

Simplified transcript of David Danovich's interview by Philippe Stamenkovic* on 07/04/2022 on Zoom

This interview is part of a series of interviews of former Soviet/Russian scientists emigrated in Israel, about their experience and conception of the relationship between science and (non-scientific) values, in the scope of Philippe Stamenkovic's postdoctoral project at the Jacques Loeb Center for the History and Philosophy of the Life Sciences, Ben-Gurion University of the Negev (Israel). David Danovich is a quantum chemist at the Hebrew University of Jerusalem. Section 1 presents the interview guide (i.e. questions) used for the interview. Section 2 summarises the interview itself. Parts of the interview which refer specifically to the relationship between science and (non-scientific) values have been underlined by the interviewer. The interviewer's comments are in square brackets.

1 Interview guide

1.1 Introductory questions

In this preliminary section, I would like to ask you some questions about your identity and tasks as a scientist.

1.1.1 Motivation

- How did you end up as a quantum chemist? What was your motivation for choosing this field?
- Was your choice influenced by some specific circumstances, either personal or related to the political situation in the Soviet Union? Was it more or less fortuitous?

1.1.2 Description of work

- Could you describe me your current work, daily tasks and activities?
- Has your line of research evolved during your career? Why?

*Contact: philippe.stamenkovic@icloud.com.

1.2 (Descriptive) questions specific to the Soviet Union (SU) / Russia

In this section, I would like to ask you some questions specific to your experience as a scientist who has worked in the Soviet Union / Russia. My questions concern either your personal situation and work, or those of other people which you have witnessed.

I am interested in the relationship between science and the extra-scientific context (be it social, political, ideological or economic). I am especially interested in the political and ideological values specific to the Soviet regime.

According to (Kojevnikov, 2004, 277), “Soviet communists understood science as rooted in human beings’ material and social life. They correspondingly declined to view scientific knowledge as independent of either industry and technology or politics and values.” Today, many philosophers, historians and sociologists of science claim that science is not, and should not be, independent from the larger, extra-scientific context¹. According to Kojevnikov (300, 303), Soviets were precursors of these views of science as entangled with society, values and non-scientific interests!²

1.2.1 Description of the influence of non-scientific values on the various phases of scientific inquiry

- Did you notice, in your (or in others’) activity as a scientist in the Soviet Union / Russia, an influence of the extra-scientific context / non-scientific values concerning:

1. what to investigate / the choice of research avenues and questions (pre-epistemic phase)?

(a) Regarding pure and applied science : much science in the SU was devoted to applications (Kojevnikov, 2004, 300). Pure science was threatened by non-scientific interests, because it had no applications. But in the end the regime decided to let it go³. Was there pure science nevertheless? Or was there only “big science” related to engineering/the atomic bomb/etc.? Were theoreticians supposed to bring about practical results, or were they allowed to develop their own thoughts?

(b) Did you have to follow the already existing research avenues of the West (instead of investigating new ones), in order to “catch up and surpass” (*Dognat’ i peregnat*) American science (original quote from Stalin referring to the atomic bomb in 1946 (Kojevnikov, 2004, 144), which became a popular Soviet slogan during the Cold War)?

2. how to investigate it (gathering of evidence and choice of methods, including from the moral point of view) (pre-epistemic phase):

¹According to Kojevnikov (2004, 300), the naive “ideology of pure and apolitical science” has almost disappeared from the West and it is a good thing! Science is “grounded in social, economic, and cultural realities of human life” Kojevnikov (2004, 302).

²According to Kojevnikov (2004, 223-224), the Soviets managed to reconcile the social constructivist view of science (as it is called today) typical of Soviet Marxists (science and its concepts are, like any other human activity, related to economic, political and class interests) with scientific realism (science provides true knowledge of nature) by simply stating that: interests can be right or wrong, and that having the right extra-scientific interests helps achieve scientific truth (and conversely)! The correctness of science guarantees its *partiinost’* (its party-mindedness), and vice versa!

³According to Kojevnikov (2004, 305), whereas the West followed the Soviets in abolishing the distinction between pure and applied science, the Soviets in fact reverted to this distinction.

