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The Kitchen and the Dacha: Productive Spaces of Soviet Mathematics

Abstract

In the late 1960s and 70s, due to the Soviet regime's crackdown on dissident activities and rising anti-Semitic policies, many mathematicians from "undesirable" groups faced discrimination and serious administrative restrictions on work and study at top-ranking official institutions. To overcome such barriers, the mathematical community built extensive social networks around informal or semi-formal study groups and seminars, which formed a *parallel social infrastructure* for learning and research.

As result, mathematical activity began shifting from public educational and research institutions into private or semi-private settings – family apartments, summer dachas, and countryside walks. For many Soviet mathematicians, instead of being a refuge from work, their home apartments and dachas became their primary working spaces – places where they did their research, met with students, and exchanged ideas with colleagues. At the

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intersection of work and private life, a tightly knit mathematical community emerged, whose commitment to scholarship went beyond formal duty or required curriculum, a community practicing mathematics as a "way of life." The parallel social infrastructure functioned in tense interdependency with formal institutions and borrowed some characteristics of the official system it opposed.

Keywords: *mathematics, anti-Semitism, discrimination, Soviet Union, social networks, parallel social infrastructure, public, private, scientific community, institutions*

Kuchnia i dacza: produktywne przestrzenie radzieckiej matematyki

Abstrakt

Pod koniec lat sześćdziesiątych i siedemdziesiątych, w wyniku tłumienia przez reżim sowiecki działalności dysydenckiej i nasilającej się polityki antysemickiej, wielu matematyków z „niepożądanych" grup spotkało się z dyskryminacją i poważnymi ograniczeniami administracyjnymi w pracy i badaniach w najważniejszych oficjalnych instytucjach. Aby pokonać te bariery, społeczność matematyczna zbudowała rozległe sieci społecznościowe wokół nieformalnych lub półformalnych grup badawczych i seminariów, które utworzyły równoległą infrastrukturę społeczną do nauki i badań.

W rezultacie działalność matematyczna zaczęła przenosić się z publicznych instytucji edukacyjnych i badawczych do środowisk prywatnych lub półprywatnych – mieszkań rodzinnych, letnich daczy i spacerów na wsi. Dla wielu radzieckich matematyków ich mieszkania i dacze, zamiast być schronieniem przed pracą, stały się główną przestrzenią pracy – miejscami, w których prowadzili badania, spotykali się ze studentami i wymieniali się pomysłami z kolegami. Na skrzyżowaniu pracy i życia prywatnego wyłoniła się zwarta społeczność naukowa, której oddanie matematyce wykraczało daleko poza jakiekolwiek formalne obowiązki zawodowe lub wymogi związane z nauką, społeczność praktykująca matematykę jako „sposób na życie". Równoległa infrastruktura społeczna funkcjonowała

w napiętej współzależności z oficjalnymi instytucjami i częściowo odzwierciedlała niektóre cechy systemu, któremu miała się przeciwstawić.

Słowa kluczowe: *matematyka*, *antysemityzm*, *dyskryminacja*, *Związek Radziecki, sieci społeczno*ściowe, *równoległa infrastruktura społeczna, sfera publiczna*, sfera *prywatna*, *środowisko naukowe*, *instytucje*

1. Parallel social infrastructure

By going beyond the "laboratory life" at official academic institutions, historians of Soviet science have been expanding their focus to include much more diverse forms of scientific life associated with daily life, everyday environment, and the private world of scientists.[1] The focus thus shifts to such kinds of scientific activity as informal workshops, study circles, underground and home seminars, and peripatetic discussions during nature walks. In such instances, academic communication becomes closely intertwined with friendship and family connections, life mentorship, and social integration of students and collaborators. Extensive personal networks connect specialists from diverse scientific disciplines, and their communications transcend academic subjects, touching upon political, social, and cultural themes.

Such parallel forms of scientific life are always present in the background, two famous examples being the birth of the Bourbaki group in a Parisian café in the mid-1930s, and the production of the *Scottish Book* of mathematical problems at the Scottish café in Lwów in the 1930s–40s.[2] At certain historical junctures, these forms may acquire such significance that they begin to rival official institutions of the scientific community, as did, for instance, the *Uniwersytet Latający* [Flying University] in Warsaw in the late 19th century, which provided instruction on forbidden subjects and for excluded groups (in particular, women).[3] This article argues that this is precisely what happened in Soviet mathematics, where new informal communities, organizational structures, educational forms, communication patterns, and research programs emerged, shaping a specific character of late Soviet mathematics and related fields.

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[1] Alexandrov 1995; Rogacheva 2017.

[2] Beaulieu 1993; Mauldin 1981.

