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# **The Science-Music Borderlands**

## **Reckoning with the Past and Imagining the Future**

**Edited by: Elizabeth H. Margulis, Psyche Loui, Deirdre Loughridge**

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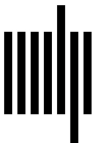
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## 19 Conversations with Steven Feld

Steven Feld, Nori Jacoby, Deirdre Loughridge, Psyche Loui, and Elizabeth H. Margulis

[*Editors' note:* Anthropologist Steven Feld has been thinking about sound as a site of nature and culture since at least his work on the Kaluli and birdsong, published in 1982. In a piece coauthored with Aaron Fox for the *Annual Review of Anthropology* in 1994, Feld laid out an optimistic vision of a future in which the sciences and the humanities worked together to understand music and language. Two coeditors of this volume, Deirdre Loughridge and Elizabeth Margulis, interviewed Feld on January 13, 2021. Psyche Loui and Nori Jacoby joined for a follow-up interview on June 22, 2021. A condensed version of those conversations appears here.]

### Reintegrating Cognitive Approaches with Grounded Investigation

**EM:** I'm going to quote you to yourself now, if that's a kosher interview strategy. In your 1994 article with Aaron Fox, you say that "an important agenda for contemporary musical anthropology is the reintegration of sophisticated cognitivist approaches with grounded investigation" [Feld & Fox, 1994]. Is there some ideal version of the relationship between the cognitive sciences and anthropology of music that failed to come to fruition?

**SF:** I think I was reacting to certain things around me that I didn't like, and certain things that I did. What I didn't like was the increasing use of anthropological or ethnomusicological or musicological work just to construct a kind of contrary, what in anthropology we call the "but not among the Bongo-Bongo" syndrome. Work would be dismissed as simplistic or not grounded because somebody can pull one counterexample out of the air, as if ethnographers are in combat with psychologists in some ring called "Universalism vs. Something. . . ." And you know, I hated that. I just thought that was a kind of descent into a kind of anti-intellectualism, and a form of professional stupidity. I felt it was a kind of closing up of an intellectual perspective as people rallied

around the idea that you had to be a card-carrying ethnographer to make certain kinds of statements about music and anybody who wanted to generalize beyond the specifics of ethnography was somehow suspect.

In the 1990s there was a lot of that, because there was a really important and interesting resurgence of certain kinds of dialogue that was probably very threatening to musical ethnographers. The science was getting considerably more complex, depending on levels of specialization that most people didn't have access to. It started to become harder for ethnomusicologists to really understand what the experimental agendas were about, and why they were exciting to the people that were doing them, because of the specialization. At the same time, there was an increased level of funding for cognitive and neurosciences and an enlarging gap between science-rich and humanities-poor sectors at many universities, especially at the state level, that left people doing ethnographic work feeling like there wasn't really a conversation. So in that article, I was making a kind of contrary, anticontrarian statement: why not be open to the possibility that there could be a sophisticated conversation, and a different kind of integration of these approaches, where ethnographers could be valued because of the kinds of depth they might have, and people who don't do ethnography could be valued because they come up with good questions.

**DL:** My sense is that this “naysayer” attitude that you are describing in the 1990s may have really set back and delayed the ability of cognitive science and more experimental approaches to deal with culture as part of something that is not just the arbitrary variable happening above the natural innate, but rather to think about how the cultural is part of the biological.

### **If I Were a Cognitive Psychologist**

**DL:** I feel like that line about “for you it's a bird, for me they're voices in the rain forest” [Feld, 2012] encapsulates so well the knowledge or insight I would hope to get at. But you have this whole other experience of the world [from your fieldwork]; how does a cognitive scientist or somebody designing an experiment bring that kind of experience or insight into that domain of knowledge production?

