Psychology's Feminist Voices Oral History Project

Interview with Gillian Einstein

Interviewed by Jenna MacKay and Lisa Feingold

Toronto, ON

February 26, 2016

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JM: Jenna MacKay, Interviewer

LF: Lisa Feingold, Interviewer

GE: Gillian Einstein, Interview participant

JM: So Lisa and I are going to take turns asking questions. I guess I'll let Lisa get started, unless, do you have any questions for us before we begin?

GE: No, I just think this is a great project.

LF: We always start off our interviews by asking for the historical record if you could please state your name and the date and place of your birth.

GE: My name is Gillian Einstein. The date of my birth is June 13th, 1952, and I was born in New York City, New York, United States.

LF: Great. So we also like to start out by asking about when you developed a feminist identity, or how did that emerge?

GE: I honestly think I was born this way (laughs). I think the first moment of understanding it was actually, I think I was probably seven years old and there was a film series in this little town that I lived in on Saturdays for kids about great people and they had one on Marie Curie. You probably can see it on YouTube now. And so I just remember this image of Marie Curie in a long black dress stirring the pots of radium with this glow coming up, you know? And I wanted to be like that. I just thought she was – she just spoke to me in a way that all the famous men didn't.

JM: Was your family or environment, I guess, supportive?

GE: No. I fought with my family all the time, and I think that was part of trying to establish who I was and my own identity. On the one hand, I played a pretty good '50s girl, but I didn't really, inside, feel like a '50s girl. I really wanted to work. I had ideas. I wanted to be independent.

LF: So was your family supportive of you going to university?

{2:15}

GE: I think so. My dad was a vocational guidance counsellor at that time and he had a very strong ethic about applying to university and there was never any question of whether I would or not. So I applied to six schools. I had to have some safety schools, [which] is the way you do it in the United States. My mother and I went and visited the campuses. But I don't have a sense at all from growing up that they had an idea of what I would do beyond that. It was really clear my mother wanted my brother to be a doctor. It wasn't clear to me at all what they wanted me to be. So that was sort of interesting.

I ended up getting into Radcliffe, which was Harvard, and [I remember] my mother being totally ecstatic. So it must have been something to them.

LF: Do you think they expected you to get married and settle down and be a housewife?

GE: I think they really hoped I would, but they thought I was so argumentative and so difficult that they weren't sure I would ever meet anybody who would settle for somebody like me.

JM: Can you tell us a bit about your undergrad studies at Radcliffe? We noticed that you studied art history.

GE: Yeah. I didn't really know what I wanted to do and I had taken a trip with a private school with, like, seven or eight other high school students to Japan over the summer. The person who led the trip, his name was Wayne Altree, he said to me "You know, you'd be really good in art history," and I thought, "Ok!" No one had any expectations of me, I had no expectations of what I wanted to do. I knew I liked to look at things, I knew I liked colour and construction of images. I really liked photography. So, I majored in art history.

I really liked it, but I was sitting on the steps of the museum at Harvard where you took courses (I was taking a course in Indian miniature painting of the Mughal and Rajput eras) and I was sitting next to a friend of mine on the steps of the Fogg Museum, and I said to Joyce, "You know, Joyce, we just stand here, we look at the paintings and we describe what we think people are seeing, but there must be a field where people actually study what people are seeing and understand how they see." And my friend said to me "Yes, there is. It's called neurobiology." It's kind of like you can't quite believe that that happened, but I really remember quite vividly that's what happened. I thought, ok, I'm going to go into graduate school in neurobiology. At the time, neurobiology was really – some of the most exciting work was being done in the visual system. It was a time when the work that eventually was the work that Hubel and Wiesel got the Nobel Prize for studying visual pathways, studying what happens if you block an eye early in development. So it was a really exciting time to study vision. I thought, "Ok, I'm going to apply to graduate school in neuroanatomy." I had a friend who was really interested in neuroanatomy and I thought, "I know how to look at things," and that's what you do in neuroanatomy, so I'll do that. So that's what I did.

LF: Wow. An interesting connection.

JM: It sounds like it must have been an "Aha!" moment on the steps there, just realizing this field existed.

GE: It was. Totally.

JM: Can you talk a little about what that transition was like, coming from an art history background and then going to an anatomy department?

{6:19}

GE: It was really, really hard. First, I had not taken any math since high school. Maybe not even in high school. So I had to take algebra in order to take calculus and I had to enroll in a program that would allow me to take science courses post-graduation, which Harvard had, called the special student program. Most people did it to to premed courses in order to go on to medical school. So they were English majors who realized they wanted to be doctors and so they needed to take the prerequisites. And that's pretty much what I did. I took the prerequisites for medical school. I was pretty sure if I told my parents that I wanted to be a basic science researcher, I would have a lot of issues on my hands to deal with. So I said I wanted to go to medical school. So I took those courses and I earned a living being a research assistant in a laboratory that studied male reproductive biology. They were kind of looking for a male pill.