[3] Domoradzki, Stawiska-Friedland 2021.

This trend first emerged in the early post-Stalin period, when the scientific community attempted to self-organize, built alliances across disciplines, and took steps toward reforming the Stalinist system of science, reinstating such previously banned disciplines as genetics and cybernetics, creating a network of specialized math and physics high schools, and broadening international contacts.[4]

A new impulse was received in the late 1960s, with the Soviet regime's crackdown on political dissent and the rise of anti-Semitic policies, which deprived many mathematicians of opportunities to study, publish, and work at leading official institutions.[5] In response, the mathematical community came up with several ways to overcome such barriers. Through local initiatives, they vastly expanded the network of free afterschool study circles for school children, established a correspondence school, and organized many new specialized math schools and classes, providing talented students with advanced mathematical instruction. They built an extensive system of math competitions for students, creating an opportunity for the strongest students to enroll in top universities. They opened free evening courses for the promising youth who had been barred from leading universities. For those talented mathematicians whose appointments at pure mathematical research institutions were blocked due to discrimination, they found alternative positions at computing centers or applied research institutions. They turned open research seminars into forums for the dissemination of new ideas and collaboration among mathematicians without regard for age or status.[6]

These efforts resulted in the establishment of a "parallel social infrastructure," which ran alongside official institutions, sometimes overlapping with them, sometimes providing a functional alternative. Despite the administrative restrictions and barriers, this infrastructure turned out to be surprisingly effective in supporting the activity of the academic community and produced a large cohort of world-level mathematicians, including several Fields medalists and winners of other top international awards in mathematics. This paper focuses on a key element of this "parallel social infrastructure" – the transfer of basic

[4] Gerovitch 2002; Maiofis, Kukulin 2015.
[5] Shifman 2005.
[6] Gerovitch 2013; 2016; 2019.

forms of academic activity from official institutions, access to which was obstructed for many mathematicians, to the privacy of their apartments or summer dachas.

2. The tradition of private study groups ("circles")

Late Soviet "parallel mathematics" drew on already existing traditions of scientists' informal self-organization, which, in turn, grew out of the longer Russian traditions of political and literary groupings, or "circles." Daniel Alexandrov defines a private study group, or *kruzhok* in Russian, as "a group of persons who gather out of the sight of official institutions and who are linked by friendship and by shared, continuously debated intellectual interests outside, above, and beyond those officially prescribed."[7] He argues that such informal scientific circles emerged in the 1850s under the intense pressure of the autocratic regime and from the very beginning combined scientific discussion with political debate, and they thus "transmitted distinct features of clandestine political activity from generation to generation."[8] Literary circles, for their part, undermined rigid societal hierarchies and facilitated both horizontal networking and vertical patron-client relationships.[9]

Informal scientific circles typically formed around a charismatic leader who attracted followers to a new scholarly trend that had not yet been recognized by the academic establishment and therefore had no institutional home. For example, in the early 1910s, physicists Paul Ehrenfest and Abram Ioffe organized a closed private group in St. Petersburg to study the new physics of relativity theory. They met in private apartments or secretly in one of the rooms of the Physics Institute to escape surveillance from St. Petersburg University faculty who were hostile to the new physics. Meetings' privacy rules were reinforced by the "unspoken requirement that new members needed to be sponsored by existing ones."[10]

Biologist Sergei Chetverikov's group for the study of genetics, organized in Moscow in the 1920s, can serve as another example.

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[7] Alexandrov 1997, p. 255.
[8] Ibid., p. 256.
[9] Walker 2005.
[10] Alexandrov 1997, p. 262.

Jokingly named DROZSOOR (an abbreviation for Sovmestnoe Oranie Drozofilistov, or Joint Shouting of Drosophilists), the circle was famous for its animated discussions and utter contempt for stuffy rules of official academic meetings. Chetverikov deliberately set up his study group in a private setting, in order to "combine in some form scientific and systematic discussion of the subject matter, in a way that preserved all the positive aspects of an informal conversation, not within the cold walls of an institution but rather in the comfortable atmosphere of the domestic hearth."[11] The "cold walls" may refer not only to the actual cold temperature in unheated public buildings of post-revolutionary Moscow, but also to the unwelcoming environment in Soviet scientific institutions, increasingly dominated by Party activists. "To keep outsiders from interfering," as Chetverikov put it, his circle cultivated the spirit of exclusivity, enforced by the rule that new members could be accepted only by a unanimous secret ballot. The conflict between Chetverikov's group and the young Party members and trade unionists eventually resulted in Chetverikov's arrest and dissolution of his circle.[12]

