growing up
91	Beauty School	Beauty
90	#SWAG	Girlish, lovey-dovey, humor
87	Creative IDEAS	Needlework, etc.
85	I Want...	Other
84	Grow Up	Love, dreams, platitudes
83	Best poems of great poets	Poems, mostly about love
82	Do it yourself!	Needlework
82	Bad Girl	Girlish, inclined to uniqueness and bitchiness
82	Idea Factory	Needlework, etc.
82	Art Ideas	Needlework, etc.
80	Not children anymore	Love
80	suffocating.	Ideal love, uniqueness

Table 2. Communities with boys accounting for over 80% of the followers

Percentage of boys,%	Community	Category
100	CS: GO	Computer games
100	Windows Blog	Computers
100	GameFan	Computer games
96	Videogame MythBusters	Computer games
96	Football Vine Video	Football
95	Minecraft Майнкрафт	Computer games
93	Champions Cup FOOTBALL	Football
92	IGM	Computer games
91	Football Memes	Football
91	Success	Other
91	Real Football	Football
90	FOOTBALL MEMES	Football
88	Academy of Decent Guys	Boyish
86	Our Football	Football
82	Book of Records (lots of interesting stuff)	Interesting facts
80	EVIL NIGGER	Racist jokes
80	HORROR MOVIES	Horror films

Boys' interests focus around football, computer games and various sorts of humor. Communities followed by boys often use obscene language and slang and post a lot of photos of recognized sex symbols. Irrespective of their content and major topics, such communities contain lots of joke-like videos and texts with surprising endings as well as unexpected situations, like a video of a multiple vehicle collision on a slippery road (“Slippery Canada”).

The maps of the communities followed by girls look totally different. Girls are interested in “girlish stuff”, romance first of all. There are a lot of posts “about him”: he must understand, he must accept, he will come back for sure and regret the break-up even years later. Abundant posts describe break-ups, loneliness and abandonment. Assumingly, the narrative knot is what excites interest, while conflict-free, safe situations have no such drama in them. A lot of communities and posts touch upon relationships with a close girl friend, which indicates the phase of development, first described by Freud, where adolescents experience a strong eroticized feeling for a same-sex friend. The “Bad Girl” community also revolves around girlish issues, yet with elements of causticity and cynicism, which are implied by the name: the character is presented as smart, strong and little bothered by what others think of her. There are a pretty large number of needlework-related communities, which can be associated, at a stretch though, with the “Idea Factory”, popular among the boys. The language of the girls' communities contains less vulgarisms and obscenities, although it would be too soon to say anything particular about the ratio of foul language used by boys and girls at this stage. Meanwhile, posts in the girls' communities feature numerous “pet” and hypocoristic words, such as “cuteness” or “hugs”.

While communities followed by boys can be structurally associated with strong action, the girls' ones are largely about emotional experiences.

The ranking of “A students' communities” is topped by “what your mom googles”, a very peculiar community posting imaginary search engine queries of a mother that have the structure, “OK Google, why does my daughter ...?”, e. g. “OK Google, why is my daughter waiting for a letter from some Hogwarts?” That is to say, adolescents describe imaginary concerns of a mother (probably both parents) about what is going on with her daughter. This is a rather complex cognitive mechanism: an adolescent figures what in their behavior, while obvious and natural for them, could seem strange to their parents. The obviousness for some (adolescents themselves) and incomprehensibility for others (parents) are what makes every post funny (to a greater or lesser extent). The same community mentions the social network service Odnoklassniki (“Classmates”) and mail.ru mailboxes as instances of something obsolete. However, this humor is not mean or blunt. The “Family won't get it” community could also be partly classified into this category, but this one is rather about self-descriptions

Table 3. Communities with the mean GPA of over 4.1 among followers

GPA	Community	Category
4.30*	what your mom googles	Humor, self-identification
4.28*	Legendary stuff!	Ideas
4.22*	Do it yourself!	Ideas
4.20*	EeOneGuy	Other
4.16*	Good to be a girl	Girlish
4.15*	Interesting Facts	Interesting facts
4.15*	Rare Snaps	Photography
4.14*	Why wasn't it me who came up with this?	Ideas
4.13*	Book of Records	Interesting facts
4.13*	COOL FACTS!	Interesting facts
4.12	Ideas for Life	Ideas
4.12	Family won't get it	Humor, self-identification
4.12	Art Ideas	Ideas
4.12	WAC	Humor
4.12	Idea Factory	Ideas
4.12	PE TEACHER	Other
4.11	ART BOX	Needlework, etc.
4.10	Best poems of great poets	Poetry

Table 4. Communities with the mean GPA of under 3.8 among followers

GPA	Community	Category
3.68*	Love Horoscope	Horoscopes
3.68*	Unorthodox Horoscope	Horoscopes
3.70*	Holy cow, what a tattoo!	Tattoos
3.71*	HORROR MOVIES	Films
3.74*	I Love You	Romance
3.75*	Sarcasm	Humor
3.76*	Fun Time—Male Humor	Humor
3.76*	Minecraft Майнкрафт	Computer games
3.77*	Cinemia	Films
3.77*	Vine Video	Video
3.77*	Empire of Cinema	Films
3.77*	TTLFCKP	Humor
3.78*	Popular Music	Music
3.78*	Five Best Movies	Films
3.79	Evil Corporation	Humor
3.79	Selfish	Other
3.79	Orlyonok	Humor
3.79	FCKDP	Humor
3.79	Laugh Corporation	Humor

that adults will not understand, as the name suggests—consider the “personal fable”, a characteristic introduced by David Elkind [Alberts, Elkind, Ginsberg 2007].

Besides, the communities followed by “A students” include the “Idea Factory”, which offers amusing or serious-minded unorthodox ways of using everyday items, weird combinations of them, etc., communities dedicated to humor, films and music, and “Best poems of great poets” (mostly about love). The subject of sex is also represented in nearly every community, but most often within other subjects (e. g. when parents come home to find a young couple having sex).

The communities followed by lower-performing students are a totally different selection. They include horoscopes (“love” and “unorthodox” ones), “Holy cow, what a tattoo!” with numerous photos of tattoos and sometimes funny tattoo pictures, selections of films, videos, music, and various types of humor, sometimes very rude.

Communities followed by both types of users—high- and low-performers—use an extensive variety of language, including vulgarisms and obscenities.

Adolescent communities almost never touch upon school issues. School, learning, and the content of school subjects are thus left beyond the domains of children’s interests (except for tests and examinations, which are obviously given attention for purely external reasons, out of necessity). Low-performing students seem to show no interest even in exams.

As can be seen, a qualitative comparison of communities followed by boys and girls, or “A students” and “F students”, reveals differences in the interests of these adolescent categories. Differences can also be observed between different age cohorts, but their detailed description requires further research on the data, content analysis probably being the most appropriate method of comparison. This was not an objective at this stage of the research due to the large number of communities (over 800).

Level of differentiation of interests

Interest maps allow qualitative assessment of the differentiation of adolescents’ interests depending on their gender, age and academic performance. However, the significance of the revealed differences remains an open question, and using traditional methods to answer it is a challenging task. Let us consider an example. Suppose we would like to assess gender differences in academic performance. If we used the traditional approach, gender would be the independent variable and academic performance the dependent one. A regression model would be built to predict academic performance based on student gender and a number of control variables. The value of the gender variable coefficient and its significance level would predict the degree of correlation between academic performance and gender. Despite its widespread use, this approach has been strongly crit-

icized [Berk 2004] since the classical study of Edward Leamer [Leamer 1983], and it is far from being the only one possible [Breiman 2001]. The traditional approach is obviously inappropriate for answering the question raised here: users’ interests represent an oversized variable (hundreds of thousands), which cannot be used as the dependent variable in a regression model.

Predictive power of interests

We maintain that the level of differentiation of interests can be evaluated through their predictive power, namely through the accuracy of the model predicting a specific cohort (boys/girls, middle/high school students, etc.) based on the interests of adolescents. Otherwise speaking, if a high-accuracy gender-prediction model can be built, it will mean that interests are gender-differentiated. As with statistical hypotheses, the inverse is not always true: if no such model can be created, it does not mean that there is no differentiation at all.

Let us illustrate this thought with an example. Take gender and physical appearance: obviously, it is gender that determines appearance, not vice versa. However, it would be unreasonable to try to predict appearance based on gender, as the “gender” variable can only take two values while “appearance” can take billions. Yet, the correlation between gender and appearance is beyond argument—exactly because gender can be predicted based on appearance with high accuracy. The same can be true for interests: if interests can predict gender as accurately as appearance can, they will be at least as gender-specific as appearance is.

The creation of a prediction model requires much bigger data than we used, so information on all VK users born between 1993 and 2002, who specified the school in St. Petersburg they (had) attended, was additionally collected. Information on each user included gender, year of birth, the mean USE score among the graduates of their school over the last five years, and the list of communities they followed. All in all, this city dataset contained information on 290,182 users, and the overall number of various communities followed by at least one student was 886,191. Because there was no possibility to identify VK data with real-life indicators in this case, the reliability of the dataset was enhanced by removing the users who had no VK friends from the school they allegedly (had) attended.

Model building

That being said, it is not critical to use any specific prediction model. We prefer the approach proposed by Michal Kosinski and his co-authors [Kosinski, Stillwell, Graepel 2013]. First, because this is the most famous study that used data similar to ours, which means that we will be able to compare our results with international findings. Second, because Kosinski’s approach is straightforward and does not require using advanced machine learning methods to be understood. A

similar approach to big data analysis is used in social research [Eagle, Pentland 2009].

Users following less than 50 communities and communities followed by less than 50 users were removed from the city dataset. The resulting dataset covered 116,912 users and 40,774 communities. Being a member of each community or not was coded using binary variables a_j ($j = 1; \dots; 40,774$), where $a_j = 0$ if the user does not follow the j community and $a_j = 1$ if the user does. Thus, the whole dataset represents a (ij) 116,912 x 40,774 matrix whose entries are 1 in the case where the i th user follows the j th community or 0 otherwise. Next, singular value decomposition was performed to identify the 100 principal components b_k ($k = 1; \dots; 100$) describing users' interests.

b_k variables were used as predictors in the logistic regression. Target variables included the user's gender, age cohort, and the fact of attending the best- or worst-performing school. Cross-validation was performed and the dataset was divided into ten parts to avoid model overfitting.

Predictive power of community following

The models built on the city dataset predict the user's gender with 97% accuracy. They also allow for classifying the user into one of the two age cohorts with 98% accuracy, provided that the age gap is nine years (years of birth 2002 and 1993). However, in cases where the age gap is only four years (years of birth 2002 and 1998), accuracy drops to 88%. The model identifies even as small an age difference as two years with 70% accuracy, as well as users from 1% of the best-performing schools and 1% of the worst-performing schools with 83% accuracy. However, only 62% accuracy is achieved in dividing users between 50% of the best-performing schools and 50% of the worst-performing ones. Such a low level of accuracy is no surprise, since individual academic achievements of students from schools of these two categories largely overlap.

Using the interests of adolescents, their gender can be predicted with nearly 100% accuracy. It means that if we have a set of interests of some girl student, we can find a similar set of interests in another girl, but never in any boy student. In theory, high prediction accuracy can be ensured by merely memorizing the sets of interest that should correspond to a specific gender. However, in this case we would not be able to draw any meaningful conclusions from this high degree of prediction accuracy. In order to avoid this, cross-validation was performed. In this case, model accuracy is tested on a different dataset than the one used for its creation.

Conclusion

A virtual environment, in particular Vkontakte social networking service, used by the overwhelming majority of Russian school students, contains not only personal accounts and profiles but also communi-

ties: public pages and groups—which gather users with the same or similar interests. In this study, the fact of following a community was regarded as an indicator of a student’s interest in the content that prevails in the community. Communities followed by school students were identified and grouped based on the data on students from a Moscow school (student lists and GPAs). On the whole, the findings do not contradict the existing information on the interests of school students. For instance, they are perfectly in line with the conception of four dominants— remoteness, strain, romance, and egocentrism—described in *Pedology of the Adolescent* by Vygotsky and with Elkind’s theory of adolescent egocentrism [Elkind 1967].

Mathematical procedures used in the course of the research extended and deepened these ideas considerably, filling them, most importantly, with specific content as a result of community content analysis. A special procedure needs to be developed in order to provide a more detailed and comprehensive description and identification of the content offered by communities. We believe that content analysis will be an adequate formalized tool to compare content across different communities. However, the existing versions of this tool cannot be applied directly yet, as community content is not restricted to text posts—which are actually the least frequent—they also include videos, pictures and audios. Therefore, it was decided to confine the study to the qualitative description of community content with the indication of language used by the users.

As a result, we offer a new tool for analyzing the interests of adolescents: the most informative domain of their lives. The results of tool application are largely consistent with the existing assumptions, making them more specific and comprehensive. The most important implication of this research is the possibility of differentiating the interests of school students based on their academic performance. We can now safely hypothesize that school students follow different trajectories in the development of their interests depending on their academic attainment. It means that information about the diversity of educational trajectories is confirmed by more specific information on adolescents’ internal psychological processes, i. e. their interests.

The study undertaken has both theoretical and purely practical significance. Theoretically, it points out the heterogeneity of age-graded behavior patterns, their relationship with gender and academic performance. Whereas diversity of boys’ and girls’ interests has always been implied one way or another (though never used for teaching purposes), performance-related differences in the interests of same-sex children have only been “discussed” outside the academic community, e. g. in films and literature on children. From now on, this diversity can be studied systematically and pointedly. A very important avenue of further research consists in describing the categories in more detail, based on at least three indicators—gender, age/grade and academic performance—instead of only one (boys/girls or high-/low-perform-

ers). Differentiation of adolescents based on the socioeconomic and cultural backgrounds that they come from also suggests itself naturally, but this type of information is not available in the form of big data as it is not disclosed in users' profiles.

The practical significance of information on the interests typical of adolescents in different categories seems obvious. First, availability of such information will create conditions for the humanization of education, which will otherwise become disconnected from real people, ignoring their personal interests; it will also enable the evolution of learning and leisure activities. Second, the recognition of the diversity of interests and age-graded behavior patterns can facilitate practical work with adolescents, encourage the development of their interests, and enhance personalized psychological support.

The education system keeps going with the idea of uniform age-graded behavior patterns, widely exploited in research on developmental psychology. However, this idea, dating as far back as pedology, seems to be becoming less and less in touch with reality nowadays.

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*In memory of our
favorite teacher and
old friend Lyudmila
Obukhova*

The Playground as a Phenomenon of Children's Subculture

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Abstract. The playground is analyzed from the perspective of cultural-historical psychology as a cultural artifact and a cultural tool for mental development. In accordance with its cultural function, a playground must provide opportunities for children and adolescents to satisfy their need for playing, moving, exploring the environment's properties and their own physical abilities, as well as communicating with other children and adults. Allowance for these functions should be made both when selecting the equip-

ment and when planning the overall playarea. Analyses of landscape architecture courses in Russia have demonstrated that neither syllabi nor study materials available in Russian provide the necessary training tools to enable landscape architects to design a playground that would satisfy the needs of children and adolescents. Therefore, cross-disciplinary cooperation is required. Developmental psychologists should be involved in playground planning as well as in the process of urban development training. Our results compare the behavior of children in conventional (16 playgrounds in Moscow) and next-generation playgrounds (6 playgrounds: in Neskuchny Garden in Moscow, Mikhailovsky Garden in Saint Petersburg, and Sochi Park). The next-generation playgrounds were found to answer children's developmental needs better, unlocking the potential of the playground as a development tool. This confirms the point on effective cooperation between landscape architects and psychologists.

Keywords: playground, play area, play, psychologist- and educator-assisted planning, architecture, cultural artifact.

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Psychologists in a playground? What could they be there for? This is the question that we often hear from our colleagues. Indeed, why would playgrounds be of interest to developmental psychologists?

Our team has conducted theoretical and empirical research on children's playgrounds (or, more broadly, children's play environments) as a specific phenomenon of culture, cultural tool, or artifact. We proceed from the assumption that children's activities in outdoor

play areas are associated with “disobjectification” of meanings and functions of play environments, in fact representing the creative, fanciful and transformative activities of children and their interaction with others—children and adults in the playground.

The theoretical foundation for our approach is provided by cultural-historical psychology and activity theory, i. e. the works of Lev Vygotsky, Aleksey Leontiev, Georgy Shchedrovitsky, Aleksandr Asmolv, Vitaly Rubtsov, Vladimir Munipov, Boris Elkonin and Vyacheslav Glazychev.

The first playgrounds became part of urban industrial culture in the early 20th century as a compromise between urbanization and children’s need to play and move [Kotliar, Sokolova 2016]. In modern cities, the playground is a place where children can play, move around, communicate, cooperate and experiment freely, i. e. playgrounds support their mental and physical development. However, different playgrounds offer different scopes for such opportunities. How does each specific playground fulfill its cultural function? How does it encourage child development?

The answer to these questions comes in several parts. First, it is necessary to analyze the specific activities that playground visitors, both children and adults, engage in, and assess the development potential of an individual playground. At the same time, it is important to describe the “perfect formula”, i. e. what a playground should be like in order to fulfill its cultural function, and to determine its design requirements. In addition, it is vital to find out whether the experts involved in playground design and development dispose of resources necessary to incorporate the required cultural functions.

Methodological support for play area design

Foreign practices regarding play area design have fairly ample methodological support. Researchers discuss general and specific issues of planning as well as its peculiarities in cases of creating public and educational institution play areas [Beltzig 1990; Dattner 1974; U. S. Consumer Product Safety Commission 2015]. Research in play safety and risky behavior is an essential component of methodological support for play area design [Ball, Gill, Spiegel 2008; Sheina, Sokolova 2016]. Empirical research provides a valid basis for design. As the framework of this article does not allow for dwelling on design research and practices (see our analysis [Kotliar, Sokolova 2016]), the illustration will be confined to two sources that Russian landscape designers feed upon.

Leading German play area designers Georg von Agde, Alfred Nagel and Julian Richter propose a very important perspective on what the playground is and what it should be like: “Adults often believe they know perfectly well what children need, which results in playgrounds restraining children’s activities and imagination. Children should be free to choose where, when and how to play. They

should be able to bring their experience into play and diversify games themselves. Therefore, play areas should be designed in such a way that children (and probably adults, too) could have multiple opportunities to engage with the world around them while playing." [Agde, Nagel, Richter 1988:6]. The idea is cultivated in Ernst Neufert's *Architects' Data*, the 'bible' for many landscape designers: "Play makes a fundamental contribution to the development of a child's personality. It is mainly through play that small children adapt to their environment. Play areas must be varied, changing and changeable." [Neufert 2006:220].

Therefore, the playground is first of all an area for play, experiments, and child or parent-child cooperation; it must be changeable and encourage children's initiative. This approach has been widely used in European play area design practices.

Playground planning is rather poorly described in the available Russian literature, both theoretical and empirical—mostly in the context of organizing object-based learning environments in educational institutions. Thus, teaching aids on this issue are largely presented by various regulatory documents¹.

It is only in Aleksandr Grashin's study that playgrounds are constructed as object-based development environments [Grashin 2008]. Play objects stimulate specific physical activities and also serve as metaphors. For example, children on a seesaw experience a continuous change of social standing, going from domination down to submission and back in turns. A number of playground objects imply cooperation and coordination of joint effort: a few people are required to spin a merry-go-round at maximum speed. Playground objects allow children of different ages to solve problems specific to their stage of development. While a preschooler must learn to use alternating hands and feet and develop this skill to climb stall bars, a middle-schooler has already achieved this goal and can set new goals with the same object, like climbing as high as possible. As Grashin points out, play area designers do not design an object (or set of objects)—they design a situation that promotes a child's activity and interaction with other people. "Elements of playground objects must fit a child-proportioned environment into the adult world." [Ibid.: 39] However, the book does not offer any specific recommendations or considerations, uses sophisticated language and, unfortunately, does not make a working tool for landscape designers.