**SF:** Well, if I was a cognitive psychologist at the same point I was a graduate student in Melanesian ethnography, the kinds of questions that I would have been wanting to ask would have had to do with Why certain birds? Why were people obsessed with fruit doves and not other birds? What was so salient about birds that have very melodious calls, with specific descending intervals, that live close to people, that have interesting

displays of color, and whose sounds are ubiquitous? I would have tried to ask a question about: What is it that predisposes people to certain kinds of interests in particular families of sound makers or particular kinds of sound making? Does it have anything to do with the nature of hearing in a place where you can't see more than three feet in front of you, in an environment which is very dense? I think I would have tried to go in the direction of what these days is something called ecological musical perception or the relationship between ecological factors and perceptual foci. If I had been there with somebody who was really trained as an acoustician or scientist in perception, we would have had a hell of a great time because I now see much more how all those questions connect to each other.

### From Meta-Language to Epistemological Conversation

**EM:** Both of the examples you've raised about questions that seemed interesting for you to pursue are very situated within a particular context and place. Right now, within and around music cognition, there is a resurgence of a desire to look comparatively across cultures in a way that has been problematic in the past, and to develop questions and methods that are usable in multiple places. When we start to have these conversations about comparative work at a large scale, fundamental definitional approaches to topics like song or music or speech itself rapidly become vexing. I'm curious what you think the prospects are for the comparative enterprise, broadly speaking, and for the prospect of a shared vocabulary, just to begin with?

**SF:** It's a really important question because as interdisciplinarity becomes more important and, at the same time, the highly specific nature of training in individual disciplines becomes more differentiated, the question becomes what meta-language do we share? Where are we talking about commensurate things, or compatible things? That's really quite an issue.

To me, I think the conversation that's really missing might be the epistemological one. I mean, the conversation that says, "Okay, I'm a music psychologist, the things that turn me on are these questions, now what would it take for you to realize why I follow this path if I want to know about this thing, or devise this experiment, or imagine that this result or this statement is authoritative versus qualifiable or arguable? What kinds of knowledge do I like to produce that I would call authoritative knowledge? What kinds of knowledge do I like to produce that I would call knowledge that is out there because it needs further refinement, knowledge because the end result of the experiment I did, or the thinking that I did, only made things more complex and were really useful to me because of the way they allowed me to understand how something was more complex?"

## Comparative Approaches

**EM:** I wonder if maybe one specific kind of example might help here, which is a problem that is facing a lot of people who are doing this kind of comparative work within music cognition, where you want to have a demography, a demographic inventory that will give you some kind of means for comparing these categories across places. So you want to have something about, say, musical training. Well, how are you possibly going to have some kind of inventory about musical training that is valid and not nonsensical when applied to all the different kinds of contexts where musical training might be comprised of many different kinds of things? Is this even doable? It's this kind of question that seems to get at something deep and hard to reconcile between psychology and anthropology.

**SF:** Well, I think that the classical anthropological approach to this question is to talk about how comparables cluster and how relationships are rendered. What are we comparing anyway, and in whose interest is it to compare something? How do we define a meaningful relationship as opposed to one that is less so? So again, I go back to this epistemological question: Comparison? Yeah sure, let's talk about it, but on what epistemological grounds can we talk about comparables and relationships? I think there are a number of necessary conversations yet to be fleshed out to ask why compare? Compare what? Related how? Related why? It seems to me that those questions are foundational to the place where music cognition can speak to cultural difference.

## What's the Payoff of Saying Something Is Universal?

**DL:** I wonder about your thoughts on the move that some psychologists want to make with the cross-cultural comparative work, which is to get at universals of music and underlying psychological mechanisms that might account for those, what is found musically across cultures.

**SF:** When I think about anthropology and I think about other fields and universals, it seems to me that it's a perfectly worthwhile exercise. I mean people have thought about it for a long time, but in the organization of sound, this is a variety of the question, What is pan-human and species-specific, and what has to be discussed in some other kind of evolutionary framework? What's in the background as I speak that question is recently rereading the review of musical protolanguage in W. Tecumseh Fitch's *The Evolution of Language* [2010] and recognizing an interdisciplinary synthesis that is linguistically, musically, and biologically sophisticated *and* is not afraid to

seriously listen to birds. So the universal question is always there, and it's always going to be important, but the potential now is to really raise the interdisciplinary bar for discussing the relational evolution of all forms of sonic interaction, and in doing so cognitively and comparatively, not simply privileging the musicological or linguistic framework.