The Ehrenfest-Ioffe physics circle in St. Petersburg included several mathematicians, which facilitated intense intellectual exchanges between the two disciplines and contributed to the development of Alexander Friedmann's theory of the expanding universe.[13] But the most influential example of an early informal community in Russian mathematics emerged in Moscow. "Luzitania," a circle of disciples around the charismatic Moscow University professor Nikolai Luzin, formed in the late 1910s.[14] Discussions at Luzitania meetings went far beyond mathematics and included a broad range of cultural issues. The circle participant Pavel Aleksandrov recalled,

> These weekly gatherings at N.N. Luzin's home… started with a mathematical discussion in Nikolai Nikolaevich's very cozy office… I will never forget those conversations, filled with lively mathematics, that took place back then. These discussions sometimes stretched past midnight, but whenever they ended, they were followed by tea

[11] Quoted in ibid., p. 259.
[12] Ibid., p. 260.
[13] Ibid., p. 263.
[14] Graham, Kantor 2009.

> with the invariably delicious nut cake. After this tea – not in the office, but in the dining room of Luzin's apartment – the conversations took on a different, non-mathematical character and touched on a wide range of cultural and social topics.[15]

In the mid-1930s, some of Luzin's disciples (including Aleksandrov) rebelled against their teacher and initiated a political denunciation campaign against him; Luzin was fired and Luzitania dissolved. A few years earlier, another popular teacher and the leader of the Moscow Mathematical School, Dmitrii Egorov, was arrested on trumped-up charges and soon died in exile. The very notion of socialization between faculty and students outside the classroom became politically suspicious.[16] Later, in 1956, Aleksandrov publicly acknowledged that this alienating trend went too far:

> [W]e must put an end to the distancing between faculty and students, which existed before the revolution, completely disappeared in the first years after the revolution, and reemerged now.
>
> Students gathered in seminars like Luzin's, like my seminar, Kolmogorov's, Tikhonov's and so on. A large group of students led by the head of the seminar had formed a collective. […] Later this was stopped. The socialization between professors and students was discouraged. Student visits to professors' homes, introduced by Professor D.F. Egorov, were no longer recommended. Instead, students were assigned to university study groups.[17]

In the mid-1950s, the academic authorities still viewed private study circles as a threat to the ideological order. Mathematician Aleksei Liapunov organized for his daughters a small home study group on genetics, which was still a publicly banned subject. He was subjected to a severe reprimand at a 1956 Party meeting at the Division of Applied

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[15] Aleksandrov 1977, p. 20.

[16] Demidov 1999; Demidov, Lëvshin 2016; Ford 1991.

[17] Transcript of the Moscow University faculty general meeting, 26 October 1956; Central Municipal Archive of Moscow [now Central State Archive of Moscow]. *Records of Moscow University*. F. 1609, op. 2, d. 415, l. 19.

Mathematics, where he worked. Director of the Institute, academician Mstislav Keldysh, publicly chastised him: "The error of comrade Liapunov is that he has violated the Party ethics by holding meetings of a youth study group at his home, outside of control of political organizations."[18]

In the late 1960s, with the growing pressure on the mathematical community due to the severe administrative restrictions for "undesirable" groups, such as dissidents and Jews, the community turned to the familiar types of informal organization, which many practiced in the days of their youth, to circumvent barriers erected at official institutions. As a result, mathematical activity began to shift from public to "private/public" areas – math circles, afterschool programs, informal seminars – and sometimes to private spaces, such as family kitchens or countryside dachas. For many mathematicians, instead of being a refuge from work, the kitchen and the dacha became their main workspace, where they did research, met with students, and exchanged ideas with colleagues.

3. Math in the kitchen: "A very social place…"

Soviet mathematicians often met with their students and collaborators in their apartments for a variety of reasons. The simplest reason was the shortage of office space at academic institutions. Ironically, going to a crowded office usually meant that no work would be done; for productive work, academic researchers had to stay in the quiet of their home study. That practice clashed with the bureaucratic rules of obligatory workplace attendance, so the management often made an informal arrangement. As mathematician Andrei Zelevinsky explained,

> Hardly anyone went to the office because the office space was so scarce. Later I experienced this myself. I worked at an academic institute. People would only go to the office when the management called and said there would be some kind of inspection; everyone had to come and be at their workplace. And then there was no place to sit, as there

[18] Transcript of the Party Bureau meeting, 27 September 1956; Central Archive of Social Movements of Moscow [now Central Archive of Social-Political History of Moscow]. *Records of the Division of Applied Mathematics of the Mathematical Institute of the USSR Academy of Sciences*. F. 8033, op. 1, d. 3, l. 64.