Training landscape designers to design play areas

Landscape design curricula and the study guides of three colleges—Moscow State Forest University (the major university preparing land-

¹ National Standard of the Russian Federation "Playground Equipment. Construction Safety and Test Methods": http://tehnorma.ru/gosttext/gost/gost-dop_285.htm

scape designers), Ulyanovsk State Technical University and Magnitogorsk State University—were analyzed in order to evaluate the programs that train landscape designers to design play areas, from the perspective of this study. Bachelor’s and Master’s degree programs offer no dedicated play area design courses² but imply the possibility of undertaking small-scale optional projects as a part of other courses (e. g. Small Gardens or Design of Municipal Improvements). One of the study guides stipulates that a playground must be *completely safe* (bold added) and include equipment for physical activity, didactic games, drawing and molding [Sotnikova 2010]. Playgrounds are considered to be designed mainly for children aged under 12, while no facilities are provided for older children or adults (other than accompanying toddlers of 1.5–3 years of age). Such a perception of playground users narrows down the cultural function of play areas significantly.

Another study guide approaches the playground as a means of organizing children’s leisure education activities, as a place for preschoolers and early school-age children to play. It indicates that a playground contributes to the physical and mental development of children: “A properly organized playground motivates children for independent physical activity, personality development and the acquisition of important skills contributing to their cultural behavior.” [Grigoryev 2006: 4] Playground users are also restricted to early school-age children here, and the main activities include play and mobility. No specific methods of organizing a playground properly so that it fulfills its cultural functions are offered by the study guide.

Naturally, a number of factors affect the professional attitude of any expert, including landscape designers. The literature studied, the lectures attended and the term projects accomplished are not the only factors shaping this attitude.

How do young landscape designers picture a playground in their own minds? A two-year participant observation of 15 landscape designers analyzed their behavior and utterances in all kinds of situations: as they conceptualized playgrounds and discussed conceptions with customers, worked on specific projects, selected playground

² Bachelor’s degree curriculum in Landscape Design, Moscow State Forest University, Federal State Budgetary Institution of Higher Professional Education, available at: http://www.mgul.ac.ru/UserFiles/File/MetodOtdel/Uchebnye_plany_FGOS_VO_2016/Uchebnye_plany_Bakalavriata_2014_1___4_kursy/Ucheb_plan_350031001_14_12345_29.05.15_Oo_Vo_Zo_Ispr.pdf; Master’s degree curriculum in Landscape Design, Moscow State Forest University, Federal State Budgetary Institution of Higher Professional Education, available at: http://www.mgul.ac.ru/UserFiles/File/MetodOtdel/Uchebnye_plany_FGOS_VO_2016/Uchebnye_plany_Magistratura_2014/Ucheb_plan_35040901_2014_12_29.05.15_Oo_P.pdf; Specialist’s degree curriculum in Architectural Environment Design, Ulyanovsk State Technical University, available at: <http://plans.ulstu.ru/planFull.php?if=1&plan=147>

equipment, changed conceptions due to budget variations, etc. All the participating architects had college degrees and public space design experience of at least three years.

It transpires that landscape designers use the following information when designing play areas for children:

- Public space design knowledge gained from college. The focus is placed on the project aspects that are pivotal for an architect: styles, colors, textures, public space architecture, etc., as well as engineering design (keeping tabs on the existing objects, utility lines and plants);
- Their own childhood play experience and memories: which playgrounds they liked as children and found interesting to play in;
- Their own current experience: which playgrounds they like today;
- Subjective understanding of the interests, needs and preferences of their own children (if they have any);
- Generalized ideas of what children like (clichés like “All children like to play in the sand” or “Children like bright colors”);
- Visual conceptions and ideas of a beautiful public space, trendy solutions, and world analogues.

The fundamental professional concepts of landscape designers do not include children's needs and interests, their specific age peculiarities, characteristics of children's activity, or the needs and interests of accompanying adults. This is one of the key reasons why the existing play areas in Russia do not fulfill their cultural function or contribute to the mental development of children.

What are the possible ways out of the current situation? It is absolutely necessary to extend landscape design curricula, add dedicated courses on play area and playground design, and elaborate new study guides. It is also very important to publish and republish both Russian and translated books on play area design.

**Cooperation
between landscape
designers and
developmental psychologists in the
design of outdoor
play areas**

Play areas can be designed either by a mono-team of landscape designers or by cross-disciplinary teams involving child and developmental psychologists. The role of psychologist in such collaborations consists in representing the interests and needs of main playground users, i. e. children and adults accompanying them. Psychologists focus on the following questions: what is the function of this specific play area depending on its location within the city system? which needs (for play, communication, experimenting, mobility and risk-taking) of potential playground users can be satisfied within this area? how will the needs and interests of children of different ages be satisfied—for instance, even if the playground is designed for teenagers in the first place, will there be room for early school-age children? do the availa-

ble play objects and landscape elements have a high play value? are there conditions for risky behavior, and is the playground still safe?

As real-life collaborative outdoor play area design practices have been summarized, the following psychological requirements for playground design are set forth: consider the age peculiarities; provide a high play value and good accessibility of objects; maintain an acceptable level of risk; make allowances for varying levels of visitor activity; ensure a communication-friendly environment (for more details, see Kotliar, Sokolova, Frontov [2014]). The psychologist's mission is to help the landscape designer ensure compliance with these principles when designing a specific play area, i. e. to help them create a playground that will consider the needs of all its potential users, both children and adults.

A team of landscape designers and developmental psychologists has worked on play area design solutions for four years, resulting in a dozen residential and park playgrounds³.

Are there any differences between co-designed and conventional playgrounds? How do these differences affect user behavior? In order to answer these questions, an empirical study was conducted, comparing the behavior of children and adolescents in conventional play areas and new-generation playgrounds, in whose design we assisted directly as developmental psychology advisers.

Analysis of children's behavior in conventional and new-generation playgrounds

It was suggested that the main differences between conventional and new-generation playgrounds would consist in behavioral patterns of children and accompanying adults in the playground. A two-stage study was conducted to test this hypothesis.

During the first stage in August–September 2013, we observed the behavior of visitors in 16 Moscow conventional playgrounds, typical of megalopolises. These playgrounds were equipped as usual: sandpits, swings, merry-go-rounds, spring rockers, huts, and slides. In some of the playgrounds, equipment was partly combined into a play system with a simple small (2 meters high at most) climbing structure and a slide. The play areas mostly had asphalt or rubber flooring.

The second stage of observation targeted new-generation playgrounds located in the parks of Moscow (one play area in Neskuchny Garden), St. Petersburg (one play area in Mikhaylovsky Garden) and Sochi (four play areas in Sochi Park). These playgrounds come with all-wooden equipment and wood chips or pea gravels as ground-cover material. In addition to conventional equipment (sandpit, swing),

³ These play spaces will hereinafter be referred to as new-generation playgrounds to represent the global trend of involving various types of experts and potential users themselves in play area design (the so-called participatory design [Sanoff 2015]). The playgrounds designed without the participation of psychologists will be referred to as conventional.

the playgrounds also had equipment that encouraged cooperation (walkie-talkies, water pumps, hydraulic structures, two-user and basket swings, hammocks, rafts, etc.), experimenting (loose materials, e. g. water, pea gravels, sand or wood chips, screw pumps, pumping systems, musical facilities, complex-trajectory objects, e. g. discs, merry-go-rounds, seesaws), and risk-taking (tall climbing structures, slides, suspension bridges, etc.). Data on visitor behavior was collected in September 2014, June–August 2015, and June–August 2016.

The following was documented using observation as the key research method (see Kotliar, Sokolova [2014] for a more detailed description):

- (1) types of child–child and child–adult interactions in the playground (between children: communication, conflicts; adults' behavior: control, assistance and involvement, indifference);
- (2) actions performed by visitors on playground objects.

Visitors' actions on playground objects were divided into two large groups: those "prescribed" by the object logic (swings are used for swinging, slides for sliding down, sandpits for playing with sand, etc.) and those "overcoming" the object logic, which include:

- experimenting with objects (climbing up the slide chute);
- transforming objects or materials, trying to use objects in a different way;
- playing: any action is performed "in pretense", "as if"; the object is used as a condition, a space for playing;
- risky situations arising while using objects.

Descriptive statistic methods were used to process the data. The estimations took into account that the playgrounds had been observed a different number of times and the number of visitors differed from day to day.

A comparison of visitor behavior in conventional and new-generation playgrounds reveals considerable differences between the two types.

The observation of children and adolescents in conventional playgrounds demonstrates that their exploration of object properties is confined to simple, ordinary activities, most often within the inherent object logic. Children almost never go beyond typical actions, sliding down from slides, swinging on swings, etc. "Overcoming", i. e. going beyond the conventional use, experimenting with one's capabilities and object opportunities, can rarely be observed in playgrounds of this type (less than 30% of all actions). Play was only observed in 15% of the cases, which means that the playground—the main and essential urban space designed for children—did not encourage play activity. Most often, children would play in the hut (30%) or in the play

system and the sandpit. Conflicts were extremely rare (less than 2%), mainly on the swing and in the hut, in situations of regulating the order and duration of using an object (who swings for how long and in what order), or during a group game. Only one risky situation—on a slide—was documented for the whole period of observation. Experimenting was also observed only with slides, when children would climb up the slippery chute. Risk-taking, so important for child development, is probably neither implied nor encouraged by the analyzed playground objects.

Children in conventional playgrounds mostly act as object users, performing only logic-prescribed actions, not trying to transform the objects. They engage little in productive types of activities, experimenting, play, and communication. That is, no opportunity for such activities is integrated in the play area.

New-generation playgrounds reveal a different picture. During observations, children and adolescents “disobjectification” successfully all the design conceptions. They experiment actively with their mobility and the properties of objects and media around them. They undertake risky actions on their own or in cooperation with other children or adults, communicate, and play adventure-type games as well as games with rules. Equal proportions of logic-prescribed (sliding down from slides, swinging on swings) and logic-overcoming (e. g. climbing up the slide chute) actions were observed, along with experimenting, trying new things, and risk-taking. Conflicts were as rare as in conventional playgrounds, most times relating to the order of using playground objects.

In conventional playgrounds, children and adolescents move along two major trajectories. The first one is from object to object, from one activity to another, with no coherence between the actions. The second trajectory depends on the game story or the development of communication. Visitor movement trajectories in new-generation playgrounds are much more complex and diverse. In addition to the two described above, there can be explorative trajectories (visitors move from object to object, trying and varying a specific motion or method of operating an object) and trajectories of cooperation (two or more visitors move from object to object together, interacting with each other on the subject of such objects and exploring the possibility of their shared use).

The greater diversity and complexity of mobility trajectories in new-generation playgrounds revealed in this study are consistent with the findings of a Canadian research on the so-called play pathways and their effects on behavior [Cosco, Moore, Islam 2010]. The playground is not just the sum of individual isolated objects—the objects must be interrelated into a system. If such interrelations are present and meaningful, they will have a positive impact on children’s behavior, encouraging them to move around, cooperate, and play.

Parents in conventional playgrounds largely perform the function of control (61% of cases); the most controlled zones include climbing walls, merry-go-rounds and play systems, while the bench and the hut are the least controlled ones. Parents accompany their children, control what they do, and resolve challenging and conflict situations that arise. The sandpit and the bench are where parents engage in shared activities most often (22%). Children are mostly helped by adults when using seesaws, spring rockers, and slides. Parents rarely involve themselves in the playground activities of their children (except for toddlers). Parents themselves admit to being bored in playgrounds and perceive going there as a forced necessity. As a result, children feel less free to experiment and play and remain less active and creative, being constantly under the adults' control.

Parents in new-generation playgrounds are active and proactive, joining their children in exploring the objects and the playground as a whole. They find the play areas interesting, unusual, and attractive even for adults. We observed a number of adults, especially fathers, experimenting in the playgrounds and playing with their children. In new-generation playgrounds, adults accompanying children and adolescents often engage in shared activities. The play objects themselves are a powerful motivator, allowing talking over walkie-talkies, pumping and pouring water together, rafting around the pond, playing musical instruments, constructing, jumping on a trampoline together, pushing kids on a swing, etc. Controlling behavior was observed as children and adolescents undertook risky explorative actions, e. g. attempting to climb tall towers or other climbing structures. Adults' utterances addressed to children in the playground can be divided into two large categories:

- commenting on children's and adolescents' capabilities, often in a negative way ("Don't climb, you're gonna fall! You can't, it's too hard for you!");
- encouraging explorative behavior ("Don't be scared, give it a try!"). Unfortunately, encouraging utterances can become imperative, when parents make children do something they are not ready to do ("Climb there, don't be chicken! Coward! You'll get no ice cream!").

It is mostly fathers who demand that their children do something in the playground. Not only do such utterances shape a negative self-image ("I am a coward, I can't do what my parents want me to") but they also form an inadequate perception of one's own abilities ("I cannot do something because it is difficult and I am scared, but my parents want me to do it, so I have to") and inhibit the development of the ability to identify truly dangerous situations and make risk-based decisions [Sokolova, Sheina 2016]. Analysis of adult behavior patterns in the playground goes beyond this article, but the observations pre-

sented here indicate that parent-child interactions in the playground are an aspect that requires dedicated research.

On the whole, adults in new-generation playgrounds engage more actively in interactions with their children, controlling them less, having a more positive emotional state of mind, and being more willing to play.

Conclusion The behavior of children, adolescents and accompanying adults in conventional and new-generation playgrounds differs in all the identified parameters, from actions performed to mobility trajectories. In new-generation playgrounds, visitors engage in interactions with objects, materials and each other, as well as in explorative and risky behavior. Parents are involved in shared play activities.

New-generation playgrounds were designed with the participation of child psychologists. Design of play areas that satisfy the needs of both children and adults is a new practice for Russia and rather constitutes an exception today. Hopefully, it will spread.

The findings indicate strongly that co-designed playgrounds perfectly fulfill their cultural functions, enabling visitors to “disobjectify” the integrated meanings through play, communication, experiments, and risk-taking.

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Playgrounds as Migrant Integration Spaces

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Abstract

Playgrounds form one of the types of public spaces with the widest possible access and thus imply opportunities for interethnic contact. This contact, in turn, can contribute to migrant social integration—meaning a weakening of migrant-non-migrant stereotypes and a formation of new social ties between these two ‘groups’—or, on the contrary, lead to conflicts and strengthen negative attitudes. Existing scholarship provides contradictory accounts regarding the question about the role that public spaces in general and playgrounds in particular play regarding migrant integration. In the case of Russia, there are no accounts at all. The article presents the results of research conducted with qualitative methods (observation and interviews) on the playgrounds in two Moscow residential neighborhoods in 2014–2015 and which focused on the grown-ups/parents rather than the children. The article argues that playgrounds contribute to the integration of internal migrants-‘ethnic majority’ but not international migrants-‘ethnic minority’, even more so if the latter speak little Russian and/or wear a hijab. As a result, playgrounds witness the formation of two distinct ‘social circles’ of the ‘ethnic minority’ and ‘ethnic majority’ with few contacts between them, most of which are of a conflicting nature. Lack of interaction together with presence in the same space leads to the creation of a negative interpretation of each other’s behavior from both sides.

Keywords

playgrounds, migrant integration, public spaces, interethnic contact, contact theory, Moscow

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Fifth-Graders Moving into Adulthood: The 1960s vs. the 2010s

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Abstract. The behavior of fifth-grade students from a Moscow school was observed during a 12 week period as a replication of a similar project undertaken in the mid-1960s [Elkonin, Dragunova 1967]. Since the original research results were represented not as a text but as individual descriptions of 13 school students, observation criteria had to be identified. The criteria were grouped into so-called domains, describing how teenagers behaved among their peers, at home, and at school. The key behavioral characteristic was the indica-

tors of the emerging sense of maturity in school children, i. e. of their drive for grown-up behavior associated with freedom and responsibility. These criteria formed the basis of the 2016 observation program. The diversity of adolescent behavioral patterns has been found to be much greater than in the original study. In addition, the linear formula of the value of learning being replaced with that of communication with peers (close interpersonal relationships) has been brought into question. As it transpires, the value of learning remains high for most fifth-graders, regardless of whether they need communication or not. Such an attitude towards learning might be encouraged by family and school, which is typical for this category of children. Four types of school students have been identified based on the indicators of their interest in learning and communication. The article cites fragments of observation protocols and semi-structured interviews. Hypotheses on how the transition to adolescence is affected by family and school characteristics have been put forward, and further observations of school students with different backgrounds have been designed.

Keywords: sense of maturity, adolescence, clinical observation, mental development crisis.

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Research in childhood education cannot avoid comparisons between children’s characteristics of the past and the present. A promising technique of such comparisons consists of finding and reproducing studies from past decades. The book *Specific Age-Related and Individual Characteristics of Younger Adolescents* under the editorship of Daniil Elkonin and Katerina Polivanova, first published in 1967, describes a study unique to both Russian and international psychology. This is a long-term clinical, as defined by the authors, observation of the behavior of fifth-grade students in a Moscow school. In addition to theoretical aspects of research, the book presents detailed descriptive character sketches, or psychological portraits, of 13 students. These character sketches represent a valuable illustration of childhood in the early 1960s.

The clinical observation model offered by the authors of the 1967 study was reproduced in 2016. This pilot study was designed to test the reproducibility of the whole observation procedure and to describe the findings of the present-day study in terms of the hypotheses and assumptions put forward by the original research authors.

An intrinsic challenge that manifested itself at the preparatory stage was how the 1967 findings were presented. The book contains the methods, conversations, interviews, observations of school and out-of-school behavior—but provides no protocols or data obtained. The findings are fragmented and can be found in each of the three book chapters, mostly among the student descriptions. In order to obtain material for comparisons, the student descriptions were disaggregated, and the basic characteristics that had been the focus of research 50 years ago were identified.

The 1967 study was supposed to be the first stage of a large-scale research program. Unfortunately, there was no follow-up. Therefore, the current study was based on the available material, the more so since the original study has been presented as complete in the scientific community.

1. Theoretical framework

1.1. Sense of maturity

The 1967 study was premised on the fundamental assumptions of cultural-historical psychology, in particular on the ideas of changes to the leading activity and crises in mental development [Elkonin 1971; Vygotsky 1984; Polivanova 2000]. The concept of sense of maturity was introduced to describe the feeling children experience while moving from their early school age into adolescence¹. Sense of maturity

¹ This statement requires some clarification: according to Lev Vygotsky’s classical theory, “neoformations” of each relevant age period are shaped by the end of such a period. However, Elkonin and Dragunova’s work attribute the sense of maturity to early adolescence. Therefore, it is considered to be the neoformation of the previous stage, i. e. elementary school age, even though the original work contains variant readings of this issue (e. g. sense

ty can manifest itself in protest behavior or in positive behavior patterns: “Adolescents develop maturity of different types through their relationships with people around them, which are built after the fashion of adult world relationships, as well as through activities in which they are guided by adult behavior patterns and role models. Developing a sense of maturity is associated with learning to be independent. If independence is deliberately granted to an adolescent by parents, there will be no conflict between the evolving sense of maturity and how adults perceive it, which means that the adolescent will suffer no dissatisfaction with adults’ attitude; thus, various forms of protest will have nothing to feed on. If an adolescent’s independence is only prompted by specific life circumstances while adults still treat them as a child, this attitude will be in conflict with the evolving sense of maturity. Such disagreement will manifest itself in confrontations and conflicts between the adolescent and adults.” [Elkonin, Dragunova 1967: 333] According to the authors, conflict-proneness (protest behavior) in adolescents results from adults’ attitude that inhibits positive manifestations of maturity; however, if “adults inculcate the sense of maturity in children through interpersonal relationships and by granting them independence, <...> both the sense of maturity and maturity as such will develop smoothly and painlessly, without too much conflict or stress.” [Ibid.]

