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Interview: Ilana Löwy[1]

Ilana Löwy (née Zelmanowicz), born in Łódź, Poland, is a biologist, historian of biomedical sciences and a feminist. She is "directrice de recherche" (senior researcher) at an interdisciplinary and cross-institutional research unit CERMES-3 (*Centre de recherche médecine, sciences, santé, santé mentale, société*, Inserm-CNRS-EHESS), Paris, France. She is also affiliated with other institutions, Department of Global Health and Social Medicine at King's College London, and the Department of the History of Science at Harvard University and is an associated researcher of Casa Oswaldo Cruz, Fiocruz, Rio de Janeiro. Ilana Löwy holds a BSc and MSc degrees in microbiology and biochemistry from Tel Aviv University, and a doctorate in immunology from Paris VII University. She then retrained as a historian of science. She had studied Ludwik Fleck's epistemology, history of bacteriology, immunology tropical medicine and cancer, women's reproductive health, and more recently, congenital disorders and prenatal diagnosis.

Interviewed by:

Ana Carolina Vimieiro Gomes[2] in May 2019

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Ana Carolina Vimieiro Gomes (ACVG): You started your academic and scientific training as a biologist and has a Ph.D. in immunology. How did you become interested in the history of biomedical sciences?

> **Ilana Löwy:** I was very lucky. When I decided to switch to the history of science, I had already a tenure-track job at the French Institute of Medical Research (Inserm). When I decided to retrain as a historian of science, I was able to persuade my hierarchical superiors – with some difficulty but also with the important support of

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my mentors – that changing orientation to social and cultural studies of science is not only a personal whim, but can benefit the institution too.
I was always interested in history and art history, and followed lectures on these topics during my undergraduate and graduate studies in biology. However, at that time I was not aware of the existence of a discipline called "history of science". I first became interested in history and philosophy of science after my doctorate, when I was invited to collaborate with clinicians on a research project on Buerger disease, a rare and scary pathology. The patients, usually young men, develop inflammation and thrombosis in their fingers which may lead to gangrene, and a need to amputate the fingers, and sometimes the whole limb. Buerger disease is linked to smoking and is believed to be an autoimmune condition (a pathology produced when the body's immune system mistakenly attacks healthy tissue). My task was to develop a mouse model of Buerger disease. I had regular meeting with the clinicians at a hospital, to report about the progress of my research. The clinicians and my colleagues at the laboratory were very pleased with my results. I was less happy with myself. Although I was able to induce autoimmune reactions in mice, and show that the immune cells of these mice had some similarities with immune cells from the patients' blood, I was not sure how relevant laboratory findings are for the understanding of a human pathology; I was even not sure that they are relevant at all.

I asked a friend, who taught philosophy of science, whether he knows studies about the theoretical underpinnings of the use of animal models in science, and especially the modelling of human diseases in the laboratory. Today there are numerous such studies, but this was not the case at that time. My friend lent me an introduction to epistemology which discussed the ideas of thinkers such as Kuhn, Feyeraband, Hempel, Polanyi, Lakatos. I found some of the ideas of these scholars very interesting, but their wrings were focused mainly on physics and astronomy, were often very abstract, and were not relevant to my practice-related preoccupations. I reported my disappointment to my friend, and the next time we met he told me: I think that I found something for you. You should read a book written in the 1930s by a Polish microbiologist called Ludwik Fleck.

ACVG: You have been interested in the epistemology and scientific work of Ludwik Fleck since the very beginning of your academic and scientific career in the history of science. Why your interest was first drawn by Fleck's reflections on medicine and science? What does attract you so much about his thinking?

Ilana Löwy: I had a real "Eureka" moment reading Fleck's *Genesis and Development of a Scientific Fact*. Finally, an epistemological text which discussed the concrete experience of working in a biology laboratory, and dealt with human diseases. Fleck's book spoke directly to my preoccupations and provided some answers to my queries. I immediately photocopied the whole book (this was before Amazon times, and purchasing a book published abroad was a complex enterprise) then heavily underlined and annotated my photocopy. I was especially impressed by Fleck's fine-grained description of laboratory practices. Fleck argued that epistemologists who only read what scientists write, and fail to examine what the scientists do cannot understand what science is about. He was faithful to his own advice, and provided a highly insightful description of scientific work at the bench, and then of the long and sometimes very complicated process of production, stabilization and diffusion of "scientific facts" produced in the laboratory.

In a traditional view of science, dominant in Fleck's time, science was seen as an activity conducted by "greats scientists" (as a rule white, Western, upper class men) who unmask hidden "facts," and discover the "laws of nature". Fleck proposed a very different view of science. He saw science as a dynamic, situated collective human activity. So, since science was a situated endeavor, it cannot be studied outside its historical and social context. Fleck had shown that the production of scientific facts always included their validation by relevant communities, and thus activities such as talks in scientific meetings and publications in scientific journals. In 1935, when he published his book, scientific publications were already frequently authored by several researchers, for him a telling display of the collective and social nature of science. Fleck was also interested by the multiple ways specific knowledge claims and practices circulate outside the professional group ("thought collective") which had initially developed and validated a given "fact". Facts, he argued, migrate from the group that produced them, and are modified during their circulation among different "thought collectives," professional and lay ("imperfect translations"). This process stimulates in turn innovation in science and society.