> was always a shortage of office space, and the place got really crowded. So those who wanted a quiet place to work always worked from home.[19]

In his research, Zelevinsky was advised by Joseph Bernstein, who at that time had an affiliation with a mathematical biology lab at Moscow University. Like genetics, mathematical biology found an institutional niche under the fashionable banner of biological cybernetics, and provided a refuge for pure mathematicians who could not be employed at institutions controlled by the mathematical establishment. The shaky status of pure mathematicians at a biology lab did not provide them with office space. "How did we work with Joseph?" Zelevinsky recalled, "He had no official position anywhere. We worked at his home, where else?"[20] Even though officially Zelevinsky had a different dissertation advisor (professor Aleksandr Kirillov of Moscow University), actual advising was provided by Bernstein informally and without pay.

In addition to the lack of office space, another important factor for conducting mathematical discussions at home was privacy. For example, Dmitry (David) Kazhdan, another affiliate of the same mathematical biology lab without office space, organized a math seminar at his home. "It was more convenient to do it at home," a seminar participant explained, "because he did not want to have a large crowd; it was an informal seminar."[21]

Both Bernstein and Kazhdan found employment due to the efforts of their influential teacher and patron, the leading mathematician Israil Gelfand, a department head at the Institute of Applied Mathematics and a corresponding member of the Soviet Academy of Sciences. Working on important defense projects at the Institute, he was able to acquire connections and influence to create a network of such niche laboratories to employ "undesirable" Jewish scholars who were banned from regular academic positions. At the same time, working for a defense institution with restricted access meant that he could not meet with his students and collaborators in his office. Instead, he turned his spacious apartment into a workspace. His student Ilya Zakharevich has recalled,

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[19] Zelevinsky 2011.

[20] Ibidem. On Soviet biological cybernetics, see Gerovitch 2002, pp. 211–214.

[21] Drinfeld 2013.

> Gelfand had a small three-room apartment with a kitchen. If [his wife and daughter] were not at home, he usually had four co-authors over: three in the rooms and one in the kitchen. Gelfand would come, say, to the kitchen, where I'm sitting, and for 35 minutes we discuss the difficulties in our theory. When I'm totally exhausted and cannot think straight, he moves to another room and continues with another co-author. After an hour and a half, I recover from such an intense math discussion and begin to comprehend a bit what we talked about. At that time, he completes his circle and comes back to me, as fresh as a cucumber, and starts a new round, making three such rounds per night.[22]

Some mathematicians had to work from home simply because they were forced from their jobs due to their dissident activity or desire to emigrate. In 1968, the prominent mathematician Ilya Piatetski-Shapiro lost his professorship at Moscow University after signing a political protest letter, and in 1974 was fired from the Institute of Applied Mathematics due to his intention to emigrate from the USSR. As a result, he could advise his students only informally. Future Fields medalist Grigory Margulis met with him regularly, starting in the late 1960s and up to the time of Piatetski-Shapiro's emigration in 1976.[23] Another future Fields medalist, Vladimir Drinfeld, has recalled,

> [F]ormally speaking, I was a student of [Moscow University Professor] Manin… [I]n order to understand [the theory of automorphic forms], I needed someone who had already understood it to some extent. Such a person was found: it was Ilya Iosifovich Piatetski-Shapiro. […] At some point, he was fired from the University […] neither he, nor I cared about formalizing our connection.[24]

Meetings with foreign visitors in official institutions required special permission; to avoid such complications, it was much more preferable to communicate with them in private settings – in family apartments or during a walk. According to Leningrad mathematician Anatolii Vershik,

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[22] Zakharevich 2012.
[23] Margulis 2013.
[24] Drinfeld 2013.

> Once a famous American mathematician [Paul Halmos – S.G.] came to Moscow as a guest of the Academy of Sciences, and he wanted to go to Leningrad to give a talk at [Vladimir] Rokhlin's seminar. Rokhlin asked me to arrange this, and this was done. About 200 people came to his talk, and everything, it seemed, went well. But when the leadership of the University learned that an American scientist gave a talk without the authorities' permission, the dean made a stern reprimand to unsuspecting Rokhlin. It turned out, one could not simply invite a guest of the Academy to the University! For this, one needed preliminary approval by the proper authorities. Interestingly, that American in his memoirs wrote with surprise about the strange taciturn manner of the Russian mathematicians. They preferred talking to him not inside the building but while walking on a street. He never figured out the oddities of our life…[25]

Interviews and memoirs notoriously turn past events into well-rounded stories; they often color reminiscences with nostalgia and sometimes mix up some details (in this case, Halmos did not write about this "taciturn manner" in his memoirs, but rather told Vershik about it privately).[26] Yet when the collective memory of a professional community emphasizes the same themes across a wide variety of sources, these "mythologies" begin to shape the identity of community members.[27]

Interestingly, Halmos was so taken by this peripatetic manner of mathematical discussion that he turned it into a rule for concise and lucid mathematical writing: "Pretend that you are explaining the subject to a friend on a long walk in the woods, with no paper available; fall back on symbolism only when it is really necessary."[28]

While meeting at private apartments, mathematicians often congregated in the kitchen, in a very informal environment, mixing math discussions with food and drink. American mathematician Robert

[25] Vershik 2013.
[26] Halmos 1985; Vershik 2024.
[27] Gerovitch 2015.
[28] Halmos 1970, p. 144.