Then I transitioned to a neurobiology, neuroanatomy lab. But it was really, really hard. I remember I started studying electron microscopy and working in an electron microscopy lab because, again, I could interpret images. But I remember the guy who gave us the electron microscopy course saying something about – something that sounded to me like Raphael. It turned out he was talking about the rough ER. That's the rough endoplasmic reticulum, which is the structure within a cell where DNA resides and RNA is transcribed. I heard it as Raphael – a 15^{th}-16^{th} century painter at first. So it was really difficult and I would say it was a good 10 – 15 years before I really felt like a scientist because I didn't really think that way. And in some ways I still don't. I mean, I really trained myself to work on detail and most people would probably think of me as being a pretty good scientist but I still am really interested in the humanities and cross-disciplinary things and philosophy.

LF: You mentioned going on to work in a lot of labs. How did you end up as a professor? Did you spend a lot of time as a research assistant?

GE: Yeah. Well, first I'd like to go back to that disconnect that you might have noticed between being six years old and wanting to be like Marie Curie and then dropping algebra and science in junior high and high school. I really do think that was part of a feminist problem, in a way, because science was expected of my brother but it wasn't really expected of me. It wasn't anything that was validated. I could tell that from society. My parents were really good. You know, when I was not doing very well in algebra, they got me tutors. They really wanted me to do ok. But it was really clear to me that society didn't validate it and I really struggled with it.

Then when I was at university and I found out that there actually was this field called feminism and there were people who were feminists who supported what I wanted to do, I really do think it was part of – you know I decided to recapture science in my life and go back and redo that so it wouldn't be lost, because that really was my first driver.

So how did I get from there to here? I volunteered in labs. I first volunteered in this lab that did male reproductive biology. I had also been – do you know the expression "candy striper"? Yeah. So I had been a candy striper in a hospital that specializes in diabetes in Boston. It was in the Joslin Clinic. I had been a candy striper there so when I wanted to go on in science, I went back

to the person who was head of volunteers who was still the person I had interacted with, and asked her if she could find me a place in an electron microscopy lab. So she did. So I also worked in this electron microscopy lab printing and developing electron micrographs. I didn't do much about taking pictures on the electron microscope, but I was basically a technician there. {11:15}

Then a wonderful person named Don Fawcett, who was chair of anatomy at Harvard Medical School, gave me my first chance to learn how to do research. He was looking at spermatogenesis in the testes, so I eventually did electron microscopy of spermatogenesis in the testes. I worked with a wonderful person who was in his group called Agustin Aoki who taught me how to do profusions and taught me how to dissect the testes, etc. And it was through Don Fawcett that I was able to get a job in a neuroanatomy lab. So the first neuroanatomy lab I worked in was the laboratory of a really amazing neuroanatomist named Sanford Palay. It was Sandy Palay, with two others, who was the first person to actually show the synapse in an electron micrography. So the connection between nerve and muscle – sorry, nerve and nerve. Sherrington had hypothesized that there were connections - clasps between neurons, a synapse, in the brain and that that's how signals got transferred from one neuron to another. It was across a clasp, he called it, and synapse means clasp. And then there was a big fight between Ramón y Cajal, a neuroanatomist, and [Camillo] Golgi, who was the first person to develop stains to show neurons: the Golgi stain. Golgi believed that actually neurons were connected as a *syncytium* {13:19} and Cajal believed there was this clasp, or separation between neurons but a connection. Sanford Palay, with a guy named Peters and a guy named Webster, they were the first people (whispering) was it Webster? I'll have to look it up. They were the first people to actually show an electron micrograph of this clasp. So I was really fortunate to work in Sandy Palay's lab. He was a fantastic electron microscopist. You know, Sandy was so aware of the history, and so excited by having been able to show this. So I recognized that, to do really good anatomy, you had to have a good imagination and you had to be able to imagine what you would see before anyone had shown it. That was really exciting to me.

So that's sort of how I made my way. And then I got into graduate school in neuroanatomy and I [went to] University of Pennsylvania where I did visual anatomy because I was interested in the visual system. Then I did a post-doc with an amazing woman named Christina Enroth-Cugell and it was a post-doc in visual physiology, actually. Christina had shown, with John Robson, that in the cat, there were parallel pathways going out of the retina. Now we sort of take it for granted, but they were the first to show by physiology that there were some neurons sending information into the brain that summed information in a linear fashion, so that a + b equalled a + b, basically. But then there were other neurons that summed information in a non-linear fashion. That is, that information a + information b turned out to be something completely different. And that became sort of the doctrine of parallel pathways – or two different visual pathways from the retina into the brain and it got taken up and shown in non-human primates, and in humans.

Christina was…do I have her picture? Yeah. So here's my picture of Christina Enroth-Cugall in her office (shows camera). She was Swedish and she ran a fabulous lab and she became a role model to me, even though she would never say she was a feminist.

JM: Thank you. Maybe I can get a picture of the photo before I leave.

GE: Yeah, it's kind of fading. I think I have another one of her festschrift when she was retiring, that you could get a picture of. She was a wonderful person and I loved her, but she was not a feminist. These were all her students and you can see that all but me and one other person are "XY" individuals.