- (a) for example the building of hypotheses/models (for example, Kojevnikov talks of the heuristic influence of Soviet ideology on collectivist models and terminology in condensed matter physics)?⁴
3. what to conclude from our investigation: the acceptance or rejection of hypothesis/theories⁵ (epistemic phase)?
 - (a) for example, to possibly take more risks (make/accept more risky hypotheses, see the story of the collectivist models in physics)?
 - (b) influence of the communist ritual of “critique and self-critique” (*kritika i samokritika*, see below)?
 4. how to use and communicate the results of our investigations (post-epistemic phase):
 - (a) For example, to disseminate (in the Soviet logic of “critique and self-critique”, or to rally politicians’ support) or not (internationally, in the logic of competition against the West; but also, in the SU, against rival Soviet scientists/schools) the findings/results?
 5. Organisational/institutional aspects⁶ (para-epistemic phase):
 - (a) For example, what were the criteria for hiring/promoting people in the SU (membership of the Party? Etc.)?
 - (b) for funding?
 6. Teaching:
 - (a) regarding the content of your (or others’) courses?

⁴According to Kojevnikov (2004, xv), “some of the most fundamental concepts in contemporary [physical] science—quasiparticles and other collectivist models in condensed matter—had their roots in the socialist worldview and in the collectivist philosophy of freedom.” “Collectivist ideology provided useful heuristic metaphors for Frenkel and other theorists in their search for better mathematical models for the interactions between atoms and electrons in dense bodies. Revolutionary allusions helped stir an enthusiastic reception for the radical new theories of relativity and the quanta in the Soviet society of the 1920s. Boris Hessen, Sergei Vavilov, and others used philosophical arguments from Marxist dialectics to build justification and support for novel developments in 20th-century science.” (Kojevnikov, 2004, 187). I am personally not convinced by Kojevnikov’s claims regarding the link between extra-scientific and scientific considerations in condensed matter physics. I find them unsubstantiated and/or exaggerated.

⁵For example, failure to develop a dialectical materialistic interpretation of a theory could lead to its rejection (Kojevnikov, 2004, 224).

⁶Kojevnikov (2004, ch 11) claims there was a link between science and political power: ideally a link of “preexisting harmony” (281), in fact continuous arrangements/compromises/reciprocal services (eg exchanging members between the Central Committee of the Party and the Academy of Science). It concerned the “relative shares of authority”, “scientists’ professional expertise” vs “competence of politicians” (277), not the *content* of scientific theories/hypotheses.

But even for these institutional/organisational aspects, there were in fact boundaries between the scientific and the political realms, as Kojevnikov himself acknowledges (e.g. 284).

(b) the way they are taught (for example, the textbooks or references used)?

(c) the design of the curricula?

1.2.2 Positive or negative influence of ideology

- Would you say (as Kojevnikov (2004) claims) that politics and ideology could have a beneficial influence on science (and not only a detrimental one, as Lysenkoism typically has come to exemplify in the West), in whatever stage of research work?
- And if yes, how exactly (which stage, which process)⁷?
- To what extent was this effect specific to the SU/Russia (and not to be found in another political/institutional regime)⁸?

1.2.3 Evolution between Soviet Union, Russia and Israel

- [How the situation has changed for science after 1991 in Russia] Regarding now the evolution between the SU and Russia:
 - How did the collapse of the SU and the advent of “democratic” Russia affect research?
 - Did physics flourish in the SU, and then decline after the Soviet regime collapsed in 1989 (Kolchinsky et al., 2017, R1042)⁹?
 - In which case was it a matter of funding, of good scientists leaving the country, or something else?
- Regarding now your situation in Israel:
 - When and why did you come to Israel?
 - What is the difference with respect to Israel (once you got there)?

⁷For example, according to Kojevnikov (2004, 196, 201, 204, 206) the communist ritual of “critique and self-critique” (*kritika i samokritika*) could enable constructive self-criticism and progress (I do not agree: from what I have read it seems very artificial and dogmatic). This concerns the epistemic stage of theory/hypothesis acceptance/rejection.

There was also, regarding the pre- and post-epistemic stages, competition of scholars to translate academic issues in comprehensible language, in order to rally politicians. (This seems more convincing.)

⁸For example some of the institutional quarrels described by Kojevnikov (2004, 226) could be found in the West, and are not necessarily characteristic of/only to be found in a Soviet regime.