ACVG: Many of your works are inspired by Fleck's approach to the history of science. One example is your recent book "Imperfect pregnancies" where you mention Fleck's claim that [citing you] "epistemology without historical and comparative investigations is no more than an empty play of words, or an *epistemologia imaginabilis*". In your opinion what are the most relevant methodological contributions of Fleck's thinking for the theory and historiography of science today?

Ilana Löwy: Fleck's work has many reading, all of them legitimate, of course. Many scholars focused on Fleck's theoretical/ epistemological views. Others, such as Ian Hacking, extended his understanding of styles of scientific thought. Other still, such as Bruno Latour, were mainly attracted by Fleck's focus on epistemology as a collective practice that involved learning and change. I was especially interested in a more "prosaic" aspect of Fleck: his involvement with public health. The historian of science Barbara Rosenkrantz, who was one of my mentors, explained in one of the first reviews of the English translation of Genesis and Development of Scientific Fact that Fleck worked nearly all his life in public health. This is, I believe a very important point because public health is a discipline at the crossroads of biology, clinical medicine, sociology, economy, politics and law. Fleck was interested in all these dimensions and the ways they interact. He can still teach us much about the complex, multidimensional interaction between science and society.

Fleck lived in dark times. His book was published in 1935 when to quote the writer Victor Serge "it was midnight in the century": the consequences of the economic crisis of 1929, the rise of fascism, Stalin's repression in the Soviet Union. *Genesis and Development of a Scientific Fact*, a book written in German, was published in Switzerland because at that time no German publishing house would publish a book written by a Jew. During the Second World War, Fleck and his family were interned in the Lwow Ghetto, then he was sent to Auschwitz concentration camp, and finally to the Buchenwald camp. In the latter camp, Fleck witnessed Nazi murderous experiments on humans. He testified about these experiments in the Nuremberg Trial of Nazi doctors, in 1948. His wife and son survived the war, but other members of his family were killed by the Nazi.

In spite of his first-hand observation of horrors made by the Nazi in the name of scientific research, Fleck did not lose his faith in science. Just the opposite is true;

he passionately believed that such horrors teach us that we need a better science: more open, and more democratic. To achieve this goal, he proposed, it is crucial to educate the public how precisely science works, what scientists do, and how to judge which knowledge statements are sound and which are not. His theory of "scientific styles of thought" aimed to do precisely this: favor the public's critical engagement with science, very different from passive divulgation of "scientific facts". Such a widespread and well-informed public engagement with science is, I believe, especially important today, in an era of "alternative facts," in which false information often spreads faster than the true one, and leading politicians attempt to undermine science and propagate ignorance.

ACVG: One special hallmark of your trajectory in the history of science is an interdisciplinary approach, and you work in an interdisciplinary research institution in France, CERMES-3 (*Centre de recherche médecine, sciences, santé, santé mentale, société*). You often acknowledge the contribution of anthropologists, sociologists, philosophers and biomedical scientists' reflections to your research. Could you please tell some more about this interdisciplinary approach and its importance for your empirical work, analytic choices and historical interpretations?

Ilana Löwy: I believe that it is not possible to study the history of medicine without an interdisciplinary, comparative approach. Perhaps one partial exception is a philological approach to the study of old medical texts, central to "old" history of medicine, focused on the investigation of classic works in this domain. However, when one moves beyond the establishment of a critical edition of Hippocrates or Vesalius's writing – of course, a very important scholarly task – studying medicine is, by definition, a multidisplinary endeavor. Medicine is a socio-biological phenomenon: an individual can feel pain, have other distressing symptoms, be disabled – but to define individual's distress as "disease" is a collective time-and place-dependent act. It is not possible to dissociate the sociocultural elements of a disease from its biological ones, either on the individual or the society level. Our understanding of "disease" is shaped at the same time by the experience of perturbation of a physiological function (in psychiatric disease, a mental function), and by the social imagery linked with this perturbation. Hence the need to study it from multiple disciplinary points of view. As Fleck had already eloquently argued in 1926 such points of view are partly incommensurable. It is not possible to have a single, fixed understanding of a human pathology even when there is a simple definition of this pathology, a good diagnostic test and an efficient cure; even less when the pathology is complex and its causes are not fully understood. Syphilis is an infection by *Treponema pallidum,* it can be reliably detected by a blood test, and rapidly cured by penicillin. However, today too, the disease "syphilis" cannot be dissociated from the social context in which it manifests itself. The existence of efficient diagnosis and treatment may not be enough to contain the spread of infection. Or, to take a more dramatic example: the new vaccine against Ebola seems to work well, but it is not sufficient to stop the ongoing epidemics of this disease in the Democratic Republic of Congo, and health experts ask sociologists and anthropologists to help them to better understand peoples' resistance to the proposed health measures.