MacPherson, who visited Moscow multiple times, starting in the 1970s, has recalled,

> There were no offices. […] People would gather over kitchen tables. These kitchen tables in Moscow are the warmest places I've ever seen. Maybe all afternoon you spend doing mathematics over the kitchen table, then it comes time for dinner, and then it is this amazing Russian feast, which is hard to describe. It consists of maybe twenty little, tiny dishes, each of which is delectable and made somehow from what's available on the market, which is very limited. A good feeling is around, and people are drinking vodka. […] Every apartment had a good kitchen table, and it was usually the only table in the house you could possibly do mathematics at, and that's where it was always done. It was a very social place, a very warm place. […] socially and mathematically it was a paradise.[29]

This phenomenon was widespread well beyond the realm of mathematics. Withdrawal into the private sphere to escape ideological control was a typical, if not entirely successful, strategy both in the Soviet Union and in Central and Eastern Europe.[30] In the late Soviet period, the kitchen at intelligentsia homes acquired a special mythological status. Singer-songwriter Yuly Kim's song cycle "Moscow Kitchens" canonized the popular image of the kitchen as a place of free thought, where "tea, and sugar, and food for the spirit" came together.[31] Susan Reid has noted the place of the kitchen in the intelligentsia's imagination,

> The kitchen of the new, one-family flat subsequently became mythologized as the heart of 'private' home life and the privileged site of authentic social relations; it was imagined as an ideology-free zone of sincerity and spontaneity where one could shut the door on the duplicities of the public realm and indulge in intimate nocturnal chat.[32]

[29] MacPherson 2012.
[30] Crowley, Reid 2002.
[31] Kim 2000, p. 286.
[32] Reid 2005, p. 289.

Memoirs of Soviet-era scholars are peppered with nostalgic sentiment about the free-thinking ambiance of kitchen discussions:

> Home seminars comprised a lion's share of the most interesting university studies in the late Soviet period, until the 1980s. They had a clear advantage: in the kitchen, you could talk about things you could not talk about in a university auditorium, even with a door closed.[33]

While this consideration was more important for scholars in the humanities than in mathematics, mathematicians also liked to talk informally about broader issues that could potentially get them into trouble with the authorities. For example, in 1968, specialist in mathematical logic Sergei Maslov started an interdisciplinary seminar at Leningrad University on "The General System Theory," which quickly grew beyond the initial small group of mathematicians. As a result, in a few years the seminar moved to Maslov's apartment, where "warm intellectual exchanges were heated by the requisite tea."[34] A former participant has recalled,

> The range of topics discussed at the seminar was broad – from the rise of the Mesopotamian civilization to Dostoevsky's ideas of the "native soil," and from Darwin's theory of evolution to the power struggles in the Politburo of the Communist Party Central Committee in the 1970s. Problems of literature, art, philosophy, religion, and much more were discussed. There were no forbidden topics. Speakers expressed themselves without heeding political censorship and without resorting to the Aesopian language that the intelligentsia often employed in those years.[35]

4. Math at the dacha: "When scientific research became exciting…"

Countryside dachas also often functioned as meeting places for mathematicians outside official institutions. In Russian culture dachas traditionally served as places for "spiritual recuperation from the

[33] Ivanova 2013.
[34] Davydova 2011, p. 147.
[35] Dolinin 2002, pp. 26–27.

rigors of city life, informal and friendly social interaction, and intense intellectual and artistic creativity" and sites of "intense informal intellectual association".[36]

The summer dacha was one of the privileges provided by the Soviet government for the academic elite to ensure the loyalty of the scientific and technical intelligentsia. The first cottages for academicians were built at Nikolina Gora near Moscow back in the mid-1920s. In October 1945, the Soviet government issued the resolution "On the Construction of Dachas for the Full Members of the USSR Academy of Sciences." Signed by Stalin, the resolution prescribed to build, at the government's expense, by June 15, 1946, for the full members of the USSR Academy of Sciences, 150 individual dachas in the dacha areas near Moscow and Leningrad, including 125 dachas near Moscow and 25 dachas near Leningrad. After the construction was completed, almost all dachas were transferred, without compensation, to the private ownership of the academicians.[37]