{16:40}

JM: That was going to be my next question. I know you've talked about [how] you feel like you were born a feminist and you mentioned that when you got to university [you] realized that feminism was a thing and [you witnessed] the emergence of [it as] a vocal movement. Can you talk a little bit about what that was like during your graduate or undergraduate studies, where the feminism came into that, and what the experience of being a woman on campus was, particularly, in neurobiological settings?

GE: Well, you know, we're talking about the '70s, at least for undergraduate. I was at a women's institution but I took courses at Harvard. My freshman seminar (we met at night), there were just four of us. I suggested we meet at this gorgeous library up at Radcliffe and the professor didn't even know where that was. He complimented me on my typing skills. In fact, the Dean of Women at Radcliffe, I mean I'm just horrified to this day, I had a period where I was really not sure where I was going or what I was doing, and I went to her for advice and she told me she thought I would make a really good marriage. So this was quite difficult.

When I started taking algebra, there was a wonderful woman named Deborah Hughes Hallett, a British woman, who set up the algebra course within the math department for people like me and she was a fantastic support. So I did find support, but it was clear it was an offshoot kind of area. That's when I was majoring in art history. When I was doing science, I wouldn't say I met with any support except Deb's, which was really too bad. It was really too bad. It made things harder, I think, because I was the kind of person who could have used support. I had some wonderful professors. I had a wonderful art history professor named John Coolidge who was very supportive of me in art history. A great professor in art history, again, was David Gordon Mitten [who was] very supportive of me in art history. But the science thing was complicated.

It wasn't until I really got into labs that I got support. That's one of the reasons I think I'm so positive about undergraduate student research in labs because it becomes a smaller environment and you can establish a personal relationship. And so I did get a lot of support. I got a lot of support from Don Fawcett. I got a lot of support from Agustin Aoki, and I got a lot of support from some of the people who were my mentors when I was thinking about going to medical school. I found the medical profession, or at least the people who I encountered, [understood] what mentoring was about in a way that academia didn't quite understand it yet. There was this tradition. I don't know whether it still exists or not. So that was really good.

I should tell you [about] my other experiences in undergraduate. I wrote a paper for an anthropology course that was one of my distribution requirements. It was about sexuality in women post-menopause and it got nominated for the Natural Science Prize. It didn't get the Natural Science Prize, but it got nominated for it. So when I went back to the professor to pick up the paper, he called me Little Miss Menopause and told me that a lot of women enjoy sex even if they don't have orgasms. (Laughs) You know, these are just some of the experiences. I think it's really different now, which is really great.

So when I started the collaborative graduate program in women's health here, part of it was not just to figure out what women's health could be about, and also where it was going and train people in that, but also to provide a supportive environment for people who were interested in that but maybe the research groups they were in were not focussed on that. {21:37} Because a lot of times that happens. A lot of this is done sort of under the radar. You'd be surprised how many people are studying sex differences and gender and they don't see it [as] applicable to women's health or they don't identify as feminists. But a lot of the women in the collaborative program do, and so it's really great to provide that place for them.

LF: I wanted to ask if you actually met any resistance to being a woman studying science?

GE: Oh yeah. So I didn't get to [talking about] graduate school. This was really interesting in graduate school. I did graduate school at the University of Pennsylvania and we had [a] really wonderful cohort of students and, really, that was so great to work with them. But I think the men who admitted us didn't really know what to do with us. So the male professors would be standing in the hall, maybe they'd be telling dirty jokes or something, and the women would go by and there would be total silence. I really do think most of the women in my cohort just kind of thought [that] they don't know whether we're their sisters or their mothers or their girlfriends. [The idea of] colleagues didn't really get conveyed. So actually we started a seminar group ourselves where we met at like 8 o'clock in the morning and we read papers together. It was really supportive and great, but then the guy graduate students got wind of it and they thought it was unfair that we had a seminar group and they didn't. They wanted to be included so then it became a sort of a seminar for the neuroscience students and it kind of went downhill from there. I guess I was kind of born kicking and screaming and so we just continued to persevere and I'm still very, very good friends with a graduate student colleague of mine and I think we still feel pretty close [with] that female cohort, for the most part.

JM: So it sounds like there was mentorship among the students that were female, mentoring each other as peers.

GE: Yeah. I think so. And again I would say it would be a very different picture now, but I think that might have been a stage in which I began to believe that it might not matter how many women you admitted into science, what was really important was what the women believed. Women want to professionalize. We're careerists too and we need to professionalize as well. I would say there are a lot of women still in science and in medicine who identify pretty strongly with what I would call a male model. I think it's important not just how many women you admit, but who you admit and also engaging men in alternative models.

JM: Maybe you could talk a little bit more about what [those] alternative models [are], or what does feminism bring to researching gender and sex differences in regards to neurobiology.