I think is also important to pose the universal questions on more solid epistemological ground. What's the payoff of saying something is universal? I mean, what does it mean to say that the perceptual unit we call the octave is universal? Okay, that's really interesting, but tell me why I should be turned on by that conclusion, with or without deeper comparative experimentation. Or tell me what kind of counterexample would really turn you on. Or not. I'm simply returning to Gregory Bateson's memorable question—"how does difference makes a difference?"—and wondering whether we can create a more interesting cognitive-ethnographic conversation grounded in his postulates [Bateson, 2000, 2002].

I think about my dad, who was a professional pianist, who could do math and music in his head so fast it would astound me. I think about standing next to him, at his left side, as he played standard tunes with standard chord progressions, teaching me how to hear the relationship between II-V-I and III-VI-II-V. As he played he made me ride my left hand on top of his and hear and feel each one of those bass notes. This was when I was five or six years old. Or he'd sing the bass notes to me and I would have to pick them out and play them so I would be able to play with any Tin Pan Alley song. And I think about how he was computing a sonic macrosystem, but he also had an idea that if I knew that, that if I knew the relationship between II-V-I and III-VI-II-V in every key and in all kinds of popular song forms, then that would empower me to hear a certain way and to be able to play a certain way no matter what instrument I ended up playing. He knew that. He had this idea that there was a payoff for this little bit of computing that he was teaching me to do.

I keep coming back to simple experiential things like that when I think of learning about musical thought or musical systems. I can understand why, if I were a cognitive scientist, it would be really important to study this kind of thing. What does it mean to think in jazz, that you utilize the knowledge of these things in a certain kind of way, and they offer you profound and limitless possibilities for improvising? Negotiating that relationship between familiarity and the unknown is what the real joy and what the core of the jazz aesthetic are about [Berliner, 1994, 2020].

Suppose I was a cognitive scientist and my experimental population was jazz students trying to learn chord substitutions, and my questions were: What do they have to know about flat Vs? What do they have to know about 9s and 11s? What do they

have to be able to hear about 9 and 11? What do they have to hear about that in order to understand the kinds of possibilities of how you get back to, like standard types of questions, like how do you get back to I? Like how do you get to I if you don't have V? What else can you do? You are trying to get to I, and you understand that there's a series of possibilities that can substitute for V. Can it really be blues if it's just I-IV-I and a bunch of substitutions? This is all about question construction, but question construction in relation to a payoff.

**EM:** I think that's a really telling example of how thinking about the stakes and the payoff can help ground the conversation and move it forward.

**DL:** Yes, and finding common ground where projects share something and where it's okay for them to be different.

**SF:** If I encounter a particular kind of music for the first time, I think about a question like, What do people do to get back to I? I mean, if we want to hypothesize that there is something called a tonal center and that it might be universal, we want to have some kind of constructive dialogue about what one does within any system of musical knowledge to get back to it, no matter where else you've gone. What does it mean that we could possibly describe in cognitive terms a set of procedures and pathways, a kind of production of knowledge, which is the knowledge we would call "getting to I"? Why is it important? We want to relate the question of "Why is it important?" to the question "What are all the different ways you can do it with whatever musical materials you have available to you?" So when you ask about universals and that kind of thing, this is the sort of research I would cherry-pick, because if I see something about getting to I, it's like, "Yeah, that's interesting; I want to know about that." As a musician, and as somebody who does a different kind of research from the kind you all do, I would want to know about that. It's an example of where very pragmatic, very epistemologically rich, cognitively significant kinds of factors would come together, and where a meta-language or vocabulary for posing that across disciplinary bounds could be useful, so that we could have a serious conversation about this and think about how we would all work across experimental and natural historical divides to really talk about this. I think stuff like that is very cool.