By the end of the Soviet period, the first three elite cottage villages near Moscow (Lutsino, Mozzhinka, and Abramtsevo) grew in size from 125 to 184 dachas, and new dacha complexes were built in Novo-Daryino (180 dachas) and Zhukovka. In particular, after the successful testing of the Soviet atomic bomb in 1949, dachas were awarded in Zhukovka to a group of top nuclear physicists and mathematicians, including Nikolai Dollezhal', Mstislav Keldysh, Iulii Khariton, Isaak Kikoin, and Andrei Sakharov. As Evgeniia Dolgova has noted,

> [I]n the Soviet system of privileges, with its very specific mechanisms of distribution and consolidation of property, dacha ownership became just one of many, but possibly the most indicative instrument for providing incentives, dividing into strata, and exercising control in the Soviet model of scientific management, built on the manipulation of privileges, creating distinctions within the scientific community, and material hierarchy.[38]

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[36] Lovell 2003, pp. 23, 6.
[37] Dolgova 2023, p. 152.
[38] Ibid., p. 162.

Families of many members of the Moscow University Faculty of Mechanics and Mathematics (the "Mekh-Mat") spent their summers at Nikolina Gora. University professor Vladimir Arnold recalled,

> [S]pending every year as neighbors at the cottages at Nikolina Gora for over 10 years had a much more significant impact on me. We would talk for hours about all sorts of things, usually strolling along the Moscow river bank, often accompanied by other Zarechie inhabitants – the Efimovs, the Shilovs, the Shura-Buras, the Jacobsons, the Kushnirenkos, the Pomanskis. Sinai used to come to fill his water canister, because there was no running water in the nearby Novo-Daryino at that time. […] Moscow river bank would become a special kind of a remote office of the Mekh-Mat.[39]

Senior scholars often invited their students and colleagues to their dachas. For example, two prominent mathematicians, Andrei Kolmogorov and Pavel Aleksandrov, spent most of their time at their year-round shared dacha in Komarovka, returning to Moscow for only 2–3 days a week for teaching and obligatory duties.[40] They regularly invited large groups of their graduate students to stay at the dacha for several days in a row. During daytime, mathematical studies were interspersed with physical exercise, and evenings were filled with cultural activities. Kolmogorov recalled,

> In the golden age of the Komarovskii house, the number of guests at the dinner table after skiing could be as many as fifteen.
>
> This was a typical day's programme at Komarovka. Breakfast at 8–9 o'clock. Study from 9 to 2. Second breakfast about 2. Ski run or walk from 3 to 5. When the organization was at its strictest, a pre-dinner nap of 40 minutes. Dinner 5–6 p.m. Then reading, music, discussion of scientific and general topics. And finally a short evening walk, especially on moonlight nights in winter. Bed between 10 and 11.

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[39] Arnold 2014, p. 67.

[40] Halmos 1985, p. 310; Uspenskii 2006, p. 275.

> There were two cases in which this arrangement could be altered; a) when scientific research became exciting and demanded an unlimited length of time; b) on sunny days in March when skiing was the only occupation.[41]

Unlike the elite scientists, who often owned luxurious state-awarded dachas, ordinary scholars usually rented modest cottages for the season, rather than owned them. Mathematicians often rented dachas not far from one another, taking this opportunity to create an informal community for the summer. While for the elite, the dachas were nice perks, which they enjoyed in addition to the power and influence they exercised at their official positions, for ordinary scholars, especially for the mathematicians excluded from top institutions due to their ethnicity or dissident activity, summer dachas turned into sites of active scholarly exchange and collaboration.

Mark Graev, who had been denied a teaching position at Moscow University, once met a young mathematician at a neighbor's dacha, and their chance conversation resulted in a paper published in a leading journal.[42] Another mathematician, Vladimir Retakh, has recalled,

> We became friends [with Andrei Zelevinsky] in Kratovo, where we both rented dachas for the summer. My close friend Borya Feigin also lived there, and we discussed something all the time. It was there, at the dacha, where we wrote our only joint paper.[43]

All three were notable mathematicians, yet none of them held an academic position at mathematical research institutions. Zelevinsky worked at the Institute of Earth Science, Retakh at the Institute of Industrial Buildings, and Feigin toiled as a software engineer. Their cutting-edge mathematical research was done in private space in their spare time and without pay.

For Soviet intellectuals, dachas served as a private refuge from the norms and restrictions of the public realm. Historian Melissa Caldwell has argued,

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[41] Kolmogorov 1986, p. 234.
[42] Graev 2016.
[43] Retakh 2013.

