Simplified transcript of Michael Gedalin's interview by Philippe Stamenkovic*on 14/02/2022 at Ben-Gurion University of the Negev

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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). Michael Gedalin is a theoretical physicist at Ben-Gurion University of the Negev. Questions of the interviewer are in bold font, and answers of the interviewee in normal font. Parts of the interview which refer specifically to the relationship between science and (non-scientific) values have been underlined by the interviewer.

- **Questions about your identity as a scientist: your tasks, the nature of your work; as well as your motivation, how you ended up as a physicist studying plasma physics and astrophysics. Why did you chose this field? What was your motivation? Was your choice influenced by specific, personal or political circumstances?**

- The choice was purely practical. I did a Master in Tbilisi. There were two possibilities. I could go to PhD studies and later do a thesis. I made a Master under the guidance of Georgi (Gia) Machabeli. A very good teacher, one of my major teachers, not only in physics but also in life, later we became friends. He was studying relativistic plasma and pulsar physics, a subject I had never studied at the University. But he convinced his boss to hire me, and this is how I started.

- **I understand that your choice was practical, guided by the job and the people available. Could you describe to me your current work now, your daily tasks and activities? Has your line of research evolved during your career?**

- I am still in the large field on plasma physics. I was sent to the Space Institute in Moscow, to study other topics, including collisionless shocks. The latter since then remained my main field of interest, for more than six decades. It's a big topic.

- **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.**

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- Soviet Union disappeared after I left, I am in Israel since 1990. I have worked in Soviet Union since 1981.

- **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 context. According to Kojevnikov (300, 303), Soviets were precursors of these views of science as entangled with society, values and non-scientific interests.**
  In your experience, did you notice an influence of the non-scientific context, either 'upstream', on the choice of research avenues/questions; or on the building of models and hypotheses (for example Kojevnikov talks of the heuristic influence of Soviet ideology on collectivist models and terminology in condensed matter physics); or in the acceptance or rejection of a hypothesis or theory; or in the application and communication of results?

- OK I am not familiar with condensed matter physics, but my field is largely independent of the extra-scientific context. I am a theoretician, so I wasn't involved in satellites launched or whatever. In theoretical astrophysics it is somewhat difficult to reflect on the equations and scientific problems which we choose to solve, so the influence of the context in the place I was working was negligible.

- **Including on all aspects, for example freedom to choose research avenues?**

- Yes. It just depended on my boss since I was a junior scientist. But it was based on scientific considerations, not ideology, politics, economics, nothing. At that time we were engaged in a very hot problem, pulsar physics. It was only science.

- **The Soviet physics, and Soviet Union, also had a reputation of favouring applied science, to the detriment of theoretical science. Did you have this impression in physics? Because apparently you field did not have any application.**

- I was working in the Abastumani Astrophysical Observatory, in the theoretical laboratory. But then I worked in space science in Moscow, and many problems were theoretical, although there were also applied problems.

- **And you never had any pressure to do applied science, to choose research avenues which could have applications, or some parts of your models?**

- No. Or if they were applicable I don't know.

- **I was expecting what you say since indeed theoretical physics is not policy-relevant, as climate science or toxicology.**
  One of the communist mottos was, during Stalin, 'to catch up and to surpass':

an implicit reference to the atomic bomb, but also more generally a way to say that Soviet science would compete with western science. And to do so, instead of choosing new research avenues and taking maybe some risks, Soviet scientists were told to engage in already existing research avenues, and to go further and better there.

- There was always some pressure, but a good scientist knew how to do science.
- **So you didn't have pressure to choose already existing research avenues?**
- No. The only restriction was that before I got my PhD, I was dependent on my boss. But after my PhD, I was completely free. I am more dependent here, because of money, since I have to get grants, and then to do the things for which I got the grants.
- **If I continue on the influence of the extra-scientific context on your work, I guess there was no influence on acceptance/rejection of hypothesis/theories?**
- No. It didn't affect me, nor my teachers and friends.
- **Any influence of the context on the way results were communicated, published, promoted?**
- I published them as I publish them here, in academic journals. Soviet journals at the time, which were translated.
- **Influence on the organizational, institutional aspect? Funding?**
- There was no funding in the Soviet Union, only fixed salaries.
- **Influence on hiring and promotion?**
- Once you had a position, you could be very active or not, your salary was completely independent of your work.
- **Once you had your fixed position, you could whatever you wanted, but to get such a position, did the extra-scientific context play some role? For example, did you have to be a member of the Party, of was it only based on scientific merit?**
- No, you didn't have to be a member of the Party. It was dependent on the scientific merit, and the hierarchy, who was the boss (for personal issues, not political ones).
- **Regarding teaching, did the context play any role, regarding the content of the courses?**
- Teaching was not part of my job. I was in a purely research dedicated institute.
- **And for the content of text books? Do you know some of them whose content was influenced by the context?**
- I think some books were influenced, but we didn't read them. Bad books simply didn't arrive to me. It is always possible to publish a book which is politically oriented. Any field can be influenced. I don't know of such books.