GE: Well, I think feminism brings another approach. It brings another perspective. Because feminism came out of theory, as well as [the] second wave women's movement, I think it brings alternative approaches. So feminism is very rich in its interrogation of the science question and what it would be to do feminist science, and it's very rich in its alternative epistemologies. There's a wonderful area, but [also] a great paper by Nancy Tuana called "The speculum of ignorance: [The women's health movement and] epistemologies of ignorance", and I just think that is such a great shaper of a different paradigm. Don't just go for the next logical gap, go for

areas where we know nothing, which really is what discovery is about anyway. It's easy enough to recognize that systematic reviews are going to cover up what isn't known because they're just about what is known. So you have to come up with other methods.

{26:55}

In fact I had a really interesting conversation with a colleague of mine the other day who was saying that all the students in a particular graduate program ought to do systematic reviews and I said, "Well, it's great to want students to do reviews, but systematic reviews may not be appropriate for all graduate students because we want graduate students to become interested in discovery and not just what's known." So she started telling me, "Yeah, we tried to do a systematic review on x and there wasn't really anything known about it and we couldn't do a systematic review." Then it begins to get you to see that the notion of evidence-based medicine really has some powerful and important drivers to it, which is that people should be independent learners and not just dependent on what their mentors have told them. It also systematically erases what isn't known and whole areas of knowledge. I had somebody tell me about five years ago, they were planning a conference on hormones and women's health and I said…I don't remember what it was about, but I said "Don't forget such and such." And she said "We're going to have a program that's based on evidence and there's no evidence on that so we can't include it." That has convinced me that in some ways it's more important to know what you don't know and what isn't known than what is known. And I think feminism has really helped with that.

In my own research, going back to the feminist question helped me shape what my own research program would be about. So you know, for a long time I did single cell injections of neurons in the visual system and then in Alzheimer's disease and then I had to leave science for various reasons and to close my lab and I ended up doing science administration for six years. So when I had the opportunity to come back to academia, I thought I want to have a research program that would be empirical but commensurate with feminist epistemologies. So I thought, well, what are those? I went back to the literature on feminist epistemologies and one of the papers I sent you deals with that. And of course I picked and chose what would be reasonable if you were doing empirical psychology and empirical neuroscience. I thought based on what Helen Longino thinks about, I would want it to be about what's important to the people I'm studying. I would want the methods to match the problem {End of video 1} and not just apply methods I knew to the next problem. I would want, according to Nancy Tuana, it to be about discovering ignorance, and I don't know that anybody really covered this, but it really came to me through the work of Elizabeth Grosz, I would want it to be about the whole body in context. I didn't want the brain to be the CEO of the body. I thought that was actually really easy to do if you were studying hormones because hormones unite every single body system. So that's how I was influenced by feminist theory. I definitely picked and chose, but that's how I came up with the questions that I had come up with to study in the last seven years. They're really about the whole body in context, about if you cut one part of the body, how does the entire body becomes involved through the nervous system. I say to people [that] if I studied the immune system, I could think about it that way [because] the immune system also unites all different body parts. Ultimately [I'm interested in] getting a bigger picture of women's bodies in general and their response to treatments, conditions and hormones.

LF: I was wondering if you could talk a bit about the significance that sex and gender plays in studying the nervous system specifically?

GE: Yeah, actually one of the fields that has done the most to put forward the idea of sex differences (it's sort of emerged into sex differences, if you will) is the field of hormones {1:52} and behaviour. It's a beautifully coherent research field in psychology and it started off trying to understand the influence of, first of all, hormones on behaviour, and then it morphed into understanding how if there is differentiation of the genitalia and the reproductive system, if this differentiation takes place through hormones, that must affect the brain too and that the brain is linked with behaviour. Then they started looking in the brain to see if there were hormonal influences on the brain. And of course they were interested in the binary between males and females and so they were looking for hormonal influences on the female brain and hormonal influences on the male brain and how those hormonal differences could shift, in a sense, to change the female norm to male and the male norm to female. It really was about a binary even if you look at the individual experiments. I look at the foundational experiments in my book *Sex and the Brain* and you can see how some of the foundational experiments actually weeded out animals that didn't behave according to the binary because they were really interested in reinforcing dimorphisms.

Now that has really morphed into sex differences in neuroscience. In that field, of course, that area has become really rich with respect to funding agencies requiring that scientists begin to include both male and female animals in their studies, that they include male and female humans in clinical studies and that in some cases they begin to incorporate gender. That field has been a driver for these kinds of incorporations of sex differences and gender differences into funding mandates, calls for applications and review. But again, it's been very focussed on the binary. I've had some colleagues refer to gender as the 'g' word. So as I said, I'm trying to organize this symposium at a very sex differences-focussed organization (The Organization for the Study of Sex Differences), but I'm saying we need to also include gender in animal models and let's actually think about what that would be in animal models. Maybe it means taking gender identification off the table, but maybe it means including power structures, housing, interactions between males and females or females and females, into the model. You know, if you're studying cardiovascular disease, I'm sure everyday insults and stigma make a difference in how cardiovascular disease plays out. Don't you want that in your animal model for testing a drug treatment? It could really be important for the reproducibility of the results and the rigour of your findings. So we're going to give it a try and it will be a first attempt. But we have to get people to think about it. I think it's exciting! It's innovation. It's a way to get new ideas.