> [D]acha life is about escapism and the relationship between citizens and the state. In the countryside, Muscovites see themselves as fully self-sufficient. They are not subjected to the political wranglings and bureaucratic hurdles that structure daily life.[44]

"The dacha is permitted privacy under almost total communal ownership," wrote historian Grigorii Zabel'shanskii. "It is a trip from a public life into a private one. The dacha is not so much a second home but a temporary release for a prisoner, which makes it a distinct Soviet phenomenon."[45]

5. Between the public and the private

To analyze the transfer of mathematical practice from official settings into private spaces, such as kitchens and dachas, one needs a new conceptual framework that undermined traditional binary oppositions, such as public vs. private, individual vs. collective, and open vs. secret. In the Soviet context, however, those oppositions are already highly questionable. In the typical setting of the communal apartment and the dacha, in particular, one can already find an uneasy tension between the public and the private. The communal apartment, Stephen Lovell argues,

> [was] a worm's-eye panopticon where only 'public privacy' was possible. When we turn to the late Soviet dacha, however, it seems possible to reverse this formulation and argue that garden settlements were characterized by an altogether more benign 'private publicness.'[46]

Historians and sociologists have suggested several concepts and models, trying to grasp the Soviet blurriness of the public/private divide. Elena Zubkova cites kitchens, home clubs, cafes, friendly company gatherings, and samizdat circulation networks of the 1950s–60s as a "specifically Soviet expression of informal publicness, as opposed to official publicness."[47] She explains,

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[44] Caldwell 2004, p. 126.
[45] Zabel'shanskii 1998.
[46] Lovell 2002, p. 119.
[47] Zubkova 2011, p. 161.

> The informal public sphere acts as a medium and at the same time as a borderland between the official public zone and the private sphere, and therefore it can be defined as a "private-public sphere." Unlike Western societies, where the boundary between the public and the private spheres is quite strictly delineated and protected (including legal protections), in Soviet society these boundaries proved permeable. Yet, as a rule, they could be penetrated in only one direction, when official publicness represented by social activists or by the state unceremoniously invaded the individual's space.[48]

Within this model, the case of "parallel mathematics" curiously reversed the direction of boundary-crossing: the private sphere effectively expanded to include scholarly activities which had previously belonged to the public sphere. Two opposite movements – the invasion of the public into private, and the expansion of the private into public – were going on at the same time, spurring each other.

Other researchers describe the blurring of the boundary between the public and the private in the Soviet context in similar hybrid terms. Ingrid Oswald and Viktor Voronkov suggest such concepts as the "public–private realm" or the "second public" sphere, guided by informal norms of everyday life and typically located at intelligentsia kitchens: "Within this space […] almost everything could be put on the agenda because it became less and less subject to official control."[49]

Alexei Yurchak, on the other hand, criticizes the idea of rigidly dividing the Soviet public sphere into "public sphere proper" and "privately public sphere," with the former supposedly regulated by "statute law" and the latter by "customary law." He argues,

> This discussion rightly unsettles the picture of a singular "official" Soviet public sphere. However, by describing the two public spheres as fixed, bounded, and autonomous topographical locales, governed by distinct sets of rules and codes, it produces a new dichotomy, downplaying the indivisible and mutually constitutive relationship

[48] Ibidem.

[49] Oswald, Voronkov 2004, p. 106.

> between these rules, codes, spheres, and publics. It is more appropriate to speak of a process of deterritorialization in which multiple deterritorialized publics, not static public spheres, were continuously produced.[50]

Recent studies explore how private, unofficial intellectual gatherings of writers and artists in the Soviet Union in the 1950s–60s invented "alternative public regimes" adapted for uncensored cultural production. Lacking access to official organizations, publications, and exhibits, those intellectuals self-organized into groups that facilitated extensive networking, exchange of ideas, and interaction with official institutions through "backstage" negotiations.[51] Leaders of such gatherings often served as "cultural managers" and "mediators" between official institutions and informal groupings, becoming agents of "mutual influence of different institutional forms of literary communication in the late Soviet Union, which did not always fit in the dichotomy of 'official' vs. 'unofficial.'"[52]

The concept of "parallel social infrastructure" of Soviet mathematics is part of the same trend.[53] Instead of viewing private activities as a full alternative to the official infrastructure, it is more productive to see them in constant dynamic interaction with official institutions, which could be described as "tense co-dependency." The official structures and parallel mechanisms were not totally separated; they depended on each other for effective operation. Those who belonged to the science establishment also used private meetings at their dachas to advance their interests, for example, to ensure a favorable outcome of Academy elections or dissertation defense vote. On the other hand, informal meetings of "parallel mathematics" could be held on the premises of official institutions, usually after hours.