1.2. Indicators of maturity

Since the original study provides no research findings but only character sketches of individual children, an analysis of the 13 psychological portraits was conducted. It was used to identify specific “domains” that were the focus of the original researchers as well as some indicators of maturity in each of the domains. Each domain could have both positive and negative indicators of maturity (Table 1).

2. Research design

In the original study, psychologists observed the classroom and out-of-class behavior of fifth-graders in a Moscow school during one academic year. In addition, they conducted individual and group interviews with the students, discussed students and their classroom activities with teachers, made character sketches, and talked to parents. Sociometry was also used to investigate relationships in the classroom. As part of the project, the children wrote essays on the topics “Let’s Talk about Ourselves” and “On Friendship and Friends”.

The 2016 observations took place three times a week (every Monday, Wednesday and Friday) from February through to May and covered all of the classes and the breaks between them. The observations entailed two observers working together (12 weeks, totaling about 540

of maturity is often referred to as the neof ormation of the whole period of adolescence).

Table 1. **Indicators of maturity** (as per the original text)

Indicator	Positive	Negative
Independence and initiative	Experience of living away from parents; independent mobility; experience of working and earning money; clear prospects for the future; engagement in social activities; new interests	Abnormal behavior patterns (“excessive kindness”, window smashing, theft, etc.); risky adventures
Relationships with adults	Household chores; helping and caring for adults in cases of illness	Critical attitude towards adults’ opinions; protest behavior; feeling lonely and like an outsider in one’s own family; imitating adults
Attitude towards learning	Consistent academic performance; interest; inquisitiveness; parental control of academic achievements; responsible and scrupulous attitude towards homework; being concerned about grades	Change from treating learning as a value to declaring neglect of it; depreciation; concealed concerns about learning and grades
Relationships with peers	Status; authority; going over to one another’s homes; assistance in cases of illness; standing up for younger peers; placing a high value on fellowship; differentiated perception of people; complex moral and ethical criteria	Submissiveness; imitation; lack of immediate perception; interest in sex; flirtation; sexual advances; exaggerated attention to one’s own appearance; abrupt change in one’s social circles; susceptibility to influence
Sense of maturity	Wanting adults to treat them as an equal Seeking independence and trying to keep some spheres of personal life free from adult interference Following one’s own behavioral patterns despite adults’/peers’ disapproval	

hours of observations). Discussions were held immediately after the observations, and handwritten observation protocols were completed the same day, jointly by both observers in free form, using pens/pencils and notepads. The protocols were concealed from both the children and the teachers. At the end of each observation day, all protocol data was entered into a separate text file, common for both observers [Sokolova 2005]. An array of protocols completed by two observers for each observation day, totaling about 500,000 characters with spaces (or 200 standard pages), was obtained in the course of the study.

The protocoling procedure reconstructed from the original study and described in the previous section was used in this study. Some questions were added to make allowance for the present-day activities of children and adolescents, in particular gadget use: How are gadgets used in communication among children? Are they important for communication? Is it important to have them? How are they used for learning purposes, if at all? In addition to the observations, semi-structured interviews with the children and the teachers were conducted.

To ensure that the study was ethically appropriate and to consider the interests of all the participants, interview consents were obtained from the children (verbally) and the teachers (in writing), in addition to parents’ written consent for psychodiagnostic testing and the psychological support of their children. The project received the approv-

al of the Committee on Interuniversity Surveys and Ethical Assessment of Empirical Research of the National Research University Higher School of Economics.

Eleven people made up the team of observers. The size of the team is well-justified, as the project involved experts with various degrees (PhD holders, postgraduate students, Master's and Bachelor's students) in various fields (psychology, education, history, and sociology).

The sample consisted of 29 fifth-grade students from a school in the Western Administrative Okrug of Moscow, of which 16 were girls and 13 were boys, all aged 11 or 12.

The original study does not specify the school whose students were observed, but its name was widely known both when the project was active and after it was over. This was a central Moscow school enrolling children from the neighborhood; however, parents began to bring their kids to the school from other neighborhoods as well in the early 1960s, as the school was growing more popular. As a result, it largely served families that were highly concerned about the quality of education.

The school that served the basis for the 2016 study is located in a high-end, relatively new neighborhood of Moscow, representing a row of individually enclosed residential compounds.

This school is designed to teach children from Grade 1 through to Grade 11 in two or three parallel classes, which means that its size allows teachers and administrators to know each other personally.

The respondents' classroom creates a good impression. The wall newspaper congratulations, including caricatures, have been designed by students themselves.

The school follows a rather conventional teaching policy, where teachers are largely focused on discipline, transfer of knowledge, and the development of a certain corporate (though deeply competitive) spirit of the class and of the school as such. The administrators foster the idea of special gymnasium education style, which implies special behavioral standards; in particular, there are dress codes for both students and teachers. The level of teacher competencies is rather high, yet teachers rarely resort to innovative techniques. Children are normally seated at their desks, the teacher addressing them as an audience, not as partners; problem-based learning is a rare case; discipline restoring methods are not too strict, yet low-effective.

Many teachers are responsive to the children's individual needs, show deep sympathy with their emotional experiences, attempt to build interpersonal relationships with them, and are willing to render emotional support (most often, however, in tête-a-tête conversations after the lesson).

Most children are raised in families with incomes higher than average, by parents with college degrees, and engaged in supplementary education.

The school environment is characterized by a high value placed on grades by teachers as well as students and their parents. This was proved by observations in different classes where the children were deeply stressed after being assigned grades lower than “excellent” (self-destructive behavior, crying, etc.).

3. Types of behavior depending on the type of leading activity

Having the conception of leading activity [Leontiev 1944] as the key age characteristic in mind, we expected to see a gradual transition of children from learning activities to interpersonal relationships, or children at different stages of such a transition, by analogy with the study of the 1960s. In other words, we expected to see interest in learning and teacher authority fade away and be replaced by interest in communication and peer authority.

So, what was actually observed in the children? It was revealed that behavior typical of early school-age children and adolescents was demonstrated by some students at the same time, yet in different situations.

In accordance with the leading activity theory, early school-age children are expected to show diligence, commitment to school requirements, responsible fulfillment of those requirements, and recognition of teacher authority while showing low interest in interactions with peers. Children who have moved onto the adolescent stage are expected to neglect school requirements and authorities (or follow “their own” cognitive interest) while engaging actively in communication with peers, knowing the rules of their reference groups, and taking part in various adolescent activities. That is, the classical linear model suggests that the value of school requirements is replaced with that of peer group rules, and student-teacher relationships give way to relationships with peers as the most significant domain. However, it was found that different indicators did not necessarily supersede one another; instead, they could coexist or be simultaneously absent. Thus, four types of student behavior can be logically constructed as combinations of indicators (Table 2).

Children with an early school-age, or infantile, type of behavior are obedient in the classroom and concerned about their academic achievements; they show respect for the teacher and appreciate the teacher’s opinion. They regard peers first of all as partners in learning and demonstrate no adolescent behavior as such within their peer groups.

“Vitya² answers a lot during the lesson, trying to finish sentences before the teacher does. His answers sound passionate and sensible. He definitely likes both the study material and the opportuni-

² All children’s names have been changed.

Table 2. Types of student behavior as combinations of behavioral patterns typical of early school-age children and adolescents

		Knowing and fulfilling peer group behavioral regulations; engagement in typical informal adolescent activities	
		Yes	No
Knowing and fulfilling formal school requirements and regulations in the classroom	Yes	++ Mixed	+ - Early school-age/ infantile
	No	- + Purely adolescent	- - Suppressed

ty to answer. The teacher's reaction is his only concern. The teacher is very satisfied with him."

"At the end of the lesson, the teacher suggests that students recollect what has been learned; children recite what they have learned with great pleasure, almost excitement. On the whole, students seem to be very involved and almost never get distracted from the lesson. Informal behavior is very rare. Children answers questions and perform tasks with joy and enthusiasm."

"Mary reminds Marina strictly that they are not allowed to use correction fluids."

"Yura takes out a neat and beautiful red thick reference book (dictionary and rules he has written down) from his backpack and flips through, reading carefully. He stamps his foot and even growls when the teacher asks someone else. Trying to attract her attention, he claps his hands quietly and speaks from his place."

A purely adolescent type is characterized by protest behavior in the classroom, depreciation of the teacher and learning, frequent verbal conflicts with the teacher, and discredit to the unconditional authority of an adult. Adolescent issues dominate informal conversations with peers: games, gadgets, fleshiness, sexualized behavior, etc. Such students can be referred to as typical adolescents with proneness to crisis.

"When answering, Misha makes a lot of mistakes and gets stressed and upset. After another incorrect answer, Anton (his desk mate)

asks him loudly: “What have you smoked? Excuse me? Dope?” Nobody pays attention. Anton asks Lyosha when he solves a problem orally: “What have you smoked? What have you smoked?”.

“In the classroom hallway, Angelina was making a ponytail by flipping her head back. Grisha reacted by exclaiming, “Wow!”.”

“Misha, Andrey and Pyotr have gathered around Ayrat, looking into his phone and discussing a game app. Seryozha comes up; he is let into the close circle. Yura comes up, saying cheerfully and jokingly, “You’ll die over my game.” Everyone looks at him for a few seconds, then ignores him.”

Adolescents whose behavior is referred to as a mixed type demonstrate socially approved behavior in the classroom, being active, showing interest in the teacher’s evaluation, and attaching importance to academic success. At the same time, they are deeply engaged in communication with peers, beginning to stand up for themselves in front of some adults and showing interest in whatever has to do with self-image and gender relationships. This type embodies the idea of the heterochronic beginning of adolescence [Vygotsky 1984]. It may be that some behavioral patterns typical of early school age are preserved due to a high degree of involvement in learning (induced by the teacher or interest in a specific subject), cognitive motivation, achievement motivation, and/or parental involvement.

“Evgeny and Seryozha know the material well; they are confident in their knowledge, relaxed, talking to each other pretty much all the time (even while their classmates are answering). They try to “get smart” a little bit, answering with a lot of self-confidence, criticizing their classmates for their lack of perception, being intolerant to their slowness, allowing themselves to be overactive, and speaking out of turn. They are bored.”

“Anton makes an oral report in German. Seryozha and Vasya listen to him with an expression of amusement and failure to grasp on their faces, clearly admiring his story but also demonstrating that it is too sophisticated. The others applaud and praise Anton as the story is over. Later on, Anton also tells them about the old friendship ties between Germany and Russia.”

“Vasya argues with the teacher: “But I’m not talking! Okay, fine... fine, I’m silent.” He talks to the teacher with a smile on his face and attempts to correct her. He also corrects and complements answers of his classmates emotionally: “Ah, just the train!” (translation), “Yeah, because mayor used to be called burgomaster.” He asks the teacher about the location of cities on the map of Germa-

ny to check if he remembers right and shares his travel memories. Towards the end of the lesson, Sergey gives him a light headnut (for “peacockery”, apparently).”

Suppressed children demonstrate low interest in learning, depreciation of academic achievements, and weak orientation towards the teacher. Meanwhile, their interaction with peers is rather formal: they abstain from “unsafe” behavioral practices, discussion of sexual development issues and strong friendship ties. Such children can demonstrate disconnectedness from both peers and academic activities. However, the seeming indifference to learning and new forms of group behavior may conceal complicated emotions, which are locked inside.

This category is the most difficult to recognize, as “non-manifestation” on one scale exacerbates isolation on the other one: children who do not communicate with peers enjoy no popularity and can become targets of mockery or bullying, which will inhibit their motivation for learning. On the other hand, children who are not interested in learning risk becoming outsiders and falling out of communication with peers against their will in a group focused on the value of learning and competitiveness, which is true for the class chosen for this study. Therefore, this category encompasses children with different characteristics, which might be indicators of their individual specific features, not of a stage in their mental development.

There are two girls in the surveyed class who match this description best: they are low-performing and unpopular. One of them (Angelina) is teased on a regular basis, while the other one (Karina) is simply ignored. Teachers usually have them seated together at the front desk.

“A few high-school students (grade 8 or 9) are sitting on a bench by the classroom. They are noteworthy girls: short bouffant skirts, make-up, “duck lips”. Angelina is among them. The girls ask her for a selfie one by one. It soon becomes obvious that they are blatantly mocking her. Angelina is unaware of it, posing with pleasure, smiling broadly, and telling them about her account with 700 followers. The girls are laughing at her. She seems to be confused a little, but still unaware of what is going on.”

“Karina is doing the task slower than anyone; she reads the sheet with the task on it, running her pen along the lines and uttering the text <...>, strikes something through in the sheet languishing for a while—probably because correction fluids are not allowed.

The teacher calls out those who are to speak next: ‘And what about Karina!? We-e-ell, let’s give it a try (she has not said a word for the whole lesson yet). So, Karina, shall you!? You’re afraid!? Oh, sweetie. Okay, then.’”

“Karina is asked a question. She does not respond. ‘Karina is a sleep,’ says Eva.

“Karina is not bothered anymore in the German class. However, the English teacher asks her a question. She answers correctly, yet stumbles a lot. When Eva attempts to give a hint: ‘Let her think!’ When Karina gets lost completely: ‘Valya, help.’”

The “mixed” type is the most interesting one. These are children who behave like typical early school-agers in the classroom: they are diligent, seeking the teacher’s attention and good grades, and are competitive, while demonstrating purely adolescent behavior elsewhere—during breaks, before and after classes, in communication with each other and online—namely engagement in reference groups, imitation, flirtation, quarreling, etc. It appears that such children change their behavior at their own discretion, following the requirements of the specific social situation. This type of behavior, on the one hand, indicates a high level of their social competence, i. e. ability to identify and demonstrate different behavioral patterns that are preferable under different conditions, but on the other hand it disproves the idea of transition between the two stages, since indicators of both are observed at the same time and there is no reason to say that one is reduced and the other is reinforced.

Let us illustrate this through the example of one child. Eva is one of the tallest and most physically developed girls in the class. Her behavior is very diverse and includes typical elementary school patterns, induced by the desire to obtain good grades and the teacher’s recognition, as well as protest behavior and criticism of adults typical of adolescents. She behaves differently in different classes.

“Eva comes out to the blackboard and answers with mistakes. Teacher: “You’re only gaining the vertical part of a plus now.” Eva keeps raising her hand from her place before the teacher even asks a question and does not lower it even during note-taking. She is called to the blackboard again to recite a lesson for a grade. She works well, gets an A, lifts both her hands in the horn sign, and runs down from the blackboard podium.”

“Eva gives a lot of correct answers. While everyone else is listening to an audio poem in English, she is filling out her school diary. When the teacher asks her a question, she provides a good, detailed answer. Ayrat applauds to show his approval.”

The observations described above demonstrate a high level of academic motivation, the need for approval, and rivalry with other children for the teacher’s attention.

“Eva, Misha and Valera react to the “funny” name “Suzanna” in the task by pronouncing it with different intonations. Misha and Eva talk, sitting at different desks. Eva gives a headnut to Evgeny. The teacher gives her a redirection, threatening her with an F. <...> The teacher’s patience runs out: Eva is made to change her seat (for the one next to the observer). Unblushingly and blatantly, she looks into the observer’s notes. Her behavior does not change: she comments on everything that is going on in the classroom, answers all the questions asked to other students, and bangs her head against the desk, saying: “It’s terrible! Such a bore!”.”

“During the break Eva, Valera and the boys from the second desk in the row by the window were running around the hallway; the boys were holding Eva by her arms while she was trying to break free; the next moment, she was throwing herself at the boys, trying to “strangle” them.”

“Eva is talking to Valera; she intentionally answers the teacher’s question incorrectly. While talking to Valera, she is playing with a protractor, now waving it as a fan, then wearing it as a knuckle, then pretending to cut her throat out of boredom. Eva gets angry when her answer is not heard by the teacher. To the teacher’s question, “Why are you so slow?” she answers: “Maybe because we are Pokémons and we are Slowpokes.”.”

These observations reveal manifestations of adolescent behavior, such as loss of academic motivation and deprecation of learning (boredom), flirting with boys, and neglect of school regulations (disrespect for the teacher, commenting aloud during the lesson).

4. Sense of maturity and development of independence

The process of moving into adulthood and the specific aspects of developing independence cannot be anything but different for children in a modern city and the participants of the survey conducted by Elkonin and Dragunova. Lifestyles and family routines have undergone a drastic change over the last 50 years. Urbanization has made the everyday lives of citizens much more comfortable, on the one hand, but on the other hand it has brought about overpopulation, anonymization of neighbors, and greater distances between home and place of work or study. Modern technology has made the Internet, in particular news from all over the world, accessible at any time. As a result, the ideas associated with child independence—mobility, responsibilities, and independence growth rates—have mutated significantly over recent years.

For example, Elkonin and Dragunova’s study cites an example of a prospective fifth-grader who earned some extra money during summer vacations by serving as a cabin boy on the ship in which his fa-

ther-in-law was a sailor. Children mostly spent their spare time on Pioneer Movement events and extracurricular activities at school, in which they engaged with various degrees of enthusiasm. Many parents worked shifts or until late, so children would often spend a lot of time alone at home or invite their friends to come over. As a consequence, they possessed basic household skills, like heating or cooking food, cleaning up, or going shopping. They were used to doing their homework themselves and often tried to take care of their parents, especially overworked single mothers.

The children whom we surveyed reported doing their household duties occasionally.

I: Do you have any household duties?

R: Household duties... Well, yeah, like I can wash dishes when I have time.

I: And do you maybe help your mom with cleaning up, for example?

R: Yes, I do, I clean dust.

I: Do you cook?

R: I can only cook salads and soups for now.

I: What do you think is the most important thing your parents expect from you?

R: I think learning and good performance are the most important.

R: ...When mom sends me, like, somewhere... so I go there. Like, to buy something at a grocery store, so I go.

I: I see. And do you maybe have any other household duties, apart from going shopping?

R: Yes, I do. I should do vacuum cleaning, help my mom... er... do a lot of things... er... and my dad, too. For example, when my dad was installing the curtains, we... well, I would, like... dad would hang them and I would give him the pegs and hold the ladder.

I: Do you have any household responsibilities?

R: You mean, doing something?

I: Yeah, like washing dishes or cooking.

R: Well, no, I normally don't, unless my mom asks me; or I can offer my help sometimes.

I: What do you think is the most important thing your parents expect from you?

R: I don't know, I think it's just, well, that I do well in the future, and have a happy life, and find a good job.

I: What is a decent job for you?

R: Well, I've been always interested in medicine and the like, and now I wanna be a cosmetologist.

A typical day looks like this.

R: Well, I get up, I do the homework I didn't finish yesterday, I have breakfast, and I get ready, they take me to school, then I finish my classes, and after-school classes, and then I do my homework and go to after-school clubs, and if I don't have any, I call my mom and she takes me home.

Or like this.

R: First, I've got school classes, on Monday I've got classes, then I do my homework with my mom, then I go to Kūdō³ classes, and I only get home at 11 p. m. Next day, I go to school, then to English courses, and come home at 6 p. m. Then, on Wednesday I've got school, supplementary courses in Russian, and then judo. School, English and Kūdō on Thursdays. School and judo on Fridays.

I: But when do you do your homework?

R: Me and my mom, we go to a café after school and do my homework there.

I: Does she help you?

R: It depends on the subject. She helps me with French and mathematics. As for the rest, I do it myself.