- **Regarding the positive or negative influence of extra-scientific factors, after what you told, there was no influence at all, so this section is not relevant.**
- Right. I was lucky enough. Note also that in the place were I worked, all my friends were more or less anti-Soviets, we were a good group.
- **So maybe your place was lucky enough to be spared, as you say, but maybe some other places may have been influenced?**
- Yes, it depends on the people. But personally I don't know such places. And I do not transmit rumors.
- **Now questions about the evolution of your situation between the Soviet Union and Israel. Even if you left the SU before it collapsed, do you have something to say about the transition from the SU to Russia, and the general situation of physics after the collapse? Generally people say the situation worsened.**
- Yes, the best people left, those who could find a job. The average level went down. It is true also for my field.
- **Regarding the rise of pseudo-scientific tendencies after the collapse of the SU: there was a rise in Lysenkoism, for example. According to some authors, it was because of isolationism in Russia, the influence of the orthodox church, revival of sympathies in Stalin, etc. Do you know of similar trends in physics, in your field?**
- I didn't follow what happened in my field, so I couldn't tell. I have no connections with the people there. So I just don't know.
- **Regarding your arrival in Israel in 1990, why did you decide to come?**
- Zionism.
- **Can you elaborate?**
- I wanted to come here, to this Jewish State. I was ready not to find a job. But I was young and confident. I found a job in two weeks. One of the relatives in my family was visiting Georgia, and I sent him my CV, and he handled it to different universities, and when I came I had invitations.
- **1990, did it have something to do with the collapse of the SU?**
- No, it happened after I arrived. I didn't anticipate it, it was completely independent. I thought it would come, but later, in a much more complicated way.
- **You didn't see a future for you in the SU?**
- I just wanted to be here. It was not a rejection from the SU. It just came to optimum time.
- **Can you tell me the big differences between here and the SU, regarding the work environment? Apparently previously it was complete freedom.**

- Here I have complete freedom too. Only when I came to tenure, I was pressed to do some things: to publish more, to get grants, and to go to international meetings, which I didn't like.

- **Regarding the application to grants, does it have influence on your research avenues?**

- Yes. In the last years more than in the past. We are almost obliged to submit applications. And once you get grants you have to work on what you suggested. And if you want to start something new it is more difficult to get grants.

- **Did you notice differences regarding criteria of promotion, hiring?**

- I don't know the criteria in Russia, it was very personal. My teacher simply wanted me. There were no applications, no CVs, nothing, simply personal relations. Here the procedure is completely different. There is a competition, people submit CVs, we discuss their applications. When I came I talked with David Eichler, apparently he got a good impression so I was hired. But probably he asked for recommendations from people whom I worked with.

- **Regarding some values which could influence your work, for example the will to work hard, something maybe important in Russia, is it still here? Are people as much motivated here as they were in the SU?**

- I was not motivated to work hard in the SU! I am working harder here, I have more obligations, more output to show. It is not always good, but so it is.

- **How would you compare this obligation?**

- I worked for only 9 years in the SU, and more than 30 years here, so it is difficult to compare.

- **Which situation do you prefer, including regarding the content of your work?**

- Regarding my salary, the situation is better here! But I don't like the increasing influence of money. Sometimes the competition is not scientific. Not only for reviewing grant proposals, but in journals, for reviewing articles. I know about that, I have been told.

- **So the growing influence of money is negative?**

- Yes.

- **Now your personal conception of your discipline should be.**

- I have no such conception.

- **No? But it seems that according to you, non-scientific factors should not have any influence.**

- But it is not possible not to be influenced.

- **But I am not talking about what is, but about what should be.**

- But it is not possible, so it makes no sense to talk about it.

- **But you could say, for example for money, that you would like that money has a smaller influence. It may be possible to at least downplay this influence. You can have a wishlist!**

- 'Conception' is a big word. Yes there is a negative influence of money. There is no way to get rid of this influence. If it could be a little smaller, but I don't know how to do that. I heard about a person who didn't publish for two years, then published a paper and got the Nobel prize. Or an editor who published a paper rejected by reviewers and his name is now in all textbooks. When you have obligations you have less time to think. Rutherford story. You need to have time to think, to find new ideas.

- **Is it correct to say that for you, the scientist should be completely free from the social, political, etc. context? regarding what he wants to study, or how to communicate the results, or even to decide which hypotheses is supported by the data, especially for disciplines with consequences in policy.**

- A scientist has to do science, to find a problem, to solve it, and to present its solution to other scientists, because science is a social activity. Therefore he must publish. There should be discussions. His solution must be accepted by others.

- **An argument for the influence of the context is to say that scientists are paid by public money, hence society, in a democracy, can have some influence on the research avenues.**

- Society has the right to decide that it wants to pay more for a field (eg applied biology rather than astrophysics).

- **It can have influence on your work.**

- Yes. In the SU I was affected by the economic situation, just looking for food for my family.

- **I mean regarding the choice of which research avenues are funded by society. Do you agree that society could restrict some research avenues in order to favour other research avenues? Mention of Polanyi's republic of science.**

- Science is independent, but simply it doesn't get money.

- **Yes but if it doesn't get money, it has an influence on what you do, for example to study or not plasma physics.**

- Yes, indeed. For example we don't hire physicists in plasma physics now, because we don't have a position here. There are more positions in quantum physics.

- **But what is your opinion on this?**

- It is neither good nor bad, it is like the laws of physics. As long as you don't have an infinite amount of money, you have to make choices. Studies with unpredictable results must be performed. However, if a researcher needs money from anybody else, he has to "sell" his research. The money is not always in the hands of scientists who can make purely scientific assessment. This is the reality. Note, that there is certain amount of grants which are given to high risk studies. These grants are also competitive though.

- **But there are scientists who protest, who defend their field even if it has no application (for example with unpredictable discoveries).**
- Yes, ok, but I return to what I said.
- **Do you have any activity as an expert?**
- No. But there are scientists in my field who do.

References

Kojevnikov, A. B. (2004). *Stalin's great science: The times and adventures of Soviet physicists*, Volume 2. World Scientific.