[*Editors' note:* Nori Jacoby and Psyche Loui joined Deirdre Loughridge and Elizabeth Margulis for a second conversation on June 22, 2021, with a focus on two specific projects. One was a collaboration between Steven Feld and Ghanaian multi-instrumentalist Nii Otoo Annan, in which Nii Otoo improvised a set of variations as overdubs to a six-minute soundscape recording to yield an album—*Bufo Variations*

(VoxLox, 2008)—that “sound[s] the generative mathematics of many rhythm families” and provides a way of listening to Nii Otoo’s “histories of listening” (Feld, 2015, pp. 95, 102). The other project was a collaboration between Nori Jacoby and thirty-three other researchers who studied mental representations of rhythm by measuring how people tapped along to audio that began as a random “seed” rhythm created from a repeating cycle of three clicks but was iteratively adjusted to match the exact timing with which the participant tapped to it—in essence, a game of musical telephone with oneself (Jacoby et al., 2021).]

### Iterative Processes

**EM:** I was struck by the degree to which these kinds of iterative processes played a role in Nori’s paper and also in some of the projects described in your chapter on the Bufo Variations.

**SF:** Multitrack recordings started around the time I started to be a musician getting a bit of work in recording studios. I had an intuitive but not analytic understanding of the meaning of playback. And so I developed a fascination first as a mixture of a musician, player, and then recordist and analyst. And then, in 1974 in Paris, I met Simha Arom and became really fascinated with his early experimental techniques for using playback for analysis [Feld, 1976]. After many years and developments with his method, I think that many people have focused on the way he’s analyzed the music and thought about it, yet very few people picked up on how far out that experimental methodology was and how much it offered. So, in my own funny way, I’ve done lots of experiments with playback for a long time, bringing my studio and field knowledge together. When I met Nii Otoo and started studying with him, it was amazing, because it was like, wow playback, this is like someone giving you a window into their musical brain. What a gift.

**PL:** I think it actually opens so many more questions that an empirical psychologist might be curious about. Like how much are these recordings a result of your sensitivities, and your interactions with each other, and your trust in each other, and how much is it something that you might have when you’re an infant? I think it raises more questions than it answers. It gets at lots of intuitions, but I think we can go on to ask lots more questions about those intuitions, and where they came from, and how come they are there.

**SF:** I really agree with that. I really like to be amazed. I really love to be surprised. I love it when something happens that I can’t anticipate in any kind of way. My experience of



Accra over fifteen years continues to be a wonderful experience because there is a music called jazz that I think I know very well, because I've been a deep listener to it since I was young and I grew up with it, in many kinds of ways. It was, in a certain sense, my first music—in other words, my first musical language was improvisation. So I thought I knew quite a bit about improvisation, or embodied it as a result of many many years of improvising in contexts ranging from avant-garde classical new music to straight-ahead jazz to many other kinds of popular music. Then Accra and musicians like Nii Otoo made me rethink everything about jazz improvisation.

When I went to Accra I knew how people had previously studied and written about West African music. And I knew the ideological background: if one can articulate how the level of local complexity matches Western European art music, then one is implicitly not just analyzing a music but countering racism, and that is somehow politically good.

The downside of this is that it gives us a rigid idea of African musical traditions in order to create strict parallels to Western European art music practices. And where this falls apart politically is that it doesn't grant Africans the agency of being experimentalists. It would be like saying the only people I want to study a language with are the people who are the grammarians of the language, not its speakers. In West Africa you can meet the grammarians, of course. But you also meet someone like Nii Otoo, who is not just a percussionist but a prodigy bass player, guitar player, and singer who plays in everything from church bands to gospel bands, who is the drummer of choice for avant-garde groups, jazz groups that visit, all kinds of things. So the agency of music and musicians in West Africa is much more complex when you explore it with someone like Nii Otoo as your guide. So why would you want to focus on an experiment with a musician like Nii Otoo rather than somebody who is a master drummer at the University of Ghana? Sure, Nii Otoo taught me the basic variations on the standard bell patterns and timelines the way master drummers teach those things to their students. But he did not teach me as a grammarian; he taught me as a master who knows that the most creative thing about "tradition" is that it is unruly.

Nii Otoo taught me to be interested in what it is about his knowledge that would surprise me. And that encouraged me to interact musically with him to reveal the more surprising dimensions of his musical agency, rather than just focus on his deep mastery of principles of multipart interactions.