I: How do you relax? From what you have said, you don't have much free time.

R: I don't relax. I had a... My grandma came to visit us once and she was surprised: I went to dad's study, er, to read a book during the weekend, and I lay reading until I fell asleep at 7 p. m., and I only woke up at 11 a. m. next day.

Judging by the interview data, fifth-graders have a heavy academic schedule: for instance, supplementary courses can take up all of their weekday evenings. All other aspects, like friendship, entertainment, or household duties, can only be squeezed into the available intervals. It is not inconceivable that such time-management, initiated by parents, retains the social development of children within the early school age period and inhibits their transition to the next stage, as communication with peers is impeded and restricted to the learning environment.

All students have accounts in the Vkontakte social networking service, where they post their photos and exchange "likes". However, they are reserved in telling the interviewers about it. It can be suggested that social media has become the space that is isolated from adults, allowing the development of certain adolescent skills beyond their control. That is why children are not eager to manifest their web activities and mostly go online from home.

I: As far as I understand, you have more than one social media account, don't you?

³ Full-contact martial art.

R: Yes.

I: Which social media are those?

R: Vkontakte, Instagram... Well, that's pretty much it, the ones I use the most. I mostly use Vkontakte to keep in touch with my friends, and I also like communities about drawing, because I've been drawing since I was small... I like looking at others' works to borrow their style or just to experiment. Just to see how other people draw.

I: And what about Instagram?

R: Well, Instagram is more like... My account is private, so it's kind of for my friends and family, so they know what's up... And besides, with Instagram you can capture some bright moments of your life, and then look through them next year and recall those moments.

I: I see. How long have you been on social media?

R: Well, I joined Instagram when I came to this school. And Vkontakte... I was like eight years old. Because I wanted to keep in touch with my friends and family, I just signed up for communication.

R: Well, I signed up partly to communicate with my friends. It's just that some of them have push-button phones, so they can use Vkontakte on their PCs, and I can get in touch with them.

I: I see, and do you have many classmates as your friends on Vkontakte?

R: Yes, I do... er... well, almost all of them, and most often I talk to my friend from the drawing class.

I: Why her?

R: Well, because she is only available on Vkontakte, and we see each other very rarely, only in the drawing classes.

I: Do you receive many likes on Instagram? You said you've got a profile, right?

R: Yeah, but I used to receive likes when I posted something. Now I'm kind of passive there, because I don't have the time.

I: And you, do you often "like" something?

R: Hmm... Well, on Instagram, as I said, I almost don't use it, and on Vkontakte—no (laughing), I just browse.”

When discussing the attitude of teachers toward students, children say the following.

I: How do teachers treat you: as adults or as kids?

R: I think they treat those who are reserved and well-mannered as adults, with respect, but they probably treat those who laze away or yell in the classroom all the time as kids who should be sent to a kindergarten.

I: Do you think teachers treat you more as adults or rather as kids?

R: Well, I don't know. I think they treat us as kids. Mariya Ivanovna says that we are still small yet because we misbehave in the classroom,

and grown-ups behave well, they don't talk, and they do nothing... bad.

The respondents associate adulthood with abundant responsibilities, liability, financial independence and sufficiency. This image does not attract them too much: childhood lures them with joys and no responsibilities. Students find it difficult to identify themselves as either adults or children.

I: What do you think it means to be an adult?

R: I think to be an adult means to be able to provide for your family and to realize that you're a fulfilled person and you can leave your parents' home.

I: And what does it mean to be a fulfilled person?

R: It means that you have a job and you can afford to buy your own house or apartment.

I: How grown-up do you think you are now?

R: Well, I don't really know if I'm a child or a grown-up.

I: What do you think it means to be an adult?

R: To be an adult? Well, first of all, it's like... more responsibilities, you're growing up, and everything is changing, to my mind.

I: Like what, for example?

R: For example, some views on life, like when you get upset with something as a child, but in an adult life it's like, "So what?" Like that.

I: Cannot it be vice versa? When you begin to take something more personally.

R: Well... Maybe.

I: I see. How grown-up do you think you are, how do you see yourself?

R: I see myself more as a child, I don't know, because I behave sometimes as a child, and besides we're only in middle school now.

On the whole, this uncertainty is typical of the age of transition, but the expected affectation of maturity is not revealed here. These children don't mind staying kids for a longer period of time—perhaps because they suffer from overload learning and indeed have not enough time for being kids.

5. Adolescents today and fifty years ago

Our study revealed significant discrepancies between the life of modern children and what was described based on the observations of the 1960s⁴. Sense of maturity as well as "objective" maturity devel-

⁴ In no way are these findings considered to be final or indicative of younger

op today “on the basis of different substrates” than those described by Elkonin and Dragunova: modern fifth-graders have much fewer household duties, less independent mobility, and fewer opportunities for making autonomous decisions. However, they now have the Internet as a space isolated from the control of adults. Behavior observed during this study appears to be more infantile, rather typical of early school-age children, yet some deep reflexive reasoning on one’s age and growing-up can be found in the interviews. Negative manifestations and protest behavior are observed much less often than expected. There is reason to believe—based on the data from our peculiar sample—that the everyday life of modern adolescents provides fewer opportunities for growing up, in the traditional sense. Adulthood does not look attractive; maturity, in terms of taking responsibility for learning outcomes, develops comparatively early; parents are focused on continuous learning and decent careers for their kids, thus “suppressing” their childhood—as a result, any sense of maturity does not develop through explicit manifestations but rather catches up with physiological maturation.

Learning and academic achievement remain highly valued by most children. Such value orientations are in line with school ambitions to ensure high performance and the admission of graduates to colleges, as well as with parental strategies of encouraging the engagement of children in school and extracurricular learning activities.

Importantly, respondents consistently demonstrate socially desirable behavior at school when being supervised by adults. Apparently, modern adolescents feel more relaxed in their interactions with teachers, manifesting it through disputes, which nevertheless have a culturally acceptable structure. Following on from our observations, we can now only suggest that socially unacceptable behavioral patterns (aggressive, sexualized, or protest behavior) are canalized to the online communication realm. All children possess profiles on social networking sites and use them actively, as can be judged from the interviews. It appears that the Internet provides them with an environment alternative to the learning one, and children are not too willing to let adults into that zone.

The 2016 observation answered the most important question: it proved the possibility of reproducing the projects of past years, although the change in research design requirements called for taking into account deontological limitations, which are not mentioned in the original study.

A mere comparison of findings turned out to be impossible, as no formal findings were presented in the original text. The major chal-

adolescents in general. The sample is rather specific, consisting of children from advantaged families attending an advantaged school. What was important was to demonstrate reproducibility of such observations as such and to prove acceptability of interpretations differing from the original ones.

lenge encountered in the course of the research has to do with the rigid cultural-historical theory framework of the study of the 1960s. Child development was recognized as following a universal pattern (succession of periods of stability and crisis); the concept of the sense of maturity was introduced to denote the development of the “neof ormation” of adolescence. Illustrative examples were used to prove the hypothesis, but there were no observation protocols or charts with research findings. Technically, the original study was a qualitative one, and so was the replication.

Sense of maturity, the fundamental concept of the original study, was thrown into question in the course of the observations and findings discussion. Genetically, it is associated inextricably with the idea of adulthood and its unconditional value. However, research from recent decades raises doubts about modern children’s craving to grow up. No immediate testing of or firm evidence for this assumption has been found in the existing studies. Therefore, the question of whether adulthood as such is a value for adolescents today defines prospects for further research.

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What Factors Help and Hinder Children's Progress in Reading?

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Abstract. This study looked at the effects of phonological preparedness and vocabulary size in children, who just started primary school, on their progress in reading at the end of the first grade while controlling for other factors that can be related to increasing or decreasing reading achievements (such as SES, parenting activities and non-cognitive development of children). The study was conducted using data from the IPIPS project which assesses the preparedness of children for school-

ing and their progress at the end of the first school year. The sample consisted of 2740 first-graders living in two large Russian cities (Krasnoyarsk and Kazan) whose reading skills were assessed twice, at the beginning and at the end of the 2014–2015 school year. The results demonstrated that low levels of phonological ability and vocabulary are related to lower results not only for those who just started learning to read (as is suggested by the theoretical framework of reading skills acquisitions) but also for children who already have basic reading skills or read well. To compensate for this, special teaching approaches might be needed. Among family factors the main predictors of reading results were the level of the father's education and language at home. Parenting activities related to reading were divided into informal (reading a book, discussing a book, reading street signs out loud during walks etc.) and formal (deliberate teaching of letters and writing letters or words), with informal activities being a significant predictor of reading outcomes at the end of the first year. Conclusions and limitations of the study are discussed.

Keywords: primary school, progress in reading, parenting activities, noncognitive development, phonological ability, vocabulary.

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Why study reading development?

The importance of conscious reading skills for successful learning not in question. The 2009 Federal State Elementary Education Standard describes conscious reading of texts of different styles and genres as a critical meta-skill. Back in the 1930s, researchers had already justified the need for reading acquisition as follows: "Children learn to read during the first three years of school and read to learn the rest of the time." [Hilliard, Wilson 1936: 226] Although alternative methods of obtaining information outside of school have become available since then, this skill has remained the most frequent predictor of academic performance in pedagogical psychology research. For instance, "Matthew effects" in reading development have been the subject of ample research over the last three decades. This research provides strong evidence that individual differences in reading development widen the achievement gap between low- and high-performers [Hattie, Dörfler, Artelt 2014: 203]. Relevant studies have also revealed some correlations between the level of reading development and academic performance and proved the peculiar importance of such reading skill components as reading speed and reading comprehension (i. e. constructing meaning from decoded phonemes) in general academic progress. Therefore, not only does research in reading development help enhance the reading skills of individual students but it also solves more generalized methodological problems related to reducing the inequality of children's access to education.

The question about the most effective ways of preparing preschool children for reading development remains relevant. The deep-seated notion in parents' minds is that studying is easier for first-graders who learned to read at preschool age. As a consequence, there has long been a social demand for preschool reading development. The problem is that in this case the necessary sequence of stages—first preparing kids for reading development, then teaching them to read—is inverted. Full-value reading acquisition is impossible without providing a good foundation for the skill. It is important to analyze again the reading performance of first-graders as determined by cognitive processes underlying the skill as well as preschool home literacy practices. The data obtained will help update the beliefs about effective techniques for getting children ready for reading development as well as improve the reading instruction methods used in elementary school.

Modern reading development models

Russian reading development methodology universally accepts the model proposed by DaniilElkonin. Having determined that "at the initial stage of development, reading is reproducing the phonetic form of a word based on its graphic (letter) representation" [Elkonin 1976: 20], he demonstrated that it was the phonological system of language—phonemes and their sequences—that underlay the reading process. Reading mechanisms rely directly on the phonetics and writing system of a specific language. In order to read in Russian, it is essential to dis-

criminate between vowels and consonants, hard and soft consonants, back and front vowels and their effects on the preceding consonant. In light of this, Elkonin identified three stages in initial reading development: (i) the preparatory stage, aimed at developing phonemic analysis skills and general phonological awareness; (ii) learning the system of vowels, their letter representations, and being guided by vowel letters when reading; and (iii) learning the system of consonants, their letter representations, and developing the basic reading mechanism [Ibid.: 64]. Obviously, phonological awareness plays a crucial role in this model. Meanwhile, it is worth pointing out that, despite the explicit focus on reproducing the phonetic forms, the meaning of words is also a priority from the very first days of teaching, since reading itself is senseless unless the reader is focused on understanding what they are reading. As initial reading skills develop—meaning that a child learns to build letter-sound correspondences, assign stress correctly, observe pausing and intonation rules—the technical aspect requires less and less effort from a child, who begins to focus more and more on extracting the meaning from texts.

Despite all the differences in reading instruction methods across various countries, we found it relevant to analyze foreign reading development models as well. Most present-day English-language models include three successive stages:

1. Logographic stage, where children perceive whole words as pictures. Visual representation of a word is perceived as a whole, indivisible symbol, associated with the word's meaning. At this stage, children can even "read" individual words because they remember their graphic features;
2. Phonological decoding, where children read by extracting necessary sounds (phonemes) from letters (graphemes);
3. Orthographic stage, where readers accumulate a set of familiar word elements (e. g. syllables, letter combinations, morphemes) and decode those elements or whole words instead of individual letters or phonemes when reading [Chiappe, Siegel 2006:135].

This English-language model, the most cited one, emphasizes the high importance of phonological awareness for reading acquisition.

Imaging findings show that phonological awareness may play even a greater role than has been believed up to now. According to neurobiologists, at the earliest stage of reading development neural brain structures involved in speech production are the most active [Goswami 2010: 318]. It is only as reading experience is accumulated that the neural mechanisms in the region involved in visual perception, dubbed "visual word-form area" (VWFA), grow more active. Although this part of the cortex serves to process visual forms, there is no reason to believe that it is also responsible for extracting the meaning from graphic representation of whole words, as the same region is activated when

reading non-words. Researchers assume that this area “stores” familiar word elements that are processed immediately. Therefore, drawing on the imaging data, we can assume that early reading strategies are based on phonological recoding of letters into phonemes, not on perceiving words as images (i.e. reading development does not begin with the logographic stage, as implied by the model described above). However, as compared to the findings of traditional studies on pedagogical psychology, the available imaging data is too small to draw firm conclusions yet. Which is why the logographic stage is still a fundamental element of most reading development models in English-speaking countries.

Russian researchers of the psychology of reading have determined that the key factors of successful reading acquisition include specific levels of spatial representation, visual perception and speech development. All speech development components are important for reading acquisition: pronunciation skills, general phonological awareness, identification of phonemes within words based on their distinctive features, in order to be able to reproduce the phonetic forms of words, and a high level of lexico-grammatical analysis and synthesis skills, in order to fully understand what has been read [Ananyev 1960: 456; Gvozdev 1961: 140; Yegorov 1953: 30; Zhinkin 1966: 14–15; Zhurova, Elkonin 1963: 225; Tsvetkova 1988: 189–190; Shvachkin 1948: 106; Elkonin 1958: 101; Elkonin 1962: 16].

Phonological awareness and phonological perception develop as children naturally learn to speak their native language. For the brain to identify each word as a unique and distinct set of sounds associated with a specific meaning, children should be able to discriminate among phonemes similar in their acoustic and articulatory characteristics. However, the specific phonological word analysis skill only develops when children start learning to read. Johannes Ziegler and Usha Goswami believe that the effect of literacy on spoken language processes is the most intriguing aspect of learning to read and write. They also compare, taking their cue from Uta Frith, the alphabetic code to an infectious virus: whole word sounds are automatically broken up into sound constituents, and “language is never the same again.” [Ziegler, Goswami 2005: 14; Frith 1998: 1051].

Vocabulary size used to be considered a more important reading development tool than even phonological awareness, right up until the early 1980s. For example, Irene Athey in her article of 1983 writes that “vocabulary development may be the single most important preparatory step for reading, but it must consist of true development of the ideas surrounding a concept and not just the dictionary definitions of more and more new words.” [Athey 1983: 198]. In order to provide this, new words should be learned in the context of their application. Russian researchers and speech-language pathologists associate the limited vocabularies of children with underdeveloped phonemic and phonological awareness: without understanding the meaning of words,

Figure 1. **Reading acquisition skills arranged in accordance with the extent to which teaching them is complex and time-consuming**

<i>Skills that develop comparatively quickly and easily</i>			<i>Skills that require a lot of time and repeated effort to develop</i>			
Ability to write one's name	Knowing the alphabet	Using high-frequency words	Ability to pronounce sounds properly	Phonological processes (phonological awareness)	Oral reading fluency	Vocabulary and comprehension

children pronounce them wrong, omitting sounds, changing their sequence, or substituting other sounds for them [Filicheva, Cheveleva, Chirkina 1993: 6, 153].

Contemporary foreign researchers divide reading development skills into constrained and unconstrained. The term “unconstrained” was coined to concisely describe the teaching of such abilities as “complex and time-consuming”. Figure 1 shows the vital reading development skills depending on their “constrainedness” [Dougherty Stahl 2011: 53].

Vocabulary development requires more time than development of phonological awareness. Unfortunately, school research and reading readiness tests focus most often on constrained skills, which also dominate the school curriculum, while truly important unconstrained skills are largely overlooked [Dougherty Stahl, 2011: 55].

How non-cognitive skills and environment contribute to reading acquisition

The level of reading development has to do with other factors as well, apart from the well-formedness of phonological, semantic and grammatical language components. First of all, these other factors include the non-cognitive development of children and the environment that they grow up in.

A number of studies have proved the correlation between non-cognitive—social, emotional and personal—development of children and their academic achievement. In particular, the development of self-regulation skills correlates with that of phonological awareness. The level of social skills predicts letter recognition, sound-letter correspondence and non-word repetition skills (according to teachers) [Ritchey 2004: 375]. Inattention affects reading development more than any other non-cognitive factors, which has been demonstrated by middle school longitudinal studies that did not involve direct assessment of reading skills [Dittman 2016: 660.].

A meta-analysis of 41 studies on the relation of parental involvement to urban elementary school student academic achievement [Jeynes 2005] revealed that all the analyzed studies but one report-

ed a high coefficient (0.7 on average) of positive correlation between parental involvement and the academic performance of school students. Regression coefficients were higher in the studies which used few control variables, so the author believes that parental involvement is an indicator of differentiating factors, such as socioeconomic status, ethnicity, etc.

Canadian researchers demonstrated in a five-year reading development longitudinal project [Sénéchal, LeFevre 2002] that reading fluency development trajectories vary across children depending on home literacy practices selected by their parents: informal shared book reading or teaching the alphabet and reading in a formal style. Meanwhile, reading fluency development trajectories were found to correlate with the results of reading fluency assessment in the 3rd grade. Shared book reading is a predictor of vocabulary size and listening comprehension, which are related directly to reading skills in the 3rd grade. Formal-style teaching of the alphabet and reading skills to children (where parents deliberately make children focus on letter recognition and writing, e. g. by reading an ABC book together) correlates with early development of literacy, which is related indirectly (via word reading at the end of the 1st grade) with the third-grade level of reading development. In addition, the authors establish that vocabulary, listening comprehension and the meta-linguistic skill of phonological awareness form a single factor in factor analysis, which appears to be important for understanding the relationship between vocabulary and phonological development.

Hypothesizing on the factors associated with reading progress in children

An analysis of studies produced a number of factors essential for reading development. These include, first of all, phonological awareness, vocabulary size, non-cognitive skills, and home literacy environment. The goal of this study was to assess the effects of these factors on reading progress in children at different stages of reading development.

The following hypotheses were tested during the course of research:

- (1) Children with larger vocabularies and better phonological awareness will have better reading progress during the first year in school, provided that the starting level of reading development is the same for all.
- (2) Small vocabularies and low phonological awareness inhibit reading progress even in children who learned to read at preschool age.
- (3) Reading progress in children is affected by the level of their social and emotional development.
- (4) Family factors (cultural capital, parental involvement) are significant predictors of progress at different stages of reading development.