⁹According to Kojevnikov (2004, 300, 304), the Soviet regime praised very much science, and scientists enjoyed a high status (privileges, high social status, financial support), and the fall of the communist regime destroyed this.

- Regarding the scientific environment (selection criteria of promotion, hiring)?
- Regarding non-scientific values, including your own?
 - * For example the “will to work hard”: was it lost after you came to Israel? Did the Soviet / Russian regime provide you with a specific motivation which was lost once you arrived in a ‘Western’ country?

1.3 (Normative) questions about their own views

[Normative questions about how they conceive non-epistemic values in their discipline, if they adhere to the VFI and why.]

- In science and in philosophy of science, there is a common view according to which science should be free from social, political and religious values and interests, either at all stages of research (from the choice of research avenues to the communication and use of results), or at least in the core phase of acceptance/rejection of hypotheses/theories.
 - Do you subscribe to this conception of science which *should* be value-free (even if it is not realised in practice)?
 - To which extent: in the large sense (during all phases) or only in the restricted sense (during the core phase)?
 - Why (can you give reasons for holding this view)?
 - If values should influence science, how should they?

1.4 Potential activity as an expert

[Potential activity as an expert (i.e. as a scientist providing advice for public authorities), in the SU/Russia, in Israel or elsewhere.]

- Do you have any activity as a scientific expert (providing advice for public authority)? Could you describe it [descriptive]?
- How do you understand your role as an expert [normative]?

1.5 Concluding questions

- Is there something else you would like to add or talk about?
- Do you know other natural/social scientists from SU or Russia whom I could interview?

2 Interview of David Danovich

2.1 Nature of work and career

- From 1985 to 1990 was in Soviet Union (SU). Studied physics by chance, finished University as a physicist. Started in space physics at Irkutsk Space Institute, with strong military applications. Created mathematical tools, about incoherent radio waves scattering: waves are sent to the ionosphere and come back. Military applications: you can see rockets indirectly because of the change in electronic distribution in this area. Many scientific applications as well. Needed special permission because of military applications. 3 or 5 stations around SU. Didn't get permission because he was Jew. Was 22 years old. This was disturbing for him. Was proposed another work which didn't need permission but he was disappointed and went to another field. Went to nuclear magnetic resonance at Irkutsk State University. Started creating mathematical applications for it. Met someone working in quantum chemistry, interested in photo-electronic spectroscopy. Created some method quite successful. And continued in this field, at Novosibirsk. Would have continued in space physics if was not denied access. 3 publications while in SU in international journals. When it was possible to go out of the country, he went out.
- Probably he could have continued to work in space physics, but in aspects not requiring special permission. He just decided that if he couldn't continue as he wanted, he would stop. He knows of people who didn't get permission but who continued in the field. Some people who got the permission had problems to go out afterwards. So he doesn't know if it was good or not to get the permission, at least he was free to go out afterwards.
- Left in 1990 for Israel. Wanted to go out earlier, but it was problematic. Needed to finish his PhD first. Finished in 1989. Then applied to Soviet authorities to go out. Since SU was disorganized, it was quite easy. Much easier than before 1985 (when perestroika begun). His mother worked in military applications, he was afraid to create problems for her because when some people applied to go out, not only could they could lose their work, but also their parents. Everything collapsed in 1990.

2.2 Work in the SU

- Had a permanent position: there was no funding but money came from the government. The government decided how much money you can get. If they thought the field in which you were working was good for military applications, you could get a lot of money. Even if there were no military applications but your work had some influence which showed that this field was in good development in the SU so that the SU could show this outside, you could also get a lot of money. The funding actually depended on the field you chose. Therefore many people chose the field in which you could get enough money.

2.2.1 Pre-epistemic and epistemic phases

- For the pre-epistemic and epistemic phases, he did not feel any influence of non-epistemic values. His field was neutral, mathematical. Was free to chose any particular question he wanted to investigate within quantum chemistry.

- To some extent he internalized the (post-epistemic) publication constraint, only for his choice of quantum chemistry in general, not for particular research questions. At that time nobody thought quantum chemistry could be applied to anything. Theoretical science was allowed in the SU because it was good for the prestige of the country.
- He was not in a position to be subjected to influence from the government, maybe the professors were. He was just a PhD student, his professors let him do what he wanted. He just wanted to develop something interesting. And he thinks he succeeded because he got much success afterwards in collaborations with the US and Japan.
- He did not feel any influence of non-epistemic values in the epistemic phase.