There is a tendency to want to make difference into this kind of master trope for everything. I really can't stand this ethnomusicological discourse about how it's all about difference. If you're a musician and you've played musics across different parts of the world and worked with many kinds of musicians, you just deeply know that this is bullshit. Musical difference, when I play with Nii Otoo, surely connects with the way

you, Nori, experimentally question core sensibilities and core perceptual things that are just ontologically species specific and human. Overdoing the question of difference is just like overdoing this issue of greatness, trying to make Western European art music commensurate to and equal with everything else. These two things have been ideologically pounded into the history of ethnomusicology, and they are actually two things that completely diminish the intellectual agenda and intellectual character of ethnomusicology.

**NJ:** I've actually had some passionate arguments with contemporary ethnomusicologists on those exact points. And I always try to convince them that a lot of big ideas are not about universals; they are about central issues in cognition, like what is the meaning of a concept or what kinds of words do people use to describe song or birdsong.

### Measurement and Experimentation

**NJ:** One thing that I have found very challenging is trying to understand what aspects of our lives contribute to different musical experiences. Experimentally, we have demographics, but these are low dimensional and reflect only the kinds of features that can be answered by simple questions. Another option is to analyze music, similar to what you describe in your paper, but this is still a very limited way to describe what actually happens in a musical performance. Do you have some ideas about how we could develop experimental methods to enrich the vocabulary with which we describe people's musical experience?

**SF:** Yeah, I mean that's fantastic! Look, if you want to measure the electrical potential of a crystal, you get a voltmeter. But everybody knows when you touch a voltmeter to a crystal, you change the electrical potential of the crystal. If you ask a physicist about this, or someone who's a rigorous experimentalist, they say it doesn't matter; all that matters is if you have a good voltmeter. Okay, well, what's the difference between the good voltmeter and the \$1 Radioshack voltmeter? The good voltmeter takes you deeper into the plus or minus of a measurement; it is going to be much more refined. It's going to be much more subtle. So in a sense, what we are talking about here is the possibility that we could get into the zone of having much better voltmeters.

I don't mean to oversimplify how much we can do in a rigorously controlled way that really addresses the subtlety of difference. So a new form of conversation would be between people who focus on subtlety, that is, people who focus on changing what kind of voltmeter we could have, and people who refine the voltmeter because of the idea that there are still necessary refinements that have to be made even on the side of

what is the core set of understandings we want to have about experience and listening and memory and cognition and so forth.

**PL:** So can I share this paper, Nori do you know this one? “Musical Friends and Foes” [Aucouturier & Cannone, 2017], I think it is actually closer to the kind of experience of two people improvising together, except the experimenter adds a dimension to it. The experimenter says, can you play conciliatory, or can you play trust? And so one person starts, and the other person improvises on top of them, and then the researcher’s role is to record everything, see whether independent third parties can afterwards decode from the interaction what they were trying to get at and then try to understand what acoustic properties or what musical properties went into that emergent interaction that gave it that meaning.

I really like that paper. There are very few like it. There are very few people in a position where they can recruit all these advanced avant-garde improvising musicians to do these studies and also have that kind of interest and care to try to understand these very subtle interactions. I think most of the field is still trying to debate why we have emotions or what are the bread-and-butter ways in which we can tease apart cognition, which is fine. But this is a more nuanced way.

**SF:** Well, I really agree with that. I mean it goes back to what I said at the beginning. The stuff that’s amazing to me is not writing articles about how the people who study Western European art music are wrong or people who say this or that about universals are wrong. The zone of amazing that I’m talking about is like getting the opportunity to really get close year by year, day by day, over a long period of time with a Nii Otoo . . . like now I take bass lessons with him. I know how to play the bass, but I am taking bass lessons with him because I want to learn bass from somebody who taught himself how to play the bass in an African context. I want to understand why that’s different. I mean, that’s amazing to me in terms of understanding what this knowledge of the hands is about. So this idea, for me, this has nothing to do with ethnomusicology versus musicology or music psychology versus anthropology. It just has to do with musicianship and understanding what musical knowledge consists of and how can I contribute something to whatever that conversation is about. What does it mean to know a music? What does it mean to know a music closely? What does it mean to feel and embody it?