Sampling and the assessment tool

The sample included 2,741 first-graders from Krasnoyarsk and Kazan who were involved in the IPIPS¹ (International Performance Indicators in Primary School) study in 2014–2015. Children’s skills were assessed twice: in autumn, soon after placement in the 1st grade, and in spring, shortly before the end of the academic year, which allows for measuring reading progress over the first year of school. The IPIPS tool provides a comprehensive assessment of children’s characteristics—their cognitive skills as well as the level of socioemotional development—and allows for collecting various contextual information (via parental and teacher surveys). This study focused on assessing reading abilities. Reading assessment tests were arranged in the IPIPS tool by increasing complexity and used the following assessment model:

- Basic perceptions of text structure: children are asked to show the beginning and the end of a sentence, the period, and the capital letter.
- Letter recognition: children are asked to name a few letters written on a sheet of paper.
- Word recognition: children are asked to read a few words.
- Ability to read a short text correctly (without deep understanding): the only focus of the tasks in this module was on the ability to read properly; no comprehension questions were asked.
- Reading and text analysis (close reading): this skill was assessed using passages with several multiple-choice tasks. Children were asked to choose the right words to put in a sentence from three available options in the process of reading, on the basis of what they understood. This is a task example: *Yulya bistro (zabralas', sobralas', probralas') i vyshla (u, ot, iz) doma.* (“Yulya (climbed, dressed, sneaked in) quickly and went out (by, from, of) the house.”)

In addition to reading assessment tests, children also performed vocabulary size tests (vocabulary knowledge tasks using words of varying frequency) and phonological awareness tests (real-word and non-word repetition as well as multiple-choice rhyme-matching tasks).

The IPIPS tool assessed children’s skills using the adaptive testing principle: if a child committed a specified number of mistakes, assessment in the current module was stopped and more complex modules were not offered. The adaptive testing algorithm allows for reducing the assessment time, encouraging children’s motivation, and preventing child fatigue.

Non-cognitive (personal, social and emotional) development of children was assessed through a teacher questionnaire that involved 11 aspects:

¹ IPIPS website: <http://ioe.hse.ru/ipips>

- comfort (adaptation to school conditions);
- independence/autonomy;
- self-confidence;
- concentration in teacher-led activities;
- concentration in independent activities;
- prudence / impulsivity;
- relationship with peers;
- relationship with adults;
- observance of rules;
- awareness of cultural differences;
- communication.

Teachers rated all the characteristics for every child on a five-point scale. Each parameter was accompanied by a detailed description of typical behavior corresponding to specific points on the scale, so that teachers could choose the best match based on their observations. Data on the eleven indicators of personal, social and emotional development was divided into two subscales: "behavior in the classroom" and "communicative skills". "Behavior in the classroom" embraces the skills that help children remain concentrated and observe school regulations and schedules as well as promote awareness of cultural differences (i. e. understanding that other people can have a different lifestyle and their customs should be respected). The "communicative skills" scale describes the level of children's independence and autonomy as well as their social skills, i. e. the ability to maintain relationships with other people: peers and adults, both in school and in broader social contexts.

The parent questionnaire data was used to build an index of parental involvement and collect information on students' families. The questionnaire consisted of 17 questions on home literacy practices, asking how often parents engaged in various preschool home activities, such as book reading, counting, table games, jigsaw puzzles, playing with construction toys, drawing, poem reciting, singing, etc. The unified index of parental involvement was built for all 17 variables by applying the scale method used in the TIMSS study [Martin, Preuschof 2008: 282] to parents' answers. In accordance with the theoretical framework borrowed from the publications of Monique Sénéchal and her coauthors [Sénéchal, LeFevre 2002], two separate parental involvement indexes were also built, one of formal parent involvement in reading development (which included the variables "learned how to write letters or words together" and "played letter games, e. g. letter blocks") and one of the informal reading acquisition practices ("read books to the child", "discussed what has been read in books", "played word games", "read aloud street billboards, signs, words displayed in shop windows, etc."), in order to find out which types of home literacy activities predicted reading performance better.

All the results (in reading, vocabulary, phonological awareness, social and emotional development) in the IPIPS project were transformed from raw scores to z-scores, with the mean of 50 and standard deviation of 10. The same scores were used to measure reading progress.

The data was analyzed using standard statistical methods (dispersion analysis, chi-squared test, factor analysis, regression analysis) and SPSS and HLM software.

Data description Tasks of different complexity allow for identifying categories of first-graders at different stages of reading development.

Six categories, described in Table 1, were identified in compliance with the theoretical model of reading development stages. For convenience, the table presents z-scores, which show by how many standard deviations each category is on average higher or lower than the sample mean. Fourteen percent of first-graders cannot read at the beginning of the 1st grade; of them, a little over 7% are unable to recognize any letters or show the beginning/end of a text, and another 7% recognize letters well but cannot read a single word. Seventeen percent of the children were able to read individual words but not sentences. Almost half of the first-graders (47.8%, category 4 in Table 1) were placed in elementary school with some reading skills, yet with a low level of comprehension: they were able to read a short story but failed to perform the reading tasks that involved text analysis. Finally, one fifth of first-graders showed a good or excellent level of reading literacy as they entered elementary school. The differences in reading development at the end of the year are not significant between categories 2 and 3, and those in reading progress are insignificant between categories 4 and 5. All the other differences are statistically significant (*t*-test, $p=0.001$)

Figures 2, 3, 4 and 5 show the percentage distribution of children from different categories of reading literacy on the basis of the following contextual variables: number of books at home, parental education, and attending preschool classes. All of the differences between categories 1 and 2 are statistically significant except those in the number of books at home; categories 2 and 3 differ statistically significantly only in the level of mother's education; all the differences are statistically significant between categories 3 and 4; categories 4 and 5 differ statistically significantly only in the level of education of both parents; and, finally, the only statistically significant difference between categories 5 and 6 is in the number of books at home (*t*-test, $p=0.05$). Otherwise speaking, it means that children's reading ability correlates with the educational resources available to them.

Children's vocabulary was measured using a series of tasks assessing the knowledge of words of various frequency. Children were asked to match the word with one of five pictures; the test includ-

Table 1. **Categories of first-graders by the level of reading development**

Category No.	Criterion: performing a task of a specific complexity level	Description of reading abilities	N	%	Average reading score, z-scores, autumn	Reading-progress, z-scores
1	Failed the letter recognition task as well as the task that required understanding the text structure	No knowledge of letters or understanding of what a text is, i. e. where it begins or ends	199	7.3	-1.99	1.16
2	Obtained a few scores in the letter recognition task but were unable to read words	Letter recognition; no reading ability	203	7.4	-0.92	0.54
3	Solved the tasks that required understanding of what reading is; recognized letters, read words, but were unable to read sentences, either because they never reached the short story level due to word reading mistakes or because they committed too many mistakes when reading the story	Ability to read individual words; inability to read sentences	477	17.4	-0.61	0.19
4	Succeeded in reading the short story but failed to read the text that required knowledge of letter-sound correspondences and deep comprehension	Ability to read words and sentences; however, building sound-letter correspondences is so effort-consuming that it inhibits simultaneous semantic processing	1,310	47.8	0.14	-0.15
5	Succeeded in reading the first text, which required simultaneous reading and comprehension, but failed to demonstrate the same level in reading the second (more complex) one	Ability to read and analyze texts at the same time	243	8.9	0.75	-0.15
6	Read both texts requiring simultaneous reading and comprehension and made it to the third (the most complex) one	Very good reading and comprehension skills	309	11.3	1.3	-0.66
Total			2,741	100		

ed 16 sets of pictures. The complexity of the tasks was gradually increased, from more frequent words to less frequent ones. One score was awarded for each correct answer. Depending on the number of scores obtained, the sample was divided into four categories (Table 2).

Phonological awareness was assessed using two tests. The first asked the children to repeat eight real words and non-words (e. g. *ta-*

Figure 2. **Number of books at home**

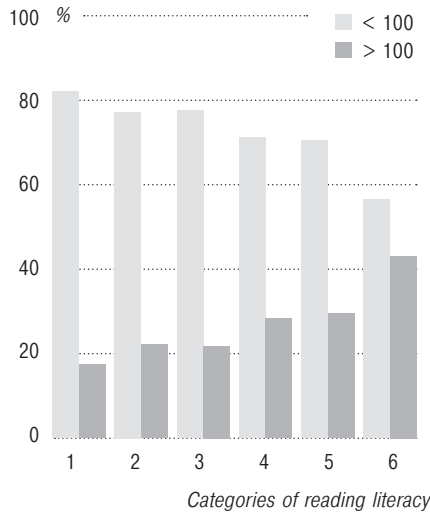


Figure 3. **Preschool classes**

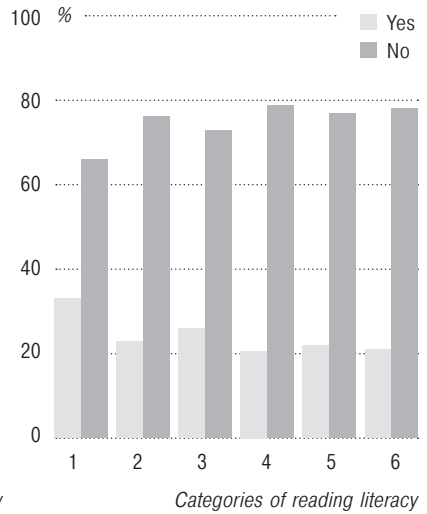


Figure 4. **Mother's education**

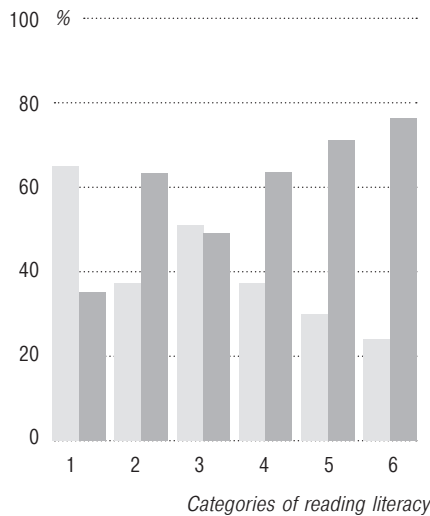
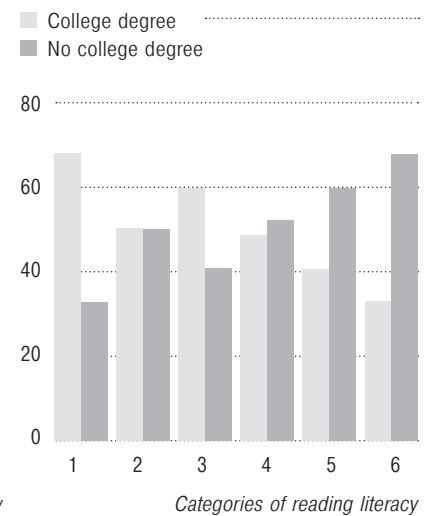


Figure 5. **Father's education**



nets(~“pance”), which had varying syllable structures. The children were supposed to concentrate on the perception of words and repeat them in exactly the same way, reproducing their sound and syllable structure. The second test asked the children to choose the word from a set of options that rhymed with the given one, following a demonstration on how it worked. The children were supposed to find rhymes for five words. Based on performance in each of the two tests (word repetition and rhyme matching), the students were divided into three

Table 2. **Student categories depending on vocabulary size**

Category No.	Criterion: rawscores	Vocabulary description	N	%	Mean vocabulary size score expressed in z-scores
1	0–3	Knowledge of the most frequent words only, such as <i>stado</i> ("herd")	330	12	-1.7
2	4–8	Knowledge of common words, such as <i>kompas</i> ("compass")	1,202	43.9	-0.4
3	9–12	Large vocabulary, knowledge of words like <i>saksofon</i> ("saxophone")	770	28.1	-0.51
4	13–16	Rich vocabulary, knowledge of words like <i>siluet</i> ("silhouette")	439	16.0	1.5
Total			2,741	100	

Table 3. **Categories of students identified based on their ability to repeat words with different syllable structures**

Category No.	Criterion: rawscores	Description of word repetition skills	N	%	Mean score for the whole phonological awareness module (z-score)
1	0–2	Ability to repeat very simple words only, such as <i>stop</i> ("stop")	197	7.2	-1.3
2	3–6	Ability to repeat words with syllable structures of medium difficulty	1,458	53.2	-0.45
3	7–8	Ability to repeat words with complex sound and syllable structures, such as <i>predpriimchivy</i> ("entrepreneurial")	1,086	39.6	0.85
Total:			2,741	100	

Table 4. **Categories of students identified based on their ability to match rhyming words**

Category No.	Criterion: rawscores	Description of rhyme matching skills	N	%	Mean score for the whole phonological awareness module (z-score)
1	0–1	Inability to find rhymes even in the easiest tasks, such as <i>dver'</i> — <i>zver'</i>	592	21.6	-0.44
2	2–3	Ability to find simple rhymes only	860	31.4	-0.15
3	4–5	Ability to find rhymes for any of the given words	1,289	47.0	0.30
Total:			2,741	100.0	

categories by the number of raw scores (Tables 3 and 4). In addition, unified scores for the whole phonological awareness module were estimated based on these two tests. The mean values of such scores are

Figure 6. **Vocabulary of children from categories with different levels of reading development**

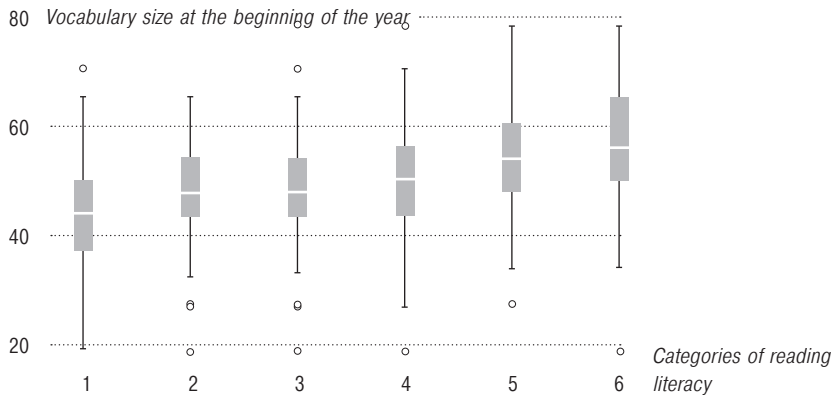
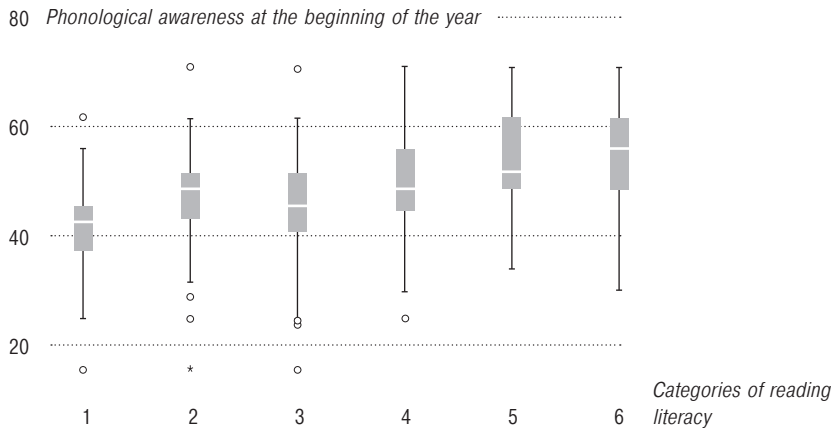


Figure 7. **Differences in phonological awareness between categories with different levels of reading development**



given as z-scores for each of the identified student categories in the far right columns of Tables 3 and 4.

The vocabulary size and phonological awareness of children correlate with their reading skills at the 0.4 level (Pearson correlation, $p=0.01$). Figures 6 and 7 contain diagrams showing the vocabulary and phonological awareness of children from categories with varying levels of reading development. In Figure 6, all of the differences are statistically significant (t -test, $p=0.01$) except those in vocabulary size between categories 2 and 3. In Figure 7, all of the differences are statistically significant (t -test, $p=0.000$). On the whole, these findings con-

Table 5. Percentage distribution of the sample into subcategories based on vocabulary size and phonological awareness

	N	Percentage of the category (%)	Percentage of the sample (%)
1A	44	22	1.6
1B	155	78	5.7
2A	90	44	3.3
2B	113	56	4.1
3A	183	38	6.7
3B	294	62	10.7
4A	715	55	26.1
4B	595	45	21.7
5A	166	68	6.1
5B	77	32	2.8
6A	249	81	9.1
6B	60	19	2.2
Total:	2,741		100

firm the hypothesis on the relation between vocabulary, phonemic development and reading skills. The children in category 2 (who know the letters but cannot read) are a curious case: while having socioeconomic characteristics (parental education, number of books at home), vocabulary size and phonological awareness similar to those of category 4 children (who can read but find comprehension challenging), these students, however, did not learn to read at preschool age. Meanwhile, they show good reading progress (see Table 1). Specific features of this student category are discussed in the final section of this article.

In order to test hypotheses 1 and 2 (limited vocabulary and low phonological awareness can inhibit reading development and progress), each of the six categories of reading literacy was divided into two parts. The "A" subcategory students had rich vocabularies and high levels of phonological awareness, while the "B" subcategory included first-graders with poor vocabularies and low levels of phonological awareness. The "B" subcategory students had been classified into category 1 or 2 by their vocabulary size and phonological awareness (word repetition and/or rhyme matching). The resulting subcategories are shown in Table 5.

Table 6 contains the main characteristics of the resulting "A" and "B" subcategories within each category. Statistically significant differences between "A" and "B" subcategories within each category are given in bold (*t*-test was used to measure the differences). Catego-

Table 6. **Characteristics of analyzed subcategories** (all indicators are given in z-scores)

Subcategory	Reading, autumn	Reading, spring	Reading progress	Communication skills, autumn	Behavior in the classroom, autumn	Parental involvement index	Socioeconomic status
1A	-1.9	-0.79	1.47	-0.29	-0.21	-0.54	-0.18
1B	-2.01	-1.31	1.07	-0.78	-0.67	-0.48	-0.54
2A	-0.91	-0.44	0.65	0.2	-0.09	-0.03	0.25
2B	-0.92	-0.7	0.38	-0.1	-0.3	-0.17	-0.15
3A	-0.48	-0.36	0.21	-0.2	-0.14	-0.04	-0.12
3B	-0.69	-0.6	0.15	-0.38	-0.26	-0.25	-0.41
4A	0.2	0.21	-0.02	0.15	0.11	0.1	0.19
4B	0.07	-0.19	-0.32	-0.08	-0.07	-0.02	-0.17
5A	0.75	0.81	-0.05	0.36	0.32	0.2	0.26
5B	0.73	0.5	-0.37	-0.01	-0.05	0.21	0.14

ry 6 was not included in the assessment, as many children from this category showed maximum possible results at the beginning of the year and had no opportunity to show their full progress in the spring assessment.

As can be seen from Table 6, low phonological awareness and small vocabulary correlate with less reading progress and lower reading assessment results at the end of the year in almost every categories. All of the children who could be defined as nonreaders at the elementary placement stage (categories 1, 2 and 3) showed similar reading progress. Category 4, the largest one (48% of the sample) originally consisted of children who were unable to read the small text in the placement test. By the end of the academic year, those with lower phonological awareness and smaller vocabularies in this subcategory had made less reading progress than others—such children account for a little more than one fifth of the sample. This subcategory also differs significantly from other children in category 4 by the level of social and emotional development, socioeconomic status, and parental involvement.

Regression analysis

Comparison of means was used in the previous section to demonstrate the significance of phonological awareness and vocabulary development in children for their reading progress in school. Whilst comparison of means reveals relations at the level of categories, the contribution of different variables at the level of individual students was assessed using regression analysis, while controlling for the variables that described contextual information on children's life (home literacy practices, cultural and social capital, language spoken at home, attendance of preschool classes, and non-cognitive development).