LF: What strikes me is how scientists try to show how scientific their work is and by asking these questions you're establishing how there are holes in the science, which actually makes me want to ask you about one of the papers you sent us [which was] a more theoretical paper. I was wondering when you developed an interest in more philosophical approaches to science?

GE: I've always been interested in the history and philosophy of science because if you were a feminist growing up when I did, if you wanted to know something that might border on feminist science, what was out there was autobiographies of women in science. So it got me interested in history and how science progresses and I've always been interested in that. When I was at Duke I was on the steering committee for the women and gender studies department, so I've always been interested in the more philosophical side of things. But I didn't really read up on it until I met a wonderful philosopher named Margrit Shildrick who is a feminist bioethicist and she was willing to work with me. There are so many allergies across these boundaries and I remember

somebody recommending Margrit to me and I called her up and we met for lunch and we could actually talk to each other without getting allergic. We were willing to sit back and I could talk in a way {7:57} that she would think was deterministic and positivist and she could say what she was saying and I [could ask], "What do you mean by that?" We did sort of have a breakthrough and then we planned a conference together that would try to do this multidisciplinary thing, out of which we wrote our paper "[The postconventional body:] Retheorizing women's health."

So I sort of got some reading out of that. She told me I would really like Elizabeth Grosz and I did my best to read Elizabeth Grosz maybe three or four times. It's really hard when you're not trained in theory to read theory. But I had always been interested in Kuhn and how science progresses. I tried to read some philosophy of mind because I was interested in Alzheimer's disease and different sorts of selves that would not just be cognitive selves. I haven't read as much as I would like because that's not where my bread and butter is. I can't get promoted on that, but it has interested me.

I would say one other thing, which is that when I was a scientific review officer at National Institutes of Health, I organized reviews of grant applications three times a year and I did notice how the science changed. I was really interested in that. I noticed, for example, that all the estrogen applications were going to a study section that was a hormones and behaviour study section, but everybody on the study section for review was a behaviourist. They didn't know how to review the molecular actions of estrogens. I thought that was really interesting so I opened up an area in my study section that was about molecular stuff to review the molecular action of hormones. [And] I noticed that I needed five reviewers for every application and one reviewer couldn't own the science of a single application, and I realized we were getting a lot of multidisciplinary applications and we had to think about how review would be different for those [rather] than an application that was purely discipline-based. For a while we didn't get any Huntington's applications in my study section and [then] all of a sudden we started getting all of these applications on Huntington's disease. I started asking people who were submitting the applications, "Why are you submitting these now?" It turned out that the Huntington's Association had had a call for, basically pilot projects. So it really stimulated the science and then all of a sudden the National Institutes of Health could start reviewing these. So I was really interested in how that worked and I always thought if I were a social studies of science person, NIH or CIHR (Canadian Institutes of Health Research) would be a fantastic place. It's almost like you could just study the applications and just see how science was progressing. I don't think anybody's done that yet. So I was interested in that. I've been interested in that for a long time.

JM: Maybe you'll end up writing about that or researching it one day.

GE: Maybe in retirement, yeah. You know, I've always kind of been on the edge of social studies of science and thinking people in that field really like what I do, whereas it's a real struggle…now it's kind of breaking more for me in psychology and in neuroscience and in Alzheimer's disease. I've been really fortunate. But you always have to think about how it is you're framing what you're doing.

JM: As we're on the topic of approaches to science, you described your methods as very mixed. I'm curious if you could describe for us what that means to you and in particular how you marry approaches like qualitative interview data with genetic testing or imaging or things that are maybe not traditionally mixed with qualitative. {12:08}

GE: Well we're working on it. I would say we're working on it. I'm very committed to the approaches, again from a philosophical point of view, that you can't really know what's going on in a body without first person, second person and third person approaches. You really need to understand what it is like for the person. You really need to understand what the interactions [are] that are affecting the person. So even how do I affect what the person is feeling or experiencing as a researcher? [It's] sort of the Niels Bohr problem with the electron and knowing the electron and changing how it is behaving just by observing it. Karan Barad wrote a nice paper about that called "Meeting the Universe Halfway" [: Realism and Social Constructivism without Contradiction]".

The third person approaches, which are considered the objective approaches, I think are really important too and they can be positive or they can be negative. They can reduce a person to a subject or they can, in cases of brain disorders, they can find areas of strength in the brain where previously all we focussed on were areas of lack. I think the interplay is really important and have I figured out how to really bring them all together yet? No. [For] the Somali project, we're writing up the qualitative and the quantitative projects separately right now. But I do feel that it's really important not to subordinate one method to the other. I really feel it's important. If you're going to do qualitative work, make it good enough to be published in a qualitative journal if you possibly can. And maybe you have a whole separate paper where you think about how these come together.