2.2.2 Post-epistemic phase: publication process

- After he wrote papers and wanted to send them to international journals, he had to pass several barriers which should approve that the paper could be sent outside. He knows people whose papers were refused. He wrote three papers which were all published in international journals. He had to get special permission from the Institute where he worked. A special group analyzed what he wrote. Once he got the permission, he had to go to another department for the whole city or area, which belonged to the communist party and supervised permissions, not only for science but for writers as well. They analyzed if the paper was anti-Soviet. It was completely unclear what/who granted the authorization. If you didn't get the authorization, you didn't know why. For sure if the paper had military applications, it was no. He himself could write what he wanted to write, was free.
- Not an easy process. If you wanted to publish outside, you had to include the director of the institute as author. This was unacceptable for him. He succeeded in putting only his name and the name of his colleague. He got an invitation from the journal to publish another paper so he was left free by the University administration. He wanted to publish in international journals because he wanted to go outside.
- What about economic applications? He doesn't know. In space physics it was not possible at all to publish because of military applications, so he didn't want to publish there.
- In Israel he asked if he needed some permission to publish a paper: when he learned that no, he was shocked!

2.2.3 Para-epistemic phase (organizational)

- Did not get permission to continue in space physics but nobody told him why, was implicit that it was because he was Jewish (all this happened in the SU, he left before it became Russia).
- 1987/88, influence of the context on communication. Got an invitation to go to a conference in the DDR (socialist country), but didn't get the permission. Was not told why: maybe because he was Jewish, or because one of his relatives was a refugee. Many people don't even wanted to ask why, because they were afraid.

2.2.4 Positive/negative influence of extra-scientific context

- You could get money for your research, if the government thought it was good for the prestige of the country.

2.2.5 Collapse of the SU

- In his field he is sure that the scientific level dropped significantly after collapse of the SU, because many of his colleagues left the SU in the 1990s. He can see it in the publications. Very few from Russia now. He thinks it is so almost in all fields. Maybe 80% at least of the scientists went out in his field.
- When he finished his PhD, had to get two referee reports. One of the reviewer, a very good professor and member of the communist party, advised him to go out of the SU as soon as he had a chance, when asked by Danovich what he (Danovich) could do in the future. It is a pity. The scientific schools were destroyed almost completely after the collapse. For those who remained in Russia, they were not able to continue their work, to continue to live at all.

2.3 Israel

- Reason for going to Israel: mostly to go out of the SU:
 - professional reason: because he couldn't do what he wanted
 - didn't want to live in this system (already in 72/73)
 - his father was Zionist; for him it was not so important to go to Israel or to other countries. Had invitations to go to Australia.
- In Israel, no influence of the extra-scientific context, except of course influence of money for funding research projects, writing proposals, etc. Thinks it is the same in Russia now: you need to get funds to do something. But to his knowledge, people do what they want to do here. It's OK to need to get the money. Of course communication here is absolutely different. For the epistemic phase: the extra-scientific context is completely irrelevant.
- Difficult to compare his productivity in the SU and Israel because he was too young in the SU. Needed to publish just to finish his PhD. His situation as PhD student may be not illustrative. He had a very low level in the hierarchy.

2.4 Own normative views

- In general he thinks it is a bad thing to allow influence of the extra-scientific context, because young scientists should be able to decide what they want to do. [tension with the following paragraph]
- His own view: according to Lenin, to live in society and be free from society is impossible. Science is the same: you cannot do what you want without influence from society, society gives you money so it should have an influence. So he thinks the current situation is optimal: you can do what you want but you need to prove that it will have some impact on society. You need to show the impact of your research.

2.5 Activity as expert

- Declined to be editor of journals.

References

- Kojevnikov, A. B. (2004). *Stalin's great science: The times and adventures of Soviet physicists*, Volume 2. World Scientific.
- Kolchinsky, E. I., U. Kutschera, U. Hossfeld, and G. S. Levit (2017). Russia's new lysenkoism. *Current Biology* 27(19), R1042–R1047.