Table 7. **Description of auxiliary variables used in the model**

Variable	Description
1-2-3A	Nonreaders and children able to read individual words only (from categories 1, 2 and 3), who have a large vocabulary or a high level of phonological awareness
1-2-3B	Nonreaders and children able to read individual words only (from categories 1, 2 and 3), who also have a small vocabulary or low phonological awareness
4A	Readers with poor reading comprehension (who succeeded in reading the short text but were unable to perform in-depth reading comprehension tasks), yet with large vocabularies or high phonological awareness
4B	Readers with poor reading comprehension (who succeeded in reading the short text but were unable to perform in-depth reading comprehension tasks) and small vocabularies or low phonological awareness

Since the sample had a natural hierarchy (children were grouped into classes and schools), it was necessary to consider its cluster structure. Two-level regression analysis was performed using HLM software, with individual students at level one and classes at level two.

Further analysis did not include the group of 309 children who performed virtually all the comprehension tests in autumn (category 6), as the same tests were offered in spring and the children had no opportunity to demonstrate their progress on more complex tasks. With a view to better illustrate regression analysis results, two dummy variables were created; they are described in Table 7.

Children included in any of these subcategories were encoded as 1 and the others as 0, which resulted in four dummy variables. Children who reached the second reading comprehension task but did not make it to the third one because of mistakes (reading development category 5) were chosen to be the reference group. These children are pretty good readers, and even though smaller vocabularies or lower phonological awareness in this category also correlated with lower reading assessment results at the end of the year (which was verified in a separate analysis), the difference was found to be rather small (about two scores) and less statistically significant (at the level of $p=0.05$ only). For this reason, the whole of category 5 was assigned the status of the reference group without dividing it on the basis of vocabulary size and phonological awareness. Two-level regression analysis produced the following model.

$$\begin{aligned} \text{End-of-year reading assessment results} = & \gamma_{00} + \gamma_{10} \times \text{Informal home literacy practices} + \\ & + \gamma_{20} \times \text{Father's education} + \gamma_{30} \times \text{Language spoken at home} + \\ & + \gamma_{40} \times \text{Behavior in the classroom} + \gamma_{50} \times \text{Subcategory 1-2-3A} + \\ & + \gamma_{60} \times \text{Subcategory 1-2-3B} + \gamma_{70} \times \text{Subcategory 4A} + \gamma_{80} \times \text{Subcategory 4B} + u_0 + r, \end{aligned}$$

where γ_{00} is the intercept, $\gamma_{10}-\gamma_{80}$ denote coefficients of relevant variables (showing the number of end-of-year reading assessment scores

that is added in case the variable is incremented by 1), u_0 is second-level measurement error, and r is first-level measurement error.

Table 8 presents the results of a few preliminary regression models and the final one. As dummy variables 1–2–3A, 1–2–3B, 4A and 4B, which take into account both baseline reading assessment results and vocabulary and phonological awareness development, are introduced, expected results of children from categories 1–2–3 and 4 (i. e. nonreaders and “mechanical” readers) are significantly lower than those of good readers, despite the great progress of all. The differences between “A” and “B” subcategories hover around 3 scores for nonreaders as well as those who could only read simple sentences. When controlling for the personal and socioemotional development of children (adding the “behavior in the classroom” scale to model 2), this gap between the “A” and “B” subcategories is reduced to 2.5 scores for nonreaders and 2 scores for “mechanical” readers, yet the factor of “behavior in the classroom” as such contributes very little to differences in reading development, its coefficient being as low as 0.17 scores. The second factor of socioemotional development (“communication skills”) revealed no significant correlations and was removed from the final model.

Mother’s education was found to be an insignificant factor, while father’s education, on the contrary, had a high level of significance. After controlling for family characteristics (father’s education, home literacy practices) and the language spoken at home, the differences between the “A” and “B” subcategories were reduced a little more, yet persisted, now being 2 scores.

Two “sets” of parental involvement indicators were tested one by one in the model described above: the common index for various activities and two indexes assessing home literacy environment, i. e. those of formal and informal reading practices. The formal reading practices indicator was found to be insignificant and was removed from the final model. The models built using the common parental involvement index and the index of informal reading practices were virtually identical (equal index coefficients, coefficient differences of no more than 0.1–0.2 between the other variables, equal proportions of explained variation at both levels in the alternative models), so the final model included the index of informal reading practices, as it used fewer variables and its values were easier to interpret.

The variable encoding the type of school (regular or advanced, such as gymnasium or lyceum) was tested at the second level of the regression, but no significant difference was revealed, so this variable was not included in the final model either.

The intraclass correlation coefficient (ICC), showing the proportion of variation in children’s performance at the second level explained by their distribution among classes, was pretty high in autumn, when measured based only on the baseline reading assessment results (ICC = 0.13, not shown in the table), which means that children at different reading development stages were distributed unevenly among

Table 8. **Regression analysis results**

	Model 0	Model1	Model 2	Model 3
Fixed effects				
Intercept	57.91** (0.34)	65.4** (0.42)	64.8** (0.47)	62,0** (0,73)
Subcategory 1, 2, 3A		-10.4 ** (0.59)	-9.48** (0.61)	-9,11** (0,64)
Subcategory 1, 2, 3B		-13.29** (0.56)	-11.5** (0.59)	-10,83** (0,62)
Subcategory 4A		-4.34** (0.49)	-4.04** (0.51)	-3,9** (0,53)
Subcategory 4B		-7.39** (0.51)	-6.57** (0.54)	-6,14** (0,58)
Behavior in the classroom			0.13** (0.02)	0,17** (0,02)
Home literacy practices				0,32* (0,14)
Father’s education				1,24** (0,34)
Language spoken at home				2,09** (0,63)
Random effects				
u_0 (school level)	10.56	7.75	8.91	7,14
E_{ij} (student level)	55.64	40.00	38.17	37,24
ICC	0.16			
R^2 (class level)		0.27	0.16	0.32
R^2 (student level)		0.28	0.31	0.33

** significance level $p=0.01$; * significance level $p=0.05$.

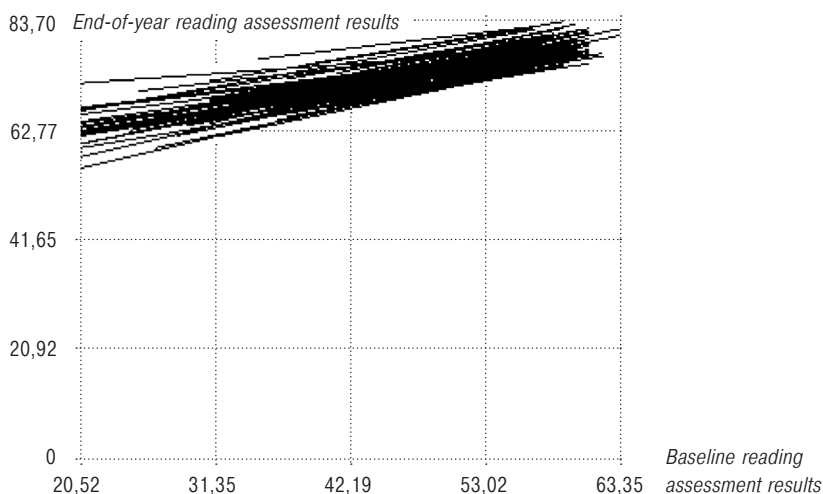
classes. The ICC at the end of the year (based on the end-of-year reading assessment) was 0.16, i. e. it increased a little more, probably because children in different classes developed at different speeds, thus widening the gap measured in autumn.

Two-level regression modeling allows for assessing differences in the regression curves across different classes. In order to evaluate the predictive power of placement reading test results, we built an additional model with a similar set of variables—except that dummy grouping variables, measuring children’s reading, vocabulary and phonological awareness test results, were replaced with individual children’s scores in baseline “reading results”, “vocabulary size” and “phonological awareness”.

$$\text{End-of-year reading assessment results} = \gamma_{00} + \gamma_{10} \times \text{Informal home literacy practices} + \gamma_{20} \times \text{Father's education} + \gamma_{30} \times \text{Language spoken at home} + \gamma_{40} \times \text{Behavior in the classroom} + \gamma_{50} \times \text{Subcategory 1–2–3A} + \gamma_{50} \times \text{Baseline reading assessment results} + \gamma_{60} \times \text{Vocabulary size} + \gamma_{70} \times \text{Phonological awareness} + u_0 + r,$$

This model was used to construct a graph, which is shown in Figure 8. There is a statistically significant difference in the location and an-

Figure 8. **Regression models for reading development in different classes**



gles of regression curves across individual classes, significance level $p=0.01$. The figure demonstrates that the curves have a slight, yet statistically significant tendency toward converging. This may be interpreted as an indicator of reading development “leveling” as classes with worse-reading children catch up to the mean performance level.

Conclusion This study aimed at evaluating the role of phonological awareness and vocabulary size in reading development at various stages. The analysis confirmed hypotheses 1 and 2 (stating that phonological awareness and vocabulary size correlate with reading progress in children with different levels of preschool reading development). Hypotheses 3 and 4 (on the role of non-cognitive skills and family factors) were confirmed partially. The contribution of socioemotional development was found to be significant only on the “behavior in the classroom” scale (which brings together the indicators of self-regulation skills), the coefficient being less than 1. Among the family factors, language spoken at home and father’s education turned out to be the most significant predictors of end-of-year reading assessment results (baseline reading results, phonological awareness, vocabulary size and non-cognitive characteristics being controlled for). Preschool home literacy practices correlate slightly yet significantly positively with end-of-year reading assessment results, informal practices such as shared book reading and discussion being more important predictors of reading development than formal (“school-style”) ones, such as learning the alphabet. Classes formed by the schools differ significantly in the level of their students’ abilities and reading progress.

Practical implications and avenues of further research

As phonological awareness and vocabulary size are critical factors of reading development not only at the beginning but at all stages of school education, teachers and parents should not be satisfied with children's basic reading skills as they enter the first grade. Possession of phonological decoding skills at the beginning of the 1st grade alone does not guarantee further success in reading development. Reading abilities at the end of the 1st grade are better predicted by a complex of three factors: reading skills as such, phonological awareness, and vocabulary size. Because the development of vocabulary and phonological awareness requires a lot of time and effort, these skills cannot be left aside when getting children ready for school.

Non-cognitive skills of children show a very weak yet statistically significant correlation with reading progress. Family characteristics—language spoken at home, father's education, and parental involvement, especially informal home literacy practices—are more reliable predictors. The low coefficient of parental involvement effect can be explained by social desirability bias (when filling out questionnaires, some parents may overestimate their involvement in their child's education), which cannot be controlled for in the framework of this study.

Quite surprisingly, the level of mother's education was found to be an insignificant factor, unlike father's education. In the course of preliminary data analysis (not included in the article due to the length restrictions), we observed that the mother's education variable was significant when it was used, together with baseline reading assessment results, to predict end-of-year reading assessment results. However, it would lose its significance as soon as the "phonological awareness" or "vocabulary size" variable was introduced. These findings may have a theoretical justification: the development of phonological awareness and vocabulary should correlate with mother's cultural capital, which means that the differences described by the level of mother's education have already been considered in the variation of other variables. Besides, allowance should be made for the composition of the sample, which consisted of megalopolis dwellers (Krasnoyarsk and Kazan), where 54% of mothers reported having college degrees. Such a high percentage of families with college-educated mothers could cause bias. Nevertheless, the high significance and great role of such a predictor as father's education became a curious finding. Perhaps, a father's college degree is a more significant indicator of both socioeconomic status and family composition. Only about half of the parents in the surveyed sample answered the question about father's education, while the others omitted the item for whatever reason. Further research is needed so as to establish whether father's education is an indicator of socioeconomic status or family composition—both hypotheses offer prospects for research.

Category 2 of reading literacy already stood out at the descriptive statistics stage of our research: it did not fit into the set of gradually increasing "steps" in Figures 2–7. These children cannot read

despite knowing the letters, yet they have better phonological awareness, larger vocabularies, a lot of books at home and college-educated parents, as compared to other nonreading first-graders. Identifying this category in a larger sample to find out why these children did not learn to read at the preschool age would be a prospective avenue of further research. It may be that their parents made a deliberate decision to take no part in preschool reading development of their children, while providing a high level of their cognitive development. It may also be that such children have some psychophysiological disorders that prevented them from learning to read despite the overall high level of school readiness. Inadequate reading instruction methods could also be a reason why children with high reading readiness were unable to develop reading skills.

Further research should include analysis of reading development dynamics at subsequent elementary school stages (e. g. upon completing the first two years) as well as of classroom practices and teacher characteristics, since a high level of variation across classes was revealed in the course of this study.

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Parental Teaching-to-Read Practices and Children's Reading Literacy in Russia according to PIRLS2011

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Abstract It is well known that reading literacy of a child is related to the family cultural capital. Parents involvement in their children education is what explains this relationship to a large extent. In this paper, we analyze what teaching practices parents of different cultural capital choose to teach their children to read before school and in the fourth grade. For this purpose, we use PIRLS2011 data. Formal (ABC games, word games, writing) and informal (reading together, discussing a book, storytelling) practices are explored. We find that parents with different level of education choose different teaching-to-read strategies. College-educated parents engage in their children preschool education more often and prefer informal practices. They are also more likely to use a compensation strategy if their children do not attend a kindergarten. Lower-educated parents support their child's reading more actively in the fourth grade. Their preschool support is largely restricted to the reinforcement strategy of involvement in learning—they are more involved if their child attends a kindergarten. This paper also investigates the relationship between various teaching-to-read practices and children's reading literacy before school and at the fourth grade.

Keywords reading literacy, educational inequality, preschool education, primary school, parental practices, reading development, PIRLS.

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Learning Standards Must Be Scrupulously Implemented, Not Continually Adjusted

Reflections on *The End of Compulsory Education?* by Oleg Lebedev

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Abstract. Lev Lyubimov regards Oleg Lebedev's article *The End of Compulsory Education?* as a landmark in the field of general education research. For his part, he elaborates and complements the answers given to the questions raised by Lebedev: who should be taught what, how, and what for. The author insists on the importance of training school and preschool teachers on a regular basis. In particular, they should be taught developmental psychology, techniques of

inculcating cognitive competencies and Internet skills in students. Teaching parents is no less important, as they should take seriously the duty of teaching and educating their children. Lyubimov elaborates the notion of activity experience as the backbone of authentic learning, dialogue and group work as the key mechanisms of intellectual development. He also cites the experience of the HSE University-School Cluster, which has been solving the pedagogical tasks stipulated by the learning standards.

Keywords: general education, education quality, educational psychology, activity experience, cognitive skills, civic consciousness, learning competency, HSE University-School Cluster.

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It was a pleasure to read Oleg Lebedev's article *The End of Compulsory Education?*. First of all, it is highly professional. Not in terms of the so-called pedagogical science, which I (like many others) do not fully understand, but in terms of how the author perceives the organization and nature of schooling in the real-life Russian context. The amount of materials analyzed is impressive and indicates full verification of the many judgments and conclusions made in the article. In a word, Lebedev's paper is a landmark in the field of general education research, being completely in line with the importance of the author's professional reputation.

The article has inspired me to enter into a dialogue with Lebedev, not for the sake of criticism but for the sake of discussion and finding possible answers and solutions.

1. On schooling quality

The article begins with an overview of historical school education quality patterns. This is the central problem of the study. But what is school education quality? Lebedev answers this question eventually, describing how he sees it today and tomorrow and emphasizing that quality should not be solely determined by subject-specific outcomes. Why eventually? Because at first he introduces a universal definition of his own: education quality measures the relevance between education outcomes and the cost of their achievement, on the one part, and social demands, on the other. The definition is rather ambiguous and can embrace a number of things, including conflicting speculations, but I won't argue with that.

Yet, the author is undeniably right in stating that schooling quality may change depending on who is taught what, why and for what. I would first stress the dependence on who the teacher is and dare make some additions to Lebedev's answers to these questions a little bit.

1.1. Whom to teach?

The author only includes children in the analysis. Alas, this is absolutely not enough, as problem number one is who teaches. It is teachers who are to be consistently taught. The problem is especially relevant in Russian schools, where the overwhelming majority of teachers have only been trained in pedagogical colleges, which is clearly not enough in the 21st century. (Most school teachers in the West have Master's degrees obtained in classical universities¹.) My personal school interaction experience has revealed virtually a total absence of teacher's knowledge about children, i. e. educational psychology. As a result, such teachers simply do not know "whom to teach" or, rather, "whom they teach". While Lev Vygotsky is revered by Western schools in the same way as Newton is revered in classical mechanics, Russian teachers have never studied his works, although the name usually sounds vaguely familiar to them. It means that Western teachers know what a child is at the age of two, three, five, seven, or ten; how their memory, attention and thinking develop, and what teaching tools can be used to encourage their development, etc. Russian teachers have no idea about these things. This inexcusable qualification gap

¹ G. E. Grant, M. Lipman, D. W. Dean, D. Kuhn, D. F. Halpern, and dozens of other researchers have long arrived at the conclusion that critical (higher-order) thinking, metacognition, problem-solving skills, and analytical thinking can only be taught by teachers who are experts in specific subjects, i. e. mathematicians, chemists, geographers, philosophers, etc.

“between us and them” should start being reduced with a view to being ultimately eliminated.

Besides, Western teaching staff are conversant in the fundamentals of the sociology, philosophy and history of school instructional institutions, and many are well versed in the basics of education economics. Russian teachers are far from this. Western instructors graduating from classical universities are experts in specific subjects, i. e. physicists, biologists, historians, etc. They become teachers as a result of additional teacher training, e. g. postgraduate studies. Western teachers are good at information technology; in Russia, it depends. Russian teachers have too many competency deficiencies that have become obvious to professionals but not to education policy makers, sadly. The latter suggest going back again to the five-year teacher education program combining two specializations (e. g. physics+mathematics, chemistry+biology, etc.) first introduced by Khrushchev in 1956. While the world is moving forward, Russia is retreating “back through the ages”.

Teaching parents is as essential as teaching children and teachers. As mass school was introduced, and especially during the Soviet period, the parent “stratum” came to consider kindergarten and school to be “cloakrooms” for their children and to believe those institutions were unquestionably supposed to educate their children as citizens and workers on their own, without any parent participation. This weird belief is only typical of Russian parents in today’s society. The rest of the world is aware and confident that child inculturation largely depends on family. In Russia, we involve ourselves actively in the fight around juvenile justice, while the outside world scrupulously observes laws (in the West) and traditions (in the East) entrusting parents with rather strict duties to help educate their children. If the parent stratum fails to perform such duties, efforts made by the kindergarten and school will not yield more than a halved result. It is equally important for the school to make parents realize that a child’s behavior at home is largely shaped by imitating parental behaviors. Children read if they see their parents read, copy adults who play online games, etc.

Unfortunately, there is virtually no other institution other than the school to assume the function of convincing parents and teaching them instructional duties. This is part of our culture, and culture is only reproduced and complemented through schooling.

1.2. How to teach? In answering this question, Lebedev rightly points to the type of learning format, justly criticizes the drawbacks of the subject-class-and-lesson system, and gives recommendations to improve its efficiency. In my view, however, this is not enough either. Oleg Lebedev is an obvious proponent of the reduction of any regulations that inhibit teacher or student creativity. Meanwhile, lesson, class, and subject have invariably been subject to regulations in the Russian tradition. However, the information revolution of the last few decades has led to a crisis

of teacher, student, and lesson as the fundamental schooling system elements. In the Internet age, the teacher has become almost irrelevant as a source and translator of knowledge. Textbooks have suffered the same fate. It is clear that lesson design should also fundamentally change in the future.

A lesson in the didactic education paradigm (not only in school but in college as well) is a lecture delivered by a teacher/professor. The teacher knows, and the students don't. The teacher speaks, and the students listen. The teacher orders, and the students obey. The teacher evaluates, and the students resign themselves. There is no dialogue in this interaction, and this is true for 95% (or more) of Russian schools. A lesson (or lecture) like this provides temporary input of some information into the memory, and then this information is perceived only partially. But it doesn't provide any knowledge, as knowledge is not something crammed into the memory but something that a student has read, processed individually, and applied in practice under the teacher/professor's guidance. Information perceived and processed by myself and then also applied in some real-life context by myself is the knowledge that will be saved in my memory instead of fading away in two weeks. Why?