It is really important because there are areas in medicine, for example, where first person reports don't match third person measures. Sleep is an important area like that. Women often complain of having very poor sleep but when you do polysomnography on them [and you] put them in a sleep lab, there's no difference. Their polysomnograms look like they're having pretty good sleep most of the time. So what does that mean? I think that's really important to understand because how you feel about your sleep is probably shaping how you feel through the rest of the day. It doesn't matter what your polysomnogram shows in some ways. It might also be an indication that polysomnograms aren't measuring the right thing. And that's true for pain, as well. The researchers in pain are very intent on…they have really done a successful job of saying if somebody says they're in pain, they're in pain and you need to treat that. Some fields in neuroscience and psychology do better than others. But the disconnect itself is extremely important and interesting.

JM: Can you talk a little bit about what it means to bring a feminist approach to those third person measures?

GE: Well the first thing is that it makes you go back to papers and re-evaluate the studies. It makes you ask, first of all, did they study women as well as men? And if they did, did they segregate the data by sex? That's very simple and not very complicated feminism, but I think it comes out of that, but it also has to do with rigorous and good science. Then you can reinterpret the data. If you think they really did a good experiment, but you look at the interpretation of the data, you might have a completely different interpretation. My favourite example of this is Simon LeVay's 1991 study on differences in the brains of gay and straight males. When I look at his paper, I'm perfectly happy to believe his results. I'm perfectly happy to say he had really good methods and that he's a good scientist. But when I look at his interpretation, I think I would interpret this completely differently. God bless him, he published individual data points. When you look at the individual data points you see that there's enormous overlap between gay and

straight, and in fact he also had somebody who was bi who he put in the gay bin. I would interpret his results as showing pretty much a continuum. There's a small difference between the means and it's significant, but what does that mean in terms of the individual people and in terms of the actual behaviour in their lives? {17:25}

So I like to think that's a feminist approach and it's certainly an approach that Emily Martin used when she talked about the love story between the sperm and the egg and it's certainly an approach that Anne Fausto-Sterling uses in going back and re-interpreting studies that she's perfectly willing to consider have good science. [It's] more complicated to question the methodology because even quantitative methods have built in gendered assumptions that can shape what comes out of the experiment and that's much more difficult. I don't have an answer for that but I think it needs to be questioned. And of course, Joy Johnson, when she was scientific director of the Institute of Gender and Health, the first research call that she put out was on methods and measures to rethink all these different measures. We probably, in psychology, need a new gender measures because the Bem [Sex Role Inventory], as successful as it has been, is really based on old ideas of what's feminine and what's masculine. Although she was looking for androphily and androgyny through what she was looking at, most [gender measures] start with an assumption of a binary. You're either masculine or you're feminine. There will be people who end up at either end of the scales but I would say most of us are more in the middle. And there's a lot that we do as human beings to push a binary, like the way we dress, the way we talk, the way we walk, what's expected of us. Cosmetic surgery pushes the binary. I think of female genital cutting or female genital circumcision or some people say mutilation, I think of that actually as a practice instantiating a binary because in the cultures that practice it, one of the very strong beliefs is that male and female are born equivalent and you have to do something after they're born to make a successful female and to make a successful male. You have to remove from the male what is female and you have to remove from the female what is male. Unfortunately for females, it becomes a lot more than what it is for males.

But we do that in western culture. We pluck our eyebrows, we get certain kinds of body piercings, we dress in certain ways, we wear our hair in certain ways. There's a lot that we do. We get labiaplasty, we get breast implants, etc. There seems to be a deep human need to instantiate a binary and different cultures just have different ways of doing it.

LF: We wanted to ask if you'd be able to highlight some of the professional activities that you're most proud of in regard to bringing feminism to psychology and to science?

GE: Well, I'm very proud of my mentorship of women. I was among the first at the Society for Neuroscience to support the women in neuroscience group and be part of that (I'm not anymore) because it's really about mentorship of women and I do a lot of that in my own lab and my own interaction with students. So I'm very, very proud of that. I'm very proud of developing the collaborative graduate program in women's health and actually moving that into teaching about gender and health and masculinities and femininities and questioning the binary, which is where I thought women's health might fruitfully go. I'm very proud of that. I'm very proud of my work with different organizations that study sex differences. I'm a founding member of the Organization for the Study of Sex Differences. I'm part of the International Gender Medicine Society and in Sweden at Linköping University where I have an appointment and guest professorship, I'm part of advancing a platform of gender in medicine and imagining what [this] would be that wouldn't be just about women or just about sex differences. So that's very much in

the making. I'm really proud of having served for six years on the Institute of Gender and Health's advisory board: first three years as a member and the last three years as the chair of the board. {23:01} I feel like I really played a role in pushing their strategic plan, which you're welcome to take, and having it be about combining the social with the biological. So those [are the] things I'm very happy about.

JM: Do you see these professional activities as a form of activism?

GE: Totally. I totally do. I don't get any credit for them in the university but I am very proud of them. I am just learning that in the university, your professional achievement, your advancement, your tenure is based totally on papers published and your research program.

JM: Can you talk a little bit about how you see it as a form of activism or why it's important for you to be involved in these different areas if you're not receiving official recognition?