ACVG: You have also been working on the history of biomedical science in Brazil, as can be noted in your association to Casa de Oswaldo Cruz/Fiocruz and some of your publications (for instance: Portuguese translation: *Virus, mosquitos e modernidade: A febre amarela no Brasil entre ciência e política*, Rio de Janeiro: Fiocruz, 2005). Do you think there would be an

essential lesson to the historiography of science that you may have learned over the years from investigating the history of biomedical science in Brazil?

Ilana Löwy: I learned that Brazil is a fascinating place for a historian. It is at the same time "developed" and "developing" country, with an impressive tradition of scientific and clinical research and public health, but also agitated history and immense tensions and contradictions. The now defunct Parisian department store Samaritaine has a slogan "one can find everything at the Samaritaine". One can find (nearly) everything in Brazil, including great colleagues and excellent students. Brazil is, I believe, an especially interesting place to study the interactions between "center" and "periphery," or rather the complexity and indeterminacy of these terms, and a great site to look at tensions and contradiction of diffusion of new biomedical approaches. In the era of global health, it is also an especially good place to investigate the intersections between the global and the local and to examine global health from the point of view of "globalized" populations.

ACVG: You are also involved in current political debates on public health in Brazil, such as your participation in local and international public and scientific debates on the recent Zika's virus outbreak. How do you think these political experiences in the present, shape your interests in and contribute to your approaches to the history of biomedical science?

Ilana Löwy: It is difficult to live outside one's time, or isolate hermetically one's opinion as a scholar from one's views as a citizen. On the other hand, historical and sociological research is a specific activity. The role of academic, the British classics scholar Mary Beard explained, is to make issues more complicated. This may be somewhat easier when studying ancient Rome than when studying recent developments such as the development of genomics or the Zika epidemics. Scholars who deal with difficult topics and fundamentally unresolved profound moral and material questions are frequently caught in a tension between an aspiration to be policy-relevant, and thus to simplify the debated issues, and the wish to be faithful to their material, and therefore to be especially attentive to contingency and complexity. I am trying to find the right balance between these two standpoints, but I am not sure how successful I am in avoiding the multiple traps of such "in between" position.

ACVG: Your latest books *Preventive Strikes: Women, Precancer and Prophylactic Surgery*, Johns Hopkins University Press, 2009 (Prized by the European Association for the History of Science); *Woman's Disease: A History of Cervical Cancer*, Oxford University Press, 2011; Imperfect Pregnancies. A History of Birth Defects and Prenatal Diagnosis, Johns Hopkins University Press, 2017, and *Tangled Diagnoses: Prenatal Testing, Women and Risk*, Chicago: Chicago University Press, 2018 tackle issues of gender related to biomedical science. How and why do you have become involved in gender reflections in science? Could you please situate the historiographic relevance of these publications to the contemporary debates on gender studies?

Ilana Löwy: I was always interested in gender/ gender studies and their intersection with my scientific specialty, biology, at least from the time when, as a graduate student in biology. I read studies of scholars such as Evelyn Fox Keller, Anne Fausto Sterling and Ruth Hubbard (all biologists and feminists) From the mid-1990s I also participated actively in collective debates on the place of gender studies in a science studies curriculum. However, until the early 21 first century, gender was on the "back burner" in my own empirical research. At that time, I participated in collective

projects the introduction of testing for genetic predisposition to breast cancer. Through these studies, gender moved to a more central place in my work. I became then interested in gendered topics, female cancers, contraception, prenatal diagnosis, and now the Zika epidemics, a topic closely related to the thorny issue of severe constraints on women's sexual and reproductive rights in Brazil.

I am surely not the right person to discuss the relevance of my work to scholarship in gender studies. I can only hope that my focus on the concrete patterns of "manufacture of gender" through the material practices of science and medicine can stimulate more studies that look not only on rare and exceptional developments, but also mundane, routine and therefore often invisible acts, which are nevertheless the backbone of medical practices.

ACVG: After investigating the history of diagnosis techniques in 20th-century, such as cancer and prenatal diagnosis, what comes next? What have you been working on recently?

Ilana Löwy: I am still deep in the study of Zika epidemics in Brazil, a complex multilevel event with numerous ramifications. I hope to write a book on this epidemics which will combine historical insights with an analysis of present-time events. The work on Zika led me to my earlier interest in transmissible diseases, among them syphilis, since Brazil is now affected by an important epidemics of syphilis, including congenital syphilis, something I want to understand better. Thus, recent developments bring me back to my beginnings as a historian of science: the study of the diagnosis of syphilis, at the center of Fleck's book *Genesis and development of a scientific fact*.

ACVG: Thank you so much!

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