Because experience (according to Vygotsky), or activity experience (according to Leontiev), is the unit of measurement for the mind, psyche, and thinking development. This is the only thing that authentic teaching is about; and it is only this type of teaching that is authentic and genuine, as it gives knowledge and does not just attempt to place information into the memory. For many decades already, the English language and the foreign school tradition have largely replaced the conventional term *teaching* with *learning*, i. e. continuous development based on personal experiences, such as recognition, writing, actions, decisions, meetings, deeds, etc. (The correspondence with Vygotsky/Leontiev is hardly a coincidence: their "activity experiences" correlate clearly with "personal experiences", i. e. experiences of actions.)

A lecture does not generate any activity experience. Reading out from a textbook contradicts dialogue as the key mechanism of intellectual development. Plato, the first of the great teachers known to us, used dialogue to teach his disciples and develop their intelligence. By asking ever more elaborative questions as a reflection to a repeatedly incorrect disciple's answers, Plato would gradually prompt the disciple to come independently to the only right answer and find the truth on his own. Dialogue produced knowledge and enhanced intelligence. Thousands of years later, the outstanding instructor, Pavel Blonsky, would say: "Do not give them scientific truth (notion, category, theorem, conclusion etc.) but derivate it from them." (Cit. ex [Leontiev 2016: 33])

Dialogue is impossible in a space with three rows of desks. Over 100 years ago, prominent psychologist John Dewey replaced three

rows of desks with tables to accommodate five or six students each in his Chicago Lab School (the University of Chicago). The outstanding Russian researchers Daniil Elkonin and Vasily Davydov also reorganized the classroom by removing the three rows of desks within the framework of their elementary school system project. Indeed, these three rows make not only dialogue but also team work impossible.

Intergroup dialogue is not only a critical mechanism of intellectual development. It is also a small social community, where academic interactions and dialogues among all the participants contribute to: (i) the development and collaborative learning of future social roles (leader, participant, opponent, performer, etc.); (ii) the development and collaborative learning of intellectual roles (insight provider, solution algorithm developer, “solver”, conclusion maker, etc.); (iii) the manifestation of individual activity preferences in specific domains. That is to say, group work is a predictor of social and intellectual roles as well as subject preferences. All of this can and should be applied as early as in elementary school, especially if specific subjects are taught there.

1.3. What to teach? The answer to this question is inseparably associated with the answer to the question, “How to teach?”. Lebedev provides two alternative answers: (i) “teach to achieve required outcomes” (I would say, to get “correct” answers) and (ii) “teach to fulfill the existing educational opportunities”. The context of the article makes it clear that the author stands against the first option. However, I would not make a stand for the second one either. Which exact opportunities do exist where, when, and for whom? And what if such opportunities are negligible—should teaching still revolve around them?

The right answer is somewhere else, so let us start searching for it. Could Plato know 1/10 of the then human knowledge? I believe he could. Could Lomonosov know 1/200 of the human knowledge in the mid-18th century? Well, maybe. And could Einstein know 1/2000 of the human knowledge of the first half of the 20th century? I doubt any answer is right. However, I am pretty sure that 100,000 professors in 2017 cannot possess all of today’s knowledge. But then, what do we keep thinking up for the content of school education? Today’s human knowledge is a universe expanding constantly at a rapid rate. Who can dare select the school education content that will be of use throughout a child’s life? Who can find the right fish in this ocean? This is a rhetorical question, although there is no shortage of those coming up with the respective initiatives.

Meanwhile, the right answer to the question “What to teach?” does exist: a child should be given a fishing rod and shown how to fish in the ocean of human knowledge. Because this is what they will have to do in their grown-up life.

The new learning standard calls such skills meta-competencies. In practice, however, nearly all Russian teachers (as well as principals) understand meta-competencies rather as cross-curricular compe-

tencies. Everyone seems to ignore the prefix *meta-*, denoting “above”, or “beyond”. I once witnessed with my own eyes a seasoned Moscow school principal reporting cheerfully that their school offered “eight meta-subject classes”.

The global educational community has long used the more accurate term *cognitive skills*², or cognitive competences. This concept has become a universal indicator that human capital experts use to compare the performance of national education systems. The same experts have coined the term *cognitive capital*, which properly conveys the intellectual nucleus of the term *human capital*. Their research has revealed a significant correlation between economic growth and development of a country, and the level of cognitive skills of its school students.

So, what do they think the cognitive competencies indicator consists of? The answer is simple: it is the results of international assessments TIMSS, PIRLS, and PISA. These studies assess skills in mathematics, science, and reading (hermeneutics): mathematics as a language of cognizing and describing the world around us (view of the world), science as the object of cognition through mathematics and theoretic concepts adopted by consensus (Jürgen Habermas), and reading as the competency of cognizing and interpreting texts (since culture is about texts), hence the surrounding world through texts. Human capital experts believe that school is the main hearth of cognitive skills and thus the key and single-option source of the country’s cognitive capital.

Unfortunately, the international studies do not assess skills in English, the lingua franca of international communication, science, politics, and business today—probably because its worldwide spread has reached a level where neither quantitative nor qualitative comparisons make sense. Alas, Russia is still an embarrassing exception to this rule due to the Soviet school policies. Before 1917, school students had studied two or three European languages, in addition to Latin and Greek in gymnasiums. Bi- and trilingualism always imply a higher level of intellectual development. The Soviet school took the route of systemic simplification, actually leaving out the real study of foreign languages in school: two lessons a week—at first in high school only, later in middle school as well—were a senseless use of time and resources. Schools kept producing a society that was “mute” to the rest of the world. Today, foreign languages are still taught extremely insufficiently in school.

Does it follow from what has just been said that only the above-mentioned subjects should be taught? Of course, it doesn’t. Yet, what must be taught in the first place are the competencies of searching information independently, analyzing it (breaking it up into units of

² See, for instance, [Hanushek, Woessman 2015; Stiglitz, Greenwald 2012].

meaning)³, selecting the necessary bits, synthesizing them with what is already stored in the long-term memory, using associative thinking, etc. These skills are to be taught based on the materials within Internet domains; hence, students must also be taught web navigation skills. Why the Web? Because the Internet will be the main source of knowledge in their adult life, so the basic Internet skills should be taught at school age⁴. In the adult world, only a drop from the ocean of knowledge will be needed to solve an ad-hoc problem. However, this drop has to be found quickly and processed cognitively within days, while other members of the team created to solve the problem are doing the same thing. Modern economies are organized horizontally as an infinite number of companies, each engaged in innovative projects and creating ad-hoc teams of several experts—each responsible for their own product domain—with advanced cognitive competencies. The fundamentals of such co-existence should be inculcated by school: through dialogue, group work, cognitive capital development, and teaching web navigation skills. This is one part of the answer to the question “What to teach?”

Next, we should add the requirement of paramount importance for school education in the 21st century: school curricula and education content should be open to modification. Russian authorities keep trying to make them rigid, to arm the school with a unified education program, a unified textbook, a single framework curriculum, i. e. in fact, to come back to the infamous Stalinist school and the Stalinist society of unilateral standards (Michurin as the only horticulturist in the country, Williams as the only soil scientist, Stakhanov as the only hard worker, Stalin as the only leader, etc.). If that is to happen, the teacher and the child will have no access to new media—primarily the Internet—and therefore to the 21st century as such. I don’t think that children and their parents will put up with this new initiative of the Ministry of Education and Science.

Another part of the answer to the question “What to teach?” has to do with the child’s personal development and socialization, the goal that is utterly crucial for Russia.

Civic consciousness, patriotism, a nation’s unity, and national identity are of vital importance all over the world today, but even more so in Russia. The Soviet Union could have continued collapsing if it hadn’t been for the power vertical erected quickly and smoothly, as well as the discipline of the regions established right away. However, this vertical is not enough to ensure unity as it only provides an ex-

³ Text (information) analysis is extracting meanings and units of text so that they could be translated into a different form of expression (resume, essay, keywords, abstract, etc.). The ability to express the meaning of a text in a different way indicates that the text has been understood.

⁴ Today, children often outdo teachers in terms of using the Internet (and new media in general) as a source of knowledge.

ogenous tenet. Without any endogenous, fundamental national unity, this power vertical is only transitory. To inculcate the personal qualities mentioned above, Russian authorities have resorted to mass media, rhetoric, public fuss, chaotic events, law amendments, and other “magic spells”. I am pretty sure that the result has been zero so far and is not going to get any better.

One must invest oneself into a specific “place”—home, neighborhood, class, school and schoolyard, village, city, or homeland—to love it. The feelings of patriotism and civic responsibility “for everything around” can only develop as a result of activity-based teaching, which makes *me* experience and feel *my* contribution and the moral obligation to protect this contribution into what is *mine*—therefore, into what is *ours*. The school must use student self-government practices to create a menu of activities for children to invest their effort in the “place” to make it their dear home.

It is *my* investment in the “place” that begets *my* love for it, the “spiritual instinct” [Ilyin 2001:396], attachment and care, rejecting the “belligerent chauvinism and blunt national arrogance” [Ibid: 395]. Children’s activities aiming at improving what is *mine/ours* or lending help to others to develop their moral values and make them empathic. Morality and empathy, in their turn, will not allow any investment in something or someone to be betrayed.

What to teach for? “For the purpose of either being useful to the state and society or developing personal potential”, Lebedev answers. The first option is associated with the ideology of duty, while the second one has to do with the ideology of right. Lebedev prefers option two, but I believe that both answers should be considered viable. The ideology of duty cannot be avoided in a country with such a territory (and all the mechanisms inside).

Education systems can and must change. This point of Lebedev is perfectly true. He sees the root of change in “transformational processes” and cites the famous sociologist Vladimir Yadov a lot in this regard, referring in particular to his belief that transformational changes are predicted by two types of “matrixes of social being: western and eastern”. This extensive reference to Yadov in the article is not really clear to me. However, as far as it concerns education in the East/West paradigm, we should take seriously the essence of the Eastern system, which I see in the focus on inculcating dozens of educational virtues, the maxims of Confucius in the first place, instead of chasing subject-specific outcomes to ensure a high education quality. Such virtues include: “Difficulties are more important than success” and “Learn sincerely and grow every day”; “Don’t be afraid of failing, but fear the reluctance to learn”: “Learn insatiably and teach others earnestly”, and “Learn with love”. First come the virtues and the personality that values and lives them, and then everything else.

It is due to these values that China topped the TIMSS, PIRLS and PISA rankings within an unprecedented, record-breaking time-

frame. In my opinion, this breakthrough indicates clearly to whom the future belongs in our world bogged down in uncertainty. Meanwhile, as we persuade ourselves to start teaching children self-learning and self-development skills and transforming the school educational paradigm, i. e. providing “activity-based learning” according to Vygotsky and the new learning standard, the Ministry of Education and Science is planning to restore the Stalinist school with unified textbooks, syllabi, etc. Not a word about virtues “for the personality”, only about the duty to the state. The seventy years of personality deprivation in the Soviet Union taught us nothing.

Analyzing the opportunities (quality) of the Soviet school, Lebedev refers to facts that prove convincingly the consistent degradation of this quality in the second half of the 20th century. I agree with the author: nothing of what I learned in school back in the Stalin times has ever come in handy for me. The author’s overall conclusion is as follows: “(Soviet) school education was falling behind the social demand more and more, preserving the same drawbacks decade after decade.” As for me, the diagnosis is too weak.

Further on, Lebedev dwells on the reasons behind the limited potential of the Soviet school, concluding rightly that this education system solved the problem of accessibility but failed to solve the problem of quality. The retrospective journey into the history of the Soviet school is especially interesting in this regard. Readers will be intrigued to learn about the approach made from the ideas of a new school put forward by Anatoly Lunacharsky, the first Soviet People’s Commissar of Education, largely consistent with the assumptions of the present-day federal standard, to the subject-class-and-lesson system—in fact, school authoritarianism and countless school-, teacher- and student-related regulations—as early as the 1930s. A successful term “coercive teaching” is coined by the author to refer to that reincarnation.

Next, Lebedev points to the positive transformations in the West and the stagnation trends in Russian school education with disguised disappointment and goes on to speculate on “what an alternative education system could be like”. I believe that the new learning standard and the revised Law on Education already contain a regulatory answer to this question—a research-backed answer that hardly requires searching for alternatives.

However, the problem persists. First, schools report implementing the new learning standard without even starting to do so. Second, not only do education policy makers ignore this fact but their declarations and actions are often in direct conflict with the new federal standard requirements.

Subject-specific outcomes are the main concern of politicians, society, and education officials. Meanwhile, the focus of the learning standard is on developing the personality and intellectual/cognitive competencies of children. Moreover, authorities even resort to ma-

nipulations with student test scores more and more often to improve subject-specific outcomes, which are far from perfect. Mathematics is basically the most critical component of international assessments; in this context, how can we consider Russia's performance to be comparable to that of other countries after we have divided the USE (Unified State Exam) test in mathematics into basic and advanced levels?

"...Not so much a body of knowledge as personality development is the overriding concern of an education system." "To make a high school graduate socially demanded under whatever conditions, it is not enough to *teach* them. *Teaching their teachers* is at least as important or even more important." (bold added) [Leontiev 2004:15]

"Student's personal activities should be at the core of the educational process." [Vygotsky 1991:82]

Lev Vygotsky regarded personality as a psychological category that was fundamental for human activities and conscience. A personality regulates her or his cognitive (intellectual) and social development autonomously.

As we can see, the system our school education exists in is a didactic system where personality (subject) is made an object, where children are taught dogmas, algorithms and "correct" answers, and where teachers are authoritarian and non-cooperating. Oleg Lebedev has provided quite convincing arguments in favor of this point.

2. A non-regulatory vision of the alternative

It appears that Lebedev has found the alternative solution but described it in a regulatory style (which is important too). Therefore, I am going to suggest a "non-regulatory vision of the alternative" to develop Lebedev's point. This perspective is now implemented in the University-School Cluster of the National Research University Higher School of Economics (HSE), a voluntary association of schools founded as a common initiative of the HSE and the Department of Education of Moscow. Nearly 60 school complexes (about 140,000 students) solve pedagogical tasks offered by the learning standard with the intellectual support of the HSE.

2.1. Personality development

A child's personality develops on its own, the result being barely predictable if the school is indifferent. That is why schools should provide the necessary conditions. A personality is not shaped by adult rhetoric addressed to a child (persuasion, admonition, advice, scolding, call to action, encouragement, praise, etc.) but develops as a result of the child's interaction with people. Hence, such interaction must be allowed for and maintained; this is accomplished stage by stage in the HSE University-School Cluster.

- 2.1.1. Preschool The goal is to develop strong social and behavioral skills in children. The cluster concept stipulates about 20 such skills to be taught through games jointly by families and kindergartens according to an agreed plan. Nearly 60 schools in the cluster have already started implementing such plans. When the preschool stage is over, the level of these skills is tested by schools.
- 2.1.2. Primary school The goal is to develop the sense of responsibility for obligations assumed in a micro-community, to provide children with the opportunity to invest their effort into social objects and to fulfill assignments of the student council.
- A child is assigned routine obligations by family and school. Through the performance of such obligations, they interact with their family, class, or group. When a child invests their effort and concern into something or someone, they feel attached to the object and want to care about it—this is where patriotism is born. Fulfilling assignments of the student council, a school student identifies his/her place within the group. All of this is also practiced by the cluster schools.
- 2.1.3. Middle school Plato would say that a child is a “piece of flesh” that will become a human as soon as it learns to be empathic. Aggression of the present-day world is too evident among teenagers too, indicating the school’s educational failure. Meanwhile, empathy development ideas and practices literally grow on trees. For empathy to be born, there should be someone who needs your understanding and participation. Every school is surrounded with residential buildings. Middle-school students and their parents identify all the veterans of the Great Patriotic War and labor, disabled people, and vulnerable families where children are deprived of parental care who live in the school district. A sort of list of those in need of support and emotional warmth is created. Next, students are distributed voluntarily among those people, having submitted a project of their service to neighbors and received instructions from the student council. This type of activity has been a common thing in International Baccalaureate (IB) programs, entitled precisely “community service”. It is being inculcated very slowly in the cluster, the Timurite movement coming back to us little by little. Its acceptance by adults is inhibited by the deep atomization of society and the lack of mutual trust. Yet, it only makes this movement even more important, as it builds society’s future social capital⁵ out of children who develop themselves as social people.
- At the middle school stage, a child wants to play a grown-up role—this is the next level of their social development. The school is supposed to use student councils and other mechanisms to find this role for the child, help them master it and assess it regularly. We pay too

⁵ The concept of trust is paramount for the notion of social capital.

much attention to governing boards, i. e. people who have already failed as active citizens (I have never seen a governing board teeming with activity in my life), and do not fulfill our pedagogical duty of developing civic consciousness in school students. Meanwhile, civic consciousness can only develop in action, through deeds for the sake of society, a neighbor, a peer, a friend, or just someone else. We organize children instead of entrusting them with the freedom of action within their own student organisms.

2.1.4. High school This new level of social development manifests itself in the student's desire to understand the social world model and come to grips with their own view of the world. Socialization at this stage means first of all being serious about social sciences: economics, law, sociology, political science, and gnoseology. The school must motivate students towards mastering this knowledge all the time by creating the conditions for them to plunge into social life and take an active part in it, trying different roles.

The new learning standard ranks socialization, education, and personality development as the paramount goals of school education. China owes its rapid rise to the top of international school education quality assessments almost exclusively to its educational culture (still Confucian), reproduced by inculcating a great number of educational virtues in school students. This culture determines the intellectual development of Chinese children too. How about Russia?⁶

2.2. Intellectual development It is only in our country which “reads the most books” that teaching staff could mistake the second most important (after personality development) goal of the school, according to the new learning standard—“development of meta-competencies”—for “cross-curricular associations”. It proves again the extreme relevance of this second goal. We will refer to those competencies as cognitive skills, as it has been accepted by the global school community.

I was glad to find no in-depth homage to the Soviet school in Lebedev's article. As far as I can remember from my own experience, academic achievement was determined much more by student characteristics (family, genetics, social environment) than school ones back in the Soviet era. The school kept applying the same molds to everything—zero individual approach, zero freedom of choice, and everything averaged for a mediocre student. Inevitably, this affected the dynamics of the average national IQ, which declined progressive-

⁶ I would like to provide an example from the life of the cluster. The cluster includes schools of Nekrasovka settlement, which used to be one of the most crime-prone areas. Character education activities in which these schools engaged in 2012 reduced the juvenile delinquency rate in the settlement by more than 60% in 2015, bringing it to zero in 2016.

ly. Today, the new learning standard puts the development of cognitive skills, or intellect, on a par with the personality development goal.

Taking my cue from Lebedev, I will try to provide a description as telegraphic as possible of how the HSE cluster has been tackling this problem (again, stage by stage)⁷.

2.2.1. Kindergarten Preschool education faces a few serious challenges to the development of higher psychic functions in children. Challenge number one (equally important for socialization) is the mass-scale non-involvement of parents in the sustainable and adequate development of their kids. This is what draws a sharp line between Russia and the East or the West, which I have already mentioned. Parental non-involvement degrades the outcomes of a child's intellectual development manifold, evidenced first of all on the progress of speech development.