GE: Well, as I say, I've always been a fighter. I think people should receive credit for this. It's [the] training of young people, it's changing the field, it's really trying to get some paradigm shifts in there. I think it's incredibly important. I would like to see it recognized. So I do it for that reason, but I also do it for the actual concrete things that come out of it. You know, I just can't help myself (laughs).

LF: So another case of women's nurturing behaviour is not being appreciated.

GE: Yeah, exactly.

JM: You've mentioned a number of times that mentoring is really important to you. Can you talk about your approach to mentorship?

GE: Yeah. It's about actually being myself with students. I'm probably a little informal, sometimes there's "TMI" [too much information]. I am blunt and I react but I think it's important for students to see that because I think, internally, that's happening and they might think to be a professional [that] you wouldn't have any of that. But I think every professional has it. To me, I think it's important to show it. [I just make] sure that the students I interact with do the best they can, do their best work, and have their best ideas. I want to support that. I'm a little uncomfortable talking about it because sometimes somebody who really wants to be a mentor could be a really bad mentor. They could think they're one way, and I've experienced that myself, they could think they're one way and not really be that way. Actually I would much prefer having my students talk about what kind of a mentor I am than me saying what kind of a mentor I would like to be. In the end, the proof in the pudding is in the eating. It's interesting that a lot of my graduate students are from public health. They identify a lot more with women's health than psychology students do. In fact, I'm even considering changing my website because it's hard to attract psychology students with a website that says cognitive neuroscience and women's health. I've approached many potential graduate students and they've said, "Well, I'm interested in learning and memory and I didn't think you were interested in that." That's interesting to me.

JM: Are you interested in attracting more psychology students? {27:05}

GE: Yeah. I'd like the field to develop beyond potentially just looking at sex differences or just being about hormones and behaviour. I really think that when you're studying cognition, you know, cognition in the wild is a cognitive science perspective that comes out of computing, but I wonder what people are studying if they're just studying people in a laboratory and they're not taking into account how the person themselves feels at the moment they're being studied.

LF: I was wondering, where do you see the study of sex and gender and neuroscience going in the future?

GE: Yeah. One other thing I'd like to say is that when I sit in on seminars and nobody tells me that the population was actually undergraduates or that it was working women or that it was x percent male and x percent female and the data were or were not segregated by sex, and the socioeconomic status, I don't who they're studying. I don't know what they're studying. It's kind of like my brain just stops at that moment and I don't know what the data are showing us. Yet I think a lot of people think that what they're doing is fundamental research. I don't know what's fundamental about not really interpreting your results on the basis of who your population is.

So, what was the last question?

LF: Where do you see the field of neuroscience and sex and gender going in the future?

GE: Well, [There are] a lot of people studying sex differences, Larry Cahill being, now, probably the most outspoken brain scientist promulgating the field of sex differences research. I would say in good neuroscience research a lot of people are thinking about {End of video 2} including both males and females in their work, thinking about it. They see sex differences but they don't know what to do with them, which is really interesting. They want to understand the effects of hormones on the nervous system but they may not (except for people who study that specifically), they don't quite know how to do it. The Institute of Gender and Health actually spearheaded a movement in all large program grants including the strategy for patient-oriented care that there had to be a sex and gender expert on the PIship of the grant to help integrate sex and gender across the different projects in the grants. So I was involved in that for the Canadian Consortium on Neurodegeneration in Aging. I was involved in {0:54} which unfortunately didn't get funded, but it's a very exciting initiative, I think, and really important. So I think it's going great guns and I don't know about other fields but I think that neuroscience and also immunology are beginning to see that it's important to really think about this and that the field of social neuroscience and especially social stress, there are sex differences that are really predominant in social stress. I think it's going to make its way into the role of epigenetics on shaping neural systems. I think it's happening. I mean, it may loom large to me because I'm in the middle of it but I think it's encouraging.

People want to avoid it because they think it makes things more complicated, but what I say to people is [that] if we had started off studying females instead of males, we would say that males are too simple a system. If people started saying [we] should include males in our model, we would [say] they're too simple. They don't cycle, they don't have altering hormones, they don't have different reproductive stages. And it's very interesting that Zucker, who I suggested to {2:14} you, had a very interesting paper out looking at a meta-analysis of all mouse studies that looked at sex differences in the brain and behaviour. What he found was that, even in studies

that didn't account for the menstrual cycle, there was more variation among the male animals than among the female animals and the variation was dependant on housing.

JM: Interesting.

GE: It's very interesting. So I think that there's a lot of great stuff that's being learned right now. I just happened to have had the opportunity to sit next to the editor-and-chief of *Nature* at a dinner and I just talked his ears off about this.

JM: What was his response?

GE: He was really interested in it. I'm not sure he knows how to operationalize it as far as *Nature*'s editorial policy goes but I think he was really interested. You don't know what the future will bring.

JM: One of the things we noticed looking at your CV was that it seemed to be, I guess, a bit more traditional studies earlier on in your career and then by the mid '90s onward, [you were] bringing more of a social lens [to your work by] looking at gender, sex, sexuality, culture. I don't know if that's a trend that you also see?