Interdisciplinary initiatives also often found a niche in such semi-private settings as academic dachas. The first interdisciplinary School for Modelling Complex Biological Systems, for example, was held in the

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[50] Yurchak 2006, p. 118.

[51] Kukulin 2022; Kukulin, Maiofis, Chetverikova 2022a; 2022b; Velizhev, Atnashev, Vaizer 2021.

[52] Lukin 2022, p. 135.

[53] Gerovitch 2013.

academic dacha community of Mozzhinka in 1973. "It was precisely outside the official structures, in the communicative space of diverse scientific interests, that opportunities emerged for discussing and implementing inter-institutional and interdisciplinary projects," Dolgova has argued.[54]

The co-dependency of the two social infrastructures produced more similarities between them than one would initially expect. In particular, "parallel math" borrowed some characteristics of the official system it opposed.

6. The *dacha*-fication of Soviet mathematics

While arising in semi-private conditions, "parallel math" acquired many attractive features, but also produced an idiosyncratic culture of small-circle exclusivity. The price of autonomy was self-isolation; merit-based selection led to the cultivation of the spirit of elitism. Freedom from institutional restrictions also meant the lack of institutional guarantees: while systemic mechanisms of discrimination were eliminated, the arbitrariness of private invitation in a "circle" was introduced. As Grigory Margulis has argued, "circles tend to degenerate over time. Say, an outstanding mathematician has students, they have their own students, but gradually the community becomes self-isolated, people don't come from outside, and the creative aspect of the circle ebbs away."[55]

In "parallel math," bureaucratic hierarchy was replaced with the unquestionable authority of charismatic leaders. While some informal groupings of writers and artists resembled a rhizome-like interconnected and tangled structure without clear hierarchy or center,[56] mathematicians tended to form groups around recognized leaders who often combined tremendous intellectual influence with administrative power. As a result, research efforts often concentrated in the areas prioritized by these leaders. Israil Gelfand, for example, yielded considerable influence in the official world, and even greater one – in the parallel social infrastructure. His students and collaborators often heavily depended on him for jobs and other opportunities. It took a lot of effort on their part to assert

[54] Dolgova 2023, p. 160.
[55] Margulis 2016.
[56] Boris Groys, quoted in Belugina 2022, p. 164.

independence and to establish their own research agenda. Some always stayed in his shadow and never developed into original thinkers.[57]

Instead of formal position, great importance was now attached to informal ties. Building a network of connections through which one could be introduced to an exclusive informal circle became essential. The cultivation of friendly ties among collaborators led to the blurring of the boundary between work and private life. Bringing work relations into the domestic sphere often exacerbated societal gender inequalities, with spouses habitually excluded from professional conversations. In memoirs, wives are often praised for creating a warm and friendly domestic atmosphere and maintaining "a single cult" of their famous mathematician husband.[58]

It would be instructive to contrast the role of dachas in Soviet mathematics with what historian David Kaiser has dubbed "The Postwar Suburbanization of American Physics." With the rise in physics graduate school enrollments, the growing employment of physicists in industrial research, and the powerful appeal of consumer lifestyle, Kaiser observes, physicists *en masse* moved to suburbs, becoming increasingly alienated from their colleagues. Senior physicists often lamented the loss of "friendliness," "intimacy," and "personal contact," accusing the younger generation of viewing physics merely as a 9-to-5 job, rather than a calling.[59]

If an American suburb becomes a symbol of alienation and rampant consumerism, the Soviet dacha in the postwar period embodies the idea of escape from urban routine, the notion of freedom, and a friendly company. Instead of being a refuge from work, for many Soviet mathematicians, the dacha became their primary working spaces – places where they did their research, met with students, and exchanged ideas with colleagues.

While American feminists in the 1970s famously proclaimed that "the personal is political," for Soviet mathematicians, the mathematical became personal. For many of them, pure mathematical research was not part of their work duties, and they pursued it without pay. Doing mathematics in their spare time, they formed a community of

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[57] Gerovitch 2016.
[58] Bobrynina 2019, p. 176.
[59] Kaiser 2004.

like-minded scholars with its own norms of social esteem. As Robert MacPherson has noted, "Good mathematicians were doing this as a hobby, not because they were paid to do it."[60]

We might call this "*dacha*-fication of Soviet mathematics" – the emergence of a tightly-knit mathematical community, whose commitment to scholarship went beyond formal duty or required curriculum. For them, mathematics became a "way of life" that brought excitement and rewards, though not in the traditional sense of formal status, bureaucratic career, or material prosperity, but in terms of building reputation among their peers, closely connected with the international mathematical community. The kitchen and the dacha were places of escape from restrictions of officialdom and at the same time portals into world mathematics.

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[60] MacPherson 2012.

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