The vocabulary of today's seven-year-olds is far less extensive than 25 years ago. Visualized life and the gadget boom have deprived children of their main source of speech development—the “verbal environment”, i. e. everything they hear during the day. This deficiency is largely compensated for in the West and in the East by family practices: first, reading children's books aloud every day; second, talking to children as much as possible; third, watching at least one voiced cartoon a day; and, finally, playing audiobooks continuously while the child is home and awake. All of this shapes the “verbal environment” from which the child's vocabulary is built. Parental responsibility for this investment into their child's development must be at least as high as that of the kindergarten.

A bank of literary works, audiobooks and visual tools has long been developed by the schools in the cluster to be shared with parents and used for such intrafamily practices. Many schools coordinate their efforts with kindergarten activities. There has been ample evidence that such joint efforts of family and kindergarten boost the intellectual development of children. Thinking and speech are inextricably connected with each other.

The degree of sensory environment saturation has a tremendous effect on child development. Sensory analyzers accumulate meaningful concepts; the more actively they are accumulated, the higher the pace of cognitive development. Drawing, music, handicrafts, cooking, etc.—a child should be engaged in these activities as much as possible both within the family and in the kindergarten.

Many of the cluster schools have introduced preschool bilingual education. It is far from universal coverage yet (not all parents understand the importance of such development), but the initiative has been

⁷ While complementing Lebedev's answers to the questions, who should be taught what, how, etc., I also elaborate on my own ideas for the intellectual development of children in school (dialogue, group work, new media, the role of texts, etc.).

launched and is evolving almost everywhere, pushing children's language boundaries and thus the boundaries of the world they cognize.

Importantly, the staff of preschool institutions in the cluster have started learning the fundamentals of developmental psychology under the auspices of school psychologists, using the sources supplied by HSE employees on a regular basis.

Preschool cognitive development offered by the cluster implies a vocabulary of 5000–6000 words, a well-developed sensory system (monitored through assessing children's artifacts), basic bilingual skills, special game techniques (e. g. "Archicard", a game invented by Alexander Lobok that allows children to learn arithmetic operations in a visual way). Results are monitored by primary schools. The preschool staff even knows how to promote conceptual thinking in children, from the first syncretic perception at the age of about three to the gradual transition from one complex to another, with a view to allow for the early development of pseudo-thinking skills (the fifth complex) in primary school.

2.2.2. Primary school Cognitive development at this stage is provided by inculcating reading, writing, speaking, and bilingual skills.

Reading is about developing a consistent communication pattern of extracting meaning from texts. The goal is to make children addicted to reading and inculcate a habit of reading every day, as culture is contained in literature. The cluster schools make a reading list for children, pass it on to parents, and monitor reading activity. The school continues to encourage families to participate actively in child development and monitors parental behavior as well: families are supposed to read together with their children, discussing what has been read. Discussion, dialogue, and discourse with parents build the zone of proximal development. The school is expected to explain this mechanism to parents. Home reading activities are important first of all because the child is given the right of choice. Reading behavior is a crucial characteristic of a human being: "People can be recognized and identified via their reading preferences, for everyone is WHAT they read and HOW they do it." [Ilyin 2006:581] Mastering reading skills in early childhood is a vital stepping stone to cognitive development. However, the texts should not be restricted to literary works alone; essays from Alfred Brehm's encyclopedia, for example, are a good read for preschoolers.

Writing is about developing a consistent pattern of cognitive behavior and communication as well as the representation of one's ideas, thoughts, feelings, impressions, etc. From an educational perspective, the process as such matters the most, providing one of the essential prerequisites for independent development of conceptual abstract thinking (concepts are not communicated but must be shaped by children themselves). For this reason, Professor Lobok recommends using a sort of "standard rate" of 1500 pages of self-penned

texts (literally “not a day without a page”) to assess children’s writing activities over the four years of primary education. Combined with everyday verbal communication with adults at both preschool and primary school stages, this type of activity guarantees successful independent development of conceptual abstract thinking skills by the end of primary school.

Speaking is another competency that must be inculcated at the primary school stage. Oral presentation of another topic by the teacher is a waste of time and resources for everyone—it has long been recognized all over the world. Attempts to “put” content into students’ memories are actually demotivating, as they deprive children of the right to choose, read, analyze, etc. on their own, i. e. of the possibility to “live” this content. The IB program, one of the best school programs, recommends that teachers should keep silent in the classroom for the most part, encouraging students to engage in discussion and continuous verbal self-expression. Homer considered debating to be the second most important skill for a man after fighting. Teaching students to communicate is one of the school’s paramount objectives, which maybe even deserves a USE test of its own.

I have already touched upon the importance of replacing the three rows of classroom desks with big tables to sit around. Rows of desks are also abolished in the famous elementary school scaffolding technology developed by Vasily Davydov and Daniil Elkonin, allowing for an ongoing dialogue of everyone with everyone.

Bilingual skills. Bilingual education, started in kindergarten, should be picked up by the primary school without interruption—with five hours per week instead of only two and textbooks from the target language country. Primary school leavers must be able to read, listen to, and speak the target language as well as communicate with native speakers easily.

Reading, writing, speaking, bilingualism, intergroup dialogue, group work, open curriculum, and learning content accessed via the Internet (new media) are powerful drivers of intellectual growth and cognitive skills development. Active development of speech at the preschool stage is remarkably intensified in primary school. As a result, fresh fifth-graders possess a well-formed competency of learning, i. e. “changing oneself as a result of an activity experience” [Leontiev 2016: 131]. They enter the fifth grade with the ability to represent information and knowledge through categories and dynamic scenarios. The psychic function of memory, which prevailed in preschool education, is now dominated by conceptual abstract thinking, which is of a higher level. Now that the middle school content has become a reduced model of university knowledge, a child will choose subjects consciously, guided by their own aptitudes, yet keeping an eye on the rest of the curriculum. Conceptual abstract thinking will save them the agony of rote learning, unavoidable by many fifth-graders with the dominant psychic function of memorizing instead of thinking.

2.2.3. Middle and high school I surveyed a dozen school principals and teachers, asking them the same question: “Is there any knowledge you were taught in school that you have carried and applied throughout your life?” With the exception of “side” answers like “some social skills”, nearly all replied, “No, nothing”. There is nothing flamboyant about it: it is essential, indeed, to understand what the school must teach.

So, what is the core value of modern school education? Is it subject-oriented knowledge, which hundreds of thousands of professors are not able to give, or is it something else? In fact, I have already answered this question above, and here is the concise version of my answer:

1. School must create all the conditions necessary for personality development.
2. School must switch smoothly from the instructive learning of the early stages to activity-based learning, encouraging for the development of cognitive skills and intellectual abilities.
3. School must ensure the acquisition of subject-specific knowledge as the “representation of the multidimensional outside world, the world as it is.” [Leontiev 1983: 255]

As we can see, subject-specific knowledge is ranked third. A positive practice of pre-university studies has developed as part of activity-based learning, where subject-specific aptitudes can manifest themselves rather early in the course of group work activities. We refer to such pre-university studies as subject-oriented instruction. This is the knowledge that a school graduate will take to the next stage in their life, the knowledge that will provide them with a starting background to enter the realm of professional education. However, all of their future life will require speaking a foreign language, English predominantly. It is only the endemic weakness of our school that can explain the fact that the introduction of a compulsory USE test in a foreign language is constantly postponed.

Meanwhile, the choice of mathematics and foreign language as compulsory subjects made at the very dawn of the USE was perfectly right. These are the two disciplines “oriented towards not so much the objective world itself as *the construction of our knowledge about this world as well as the tools to learn it.*” (bold added) [Leontiev 2016: 140]. Mathematics, Russian, and foreign language as a means of world perception constitute a sufficient set of compulsory USE disciplines.

The Ministry’s recent suggestions to introduce compulsory USE tests in geography and history appear to be not only redundant and likely to augment a homework overload for school students but are also simply irrelevant. All the school geography knowledge that will ever come in useful can be easily found within ten minutes using mobile Internet. The same is true for history. However, this discipline is

an object of ardent interest and reverence by our patriots in the State Duma and the Ministry of Education and Science, anxious to educate our school students “correctly”.

I would like to remind those patriots that “education is a controlled system of *interactions* between society and personality, ensuring self-development and self-fulfillment of such personality, on the one part, and compliance of this self-development to society’s interests, on the other part.” (bold added) [Ibid: 150] While researchers are talking about interactions (actions, participation, etc.), authorities keep hammering the “subject”. Where are the science and politics that are supposed to be implemented into research findings?

All school textbooks on Russia’s history present the history of the Russian state. Of course, this is important for young people preparing to live in a country whose survival depends exclusively on the powerful and dominant state, given its size and a number of other factors. Yet, the textbooks ignore the history of Russian society, which is the source of knowledge about the culture, social thought, science, education, and moral values of the Russian people, hence its national and historical self-consciousness. Patriotism and civic consciousness should be inculcated through social interactions and participation in the life of society in the first place. This participation is supposed to develop parallel to the acquisition of knowledge about the state, society, and their historical evolution. As for virtues, values, and the traditional Russian panhumanism, they are to be inculcated through student’s actions (i. e. their social activities, again), their insight into social history, and their acquaintance with Russian literature and its specific features.

These two interrelated parallels fuel each other and suffice to ensure successful character development by the school both in the field of verbal communication and through student activities. However, foisting additional USE tests is a form of coerced learning and excessive pressure on the school.

Experts in all branches of educational psychology agree on the ultimate synergy between personality development and development of intellectual/cognitive competencies. These two phenomena evolve each other and have been made the top priority of school education both in the West and in the East. In Russia, they are “casual”, except for the cohort of lyceums and gymnasiums (by no means all of them).

3. What has remained untold?

Of course, Oleg Lebedev’s article, aside from being a very good one, is highly relevant. However, he chose not to focus on what was feasible and real. The HSE University-School Cluster has allowed its participants to revise their self-conception, probably for the first time, and to engage in metacognition⁸. The cluster has seen at least 40%

⁸ Metacognition is a key concept in educational psychology, denoting “thinking about thinking”, interiorizing oneself in one’s own conscience, possessing

of preschool and school teachers quit their jobs in the member institutions over the 30 months of its existence. Operating within the cluster framework, schools kind of fitness tested the professional potential of their staff to the real ideas of the cluster (stipulated by the learning standard). The fitness test identified three categories of staff in nearly every institution (the proportions varying heavily from school to school). Category one includes those who either engage in successful self-development or are always ready for new ideas, making up the driving force of the school. Teachers of category two are able to change but need to be highly motivated, sometimes even pressed upon. The staff in category three does not want to and is unable to change, so they do not belong to the school as such. Most such teachers have already resigned from the cluster schools.

However, neither category one nor category two teachers are conversant with educational psychology as the critical science for successful school education. Predominant preschool teacher activities are still restricted to care and supervision (not in the cluster schools), diluted with ad-hoc game practices, which may accidentally fit in with speech and sensory system development objectives, purposeful socialization, etc. All the more, no one is concerned about the literally historic goal of involving parents in the educational and learning process. Involving not through organized events but through a plan of everyday home practices designed jointly with the teacher to boost the development of speech, sensory system, etc. (see above). The cluster schools have already involved the bulk of the parents into regular school-approved activities for children.

Not awareness-raising but rather training activities must be provided for kindergarten staff to teach them the fundamentals of developmental psychology—this is a critical task to be performed if we expect kindergartens to implement their learning standard instead of imitating it. The same is true for primary school teachers, who do not understand the essence of learning activities involving reading, writing, speaking, group work, and dialogue skills as well as their role in the development of thinking. However, this conclusion leads to another one: developmental psychology is totally disregarded in teacher training colleges.

Middle and high school teachers still prefer the presentation-and-question-based teaching style. However, this technique is demotivating children more and more, as we can see from the cluster experience. Therefore, the cluster schools are gradually giving this up. Students who resort to tutoring services—they are not few—have the opportunity to compare group work activities (tutors work with small groups most often) to the presentation teaching style, with their assessments of the latter growing ever more negative.

self-improvement, self-evaluation, self-monitoring, self-control, and planning skills.

The official teacher professional growth policy has turned Russian teachers into collectors of certificates in various types of advanced training. They take refresher courses in numerous pedagogical and non-pedagogical colleges offering even more numerous training programs, the quality of which is not controlled by anyone. Neither does anyone evaluate the results of such “advancements”.

Here is a small example illustrating the critical question of whether or not teachers engage in self-development. A survey of the cluster school principals conducted within the first few months after the cluster was launched revealed an almost unanimous opinion that most preschool and school teachers never actually engaged in self-development. They knew nothing but kept collecting certificates zealously.

Meanwhile, the continuous professional growth of teachers is the primary prerequisite for the constant enhancement of education quality. Certification failed as a solution long ago. The chaotic “market” of teacher certification services has been criticized by most principals and teachers, behind the scenes though (administrators are vigilant). This format has long become inflated and has to be replaced by an alternative system. The most effective solution could be building the culture of self-development inside the school in the form of reading recent subject-specific and pedagogical monographs and journal articles by all teachers, monitored by subject-specific groups, with further panel discussions, cross-lesson observations, etc. A school library must include a section for school and preschool teachers. The cluster schools have begun to create such libraries and fill them with necessary materials regularly. A lot of joint discussions on the most pressing issues of a modern school are conducted by the cluster schools. As a result, an intracluster pedagogic discourse has developed, which is important for the synergy of school management teams.

3.1. Imitation as the lifestyle of mass school

What is imitated? Implementation of all the well-intentioned initiatives of the education policy. The new learning standard had hardly come into effect before a huge number of schools reported working and having always worked in compliance with it. No sooner had the preschool learning standard been adopted than many kindergartens allegedly implemented it to the full. Kindergartens, schools, municipal and regional authorities need this imitation. Let’s be honest: our morbid society needs it. Hence, the imitation will thrive. Why do we need it? Because it provides stability for the chiefs (principals and higher education administrators) and for the reputation of institutions and the system as a whole. Because imitation is wired into our DNA. It was practiced in the Russian Empire, when everything was fine because of “Orthodoxy, autocracy, and nationalism”. It flourished under the Bolshevik rule because of “Glory to the CPSU!”—hence, everything could not be anything but fine. It has moved on into the Russian Federation and keeps prospering, for no one dares encroach upon it: you cannot irritate or disappoint the electorate.

Imitation is provided by procedures, and procedures are ensured through organized events. The school is ordered to educate patriots, so it holds five public events and has its reports approved—reports on events, not on the result of patriotism development. The introduction of the USE brought about ubiquitous frauds: imitation of high education quality could not provide any positive outcomes in the context of independent evaluation, so the outcomes had to be forged. Fraudulent practices were stopped at a heavy cost (thanks to safety measures), which was immediately followed by a large-scale imitation of the educational process as such. The school became focused on drilling children for the USE (and other national tests and independent assessments), putting education as a system on the back burner.

For the cluster schools as well, imitation used to be a genetically encoded lifestyle. It stayed in the back of the mind, and still remains there for many educators. On being prescribed to develop an activity-based learning system, educational institutions plunge into inventing events, which they truly believe to be the outcomes, or tasks completed. It is only through continuous, repetitive and tedious interpretation of the cluster conception, first to the management team and then to the rest of the school staff, that “plants” the minds step by step, freezing out the subconscious attitudes typical of event organizers.

The conclusion is as follows: it is not the new learning standard requirements but answers to the questions on how this learning standard could be implemented (and why exactly this or that way) and what will be accepted as outcomes that the education authorities should communicate to schools persistently. Until then, our education policy can be described as purely declarative, inducing schools to imitate solutions, and ad hoc policies, based on accidental ideas that come to administrators’ minds in the morning. The University-School Cluster has made some progress only because the cluster ideas have been digested enough to begin to change the leaders and their professional mindset little by little, and then the leaders have begun to change the mindset of teachers. Meanwhile, a continuous dialogue between the cluster schools has promoted changes in each of them.

However, even some cluster schools (they are few) imitate the implementation of the cluster ideas. Realizing that imitation is not detected and that they earned their reputation in the Soviet-style (class-lesson-interrogatory) paradigm, the principals of such schools see refusal from imitation as an obvious risk. Taking time is safer.

Having observed the life of a number of schools in different regions, I can state for certain that this life implements the education policy with no strategy at all. Standard policy documents do exist but have no more to do with real life than Stalin’s Soviet constitution, the most democratic one in human history. The actual policy is built around the art of reporting and presenting concocted achievements. If something does not add up, authorities, which judge life by reports, simply change the numerators/denominators in the metrics

or the threshold values of reference intervals. In a nutshell, they tune thoughts (reports) to fit the rhymes (what is supposed to be done).

The ad-hoc policy agenda does not include the most vital issues, such as: parental obligations in teaching and educating their children; professional growth of school staff (including the paramount importance of the need to eliminate the lack of knowledge of child development); changes to the academic performance assessment system (breaking the monopoly on final assessments); evaluation of a child's personality development, including the inculcation of civic consciousness and patriotism; the focus on developing cognitive (non-academic) meta-competencies and, hence, paying special attention to mathematics, speech development, and proficiency in foreign languages; teaching metacognition (self-cognition); the gradual transition from lectures to teaching self-development and web navigation skills; the importance of dialogue and group work, etc.

Even when the newly-appointed Minister of Education and Science touches upon the abovementioned issues in her abundant statements, she does it in the traditional conjuration style. All the cramming with "new" ideas reveals the blatant desire to find as many supporters as possible, not so much for the sake of education as for the looming election campaign: rectors (by entitling them to independent college-based tests), geography and history teachers (by granting them compulsory USE tests), music teachers (by allowing them to teach choral singing to everyone), and a huge number of other teachers (by luring them into the restoration of the Soviet school, "the best in the world"). In other words, this is all about winning support for the 2018 elections. But does it have anything to do with the true objectives of school education? Education policies should consist of implementing the learning standards, not in adjusting them to please those in love with the schooling system of the past century.

4. Conclusion Lebedev's article is about what our school should be like today. While going along with him on nearly every point, I have added some arguments of mine as well. Nevertheless, there can be a huge gap between what needs to be done and what can actually be done in a specific social environment. What needs to be done is often described by researchers, but few or none raise the question of how it should be achieved in a specific environment to provide a successful and integral continuum of four cohesive education stages. A continuum such as this has been promoted by the HSE University-School Cluster conception, which explains the learning standard assumptions to schools effectively. The conception has been gradually and consistently translated into reality by most schools in the cluster. This is a very difficult process of changing everyone who is involved in school life: principals, school and preschool teachers, parents, children, and local communities. Still, the conception is being realized because it offers not dec-

larations or prescriptions but answers that motivate towards its implementation. Answers to the questions, “What to do?”, “Why this way?”, “How to achieve the desired outcomes?”—all of them satisfy the cluster participants and motivate them into action⁹. I hope these answers will satisfy the fastidious taste of Oleg Lebedev too.

There is one more important aspect. What has been set forth by Oleg Lebedev and elaborated by me is only known to a small number of people in the “metaschool” educational community, outside of the school. First, all of this is delivered to schools as a dissembled jigsaw puzzle. The whole picture is unknown and, consequently, incomprehensible to schools. Second, the authorities discover this information in the same disassembled fragments from educational events, the ideas of which they tend to forget quickly. So, they cannot assemble the puzzle either. They do see the overall picture but in the form of regulatory documents compiled by a group of experts, which are then translated into officialese, and then to another “foreign” language in the Ministry of Justice. These texts are unreadable. However, they have a superimportant characteristic—they are dead. Their content is never implemented by schools or enforced by authorities. This results in three phenomena divorced from each other: isolated regulatory texts; isolated reports on fabricated achievements; and isolated schools with three rows of obsolete desks in the 21st century, yet with personal computers and even interactive whiteboards.

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⁹ The University-School Cluster conception is described in detail in *Obrazovatel'naya politika*, no 3, 2016 (Lyubimov L. *Obrazovanie kak izmenenie samogo sebya [Education as Self-Improvement]*).