GE: Oh, totally.

JM: Can you talk about what that process has looked like in terms of bringing more of your politics into your work?

GE: I can tell you the moment I did was 1991when I read Simon LeVay's paper because I knew Simon LeVay as a visual neuroscientist and then all of a sudden he did this work on the gay male brain and it was really because he had a lover who died of AIDS. That just inspired me. It did inspire me to bring my personal concerns into the science. And I have to say, I've been a happier person ever since, although sometimes it kind of breaks your heart because you invest a lot in it. It's not just a theoretical thing for me. I want to do work that matters to people. I want to do work that matters to me. And I tell people [that] I kind of went off the career cliff when I started asking if women with female genital cutting had a changed brain. It was very, very difficult to get it funded. I got a little bit of bridge funding from the Institute of Gender and Health at one point, but how to get it funded going forward, I don't know. So it's been really great in that sense, at least to me. It makes me fuelled to do work.

I will say there's a lot of politics and the politics are very, very complicated. There's not so much politics now in studying the effects of hormone deprivation on women's brains who carry the BRCA mutation and so had their ovaries removed as prophylaxis. {5:51}There's not a lot of politics around that. Not a lot of politics around getting into histories, clinical histories, asking if women have had their ovaries removed, [or] trying to differentiate between whether they just had a hysterectomy or they also had their ovaries removed. That would have been political maybe ten years ago. It's not so political now. Studying women with female genital cutting and not taking a stand against female genital cutting – man, that's political. It's political in the advocacy community, which is a community that invites me to give {6:27} talks. It's political even in the funding community. How can you do this work without saying that it's bad? Personally I don't want to say it's bad. I want to say there's a biological change. What does that

mean? I want to study the bodies of the women and think about it from the perspective of what it tells us about all women's bodies. It's really hard.

But even harder than that is studying transsexuality. I just gave a conference in Frankfurt that was about transsexuality. It was to a group of transsexuals, activists, the church was involved in it, and more theoreticians, and there were some neuroscientists. I distinctly got the feeling that the trans activists, at least in that context, wanted to hear it was in the brain, wanted to hear it was binary, and didn't want to hear about any complication. Even afterwards I asked a pretty well-known person who's an advocate, "Do you think that it's important to study the outcomes of the surgeries and the hormone treatment for transsexuals? Do you think they want to know that?" She had a hard time answering me, and then she said, "Well it has to be done by somebody who's transsexual." So I thought ok, I'm supposed to stop doing this research. It was very interesting, right? There's a lot of politics.

JM: How have you navigated the politics of your work?

GE: As best I can. I feel it's very important to be honest to myself. I just try to stay honest to what it is I think is important.

JM: Do you feel like you have support now for your work?

GE: I think I have a lot of support in the neuroscience, the neuroendocrinology, and the aging community. And sex differences.

JM: Which makes a difference, right, to have that community?

GE: It makes a huge difference. It makes a difference both in how you feel every day about what you're doing but also in your ability to get funding and get your papers published.

LF: We'd like to ask what advice you'd give to feminists entering psychology and neuroscience today? What remains to be accomplished?

GE: Everything remains to be accomplished. It's like skimming the cream off the top. I don't think there isn't an area of psychology that couldn't benefit from taking a feminist perspective and thinking about sex differences and thinking about gender and taking what I would call a situated approach. It's all there to be done. It's exciting.

JM: It sounds like you're quite hopeful for the future and see it as a more welcoming place for students today than it was when you were training.

GE: Yes, definitely. And actually there are a lot of students going on in neuroscience who've done combined undergraduate degrees in neuroscience or psychology and also women and gender studies. They're a huge asset and many of them are coming to the point where they're looking for jobs. There are even jobs and postdocs, very infrequently, jobs and postdocs that are looking for people like that.

LF: So things are changing. {10:41}

GE: Yeah, totally.

JM: It's great they have the collaborative program here to foster that.

GE: I hope so. It's interesting. When we did our review last year (our seven year review), we looked to see what the women were doing after graduating, and I would say the majority of them are doing something in women's health. So that was pretty cool. One of them, actually, has gone on to graduate school in gender and health policy and she's studying with John Oliffe {11:16} who studies masculinities and she's totally committed to masculinity. I've gotten really nice emails from her saying that it was [due to] the encouragement of the program, so that's really nice.

JM: That's wonderful.

GE: I'd like it to keep inspiring in that way.

JM: Is there anything we haven't asked you about that you would like to speak to?

GM: No, you asked a lot.

JM: Well thank you so much for your time and for sharing your life and career with us.

GE: Oh, you're welcome. I think it's such a great project and I hope it will be a source of inspiration to people, women and men, because in a sense it's not just about feminism. Feminists are fighters. You've got to be a fighter. If people can watch these videos and get inspired to be a fighter for anything that they think is important, that's going to be good.

JM: I agree. I think that's the hope and why we're doing this.

GE: Yeah. So thank you so much.

JM: Thank you.