**NJ:** There is something very interactive about a tradition like jazz, where you are generating something creative with a style that gives you unbelievable richness. Culture can be seen as some kind of process rather than as a conservative, static tradition.

**SF:** You know, you’ve nailed a really core problem. The term *culture* has been made brain dead. When I write about Nii Otoo, I am not writing about culture. I am writing

about the relationship between how knowledges are always being negotiated. He has a knowledge of time. If you want 6/4, you'll get it, but there's a lot more to West Africa than doing that and hearing underneath it where the beats are placed so that it pushes up against the next bar line. Okay, no big deal, we get it. You know, he's got that, but what else is there? . . . We have to talk about skill. . . .

**PL:** I feel like a lot of people do get into these local minima, right? I think that neuroscience gets into these like popularity contests, cognitive science gets into these popularity contests too.

**SF:** You're sounding like an ethnographer, Psyche!

**PL:** Oh, I'm learning from the best. But I do think that there are different kinds of structural pressures that shape the field because music cognition is a relatively young field. I got into the field as an undergrad because I wanted to know why V had to go to I, and music theory classes told me: it just does. Right, and then you start to read some papers that were coming out at the time, and there are these brain potentials that happen when V goes to I and when you put a Neapolitan six instead of a I or a Neapolitan six instead of a IV that came before the V; they look different, and that tells you something about expectancies and predictions, and that tells us something about meanings and expectations. That got me super interested and was kind of why I went to grad school, and then in postdoc times I was told, well, people want to know why music makes you smarter. If you keep studying why V goes to I, you will never get funded and never get a job, so instead you should study why music makes you smarter. I mean, I'm totally mischaracterizing my mentors, but there are these structural pressures for certain questions to be prioritized within a field. I'm not sure they're great, but they are what they are.

**SF:** You know, what you're saying reminds me of the 1970s when I was a linguistics graduate student and transformational grammar was the thing and MIT was Mount Olympus and everything had to emanate from the Chomskyan paradigm. I was kind of cheeky, and as students we were learning how to write rules for everything and turn everything in linguistics into mathematics. And so I get to the end of my rope one day and I said, "You know, you guys are acting like what's really at stake here is that the human mind needs to economize on storage space. Is there any empirical evidence for that?" Transformational linguistics formalized through mathematics all the different properties of forms of grammatical description, and that was an extraordinary intellectual advance, but it never really did ask or answer the question of what this idea of grammar says about the mind.

From a musical perspective, what do we have to contribute to the question "Does the mind economize on storage space?" What could we talk about, or how could we

talk about the idea of an economy of listening, an economy of mind. So when I'm fooling around with Nii Otoo, I'm thinking about, how much does this guy simultaneously think about 6 on 4 or 4 on 3 or 3 on 2, and what's the play, what's going on, how many metronomes can this guy keep happening in his mind and be tracking all these kinds of interactions taking place that I could possibly numerize or understand?

**NJ:** That goes back to the overdubbing, because the overdubbing allows us to analytically separate processes. If we can think about the question of the economy of the mind and see if we can somehow reduce it to the overdubbing process, then we have a degree of control over the process and can see it gradually building up in the mind of a person who is creating it.

**SF:** Well, I mean for me, it just raises the question of how useful Pro Tools is as a piece of laboratory equipment rather than a mixing console.

**EM:** I keep thinking about your foundational question about what constitutes knowing something about music. You're excited about knowledge that emerges out of repeated encounters making this music collaboratively with one person. How might that connect to the kind of abstracted knowledge of the sort that might come out of a scientific paradigm? It seems like you just drew an explicit link there in your questions around an economy of the mind. What are the space limitations? That's a certain kind of abstract thing to know about. So I guess my question here is around the possibility for a linkage between the kind of knowledge that you're pursuing and that kind of question.

**SF:** It goes back to the questions that you've asked and really addressed in what I consider to be a pragmatic and down-to-earth way in the paper that you participated in with Nori. Can one talk about the influences of culture, history, environment, listening preferences, listening patterns, listening backgrounds, and things like that, and not completely nuke core capacity with difference? Is it possible to deal seriously with difference *and* bracket its all-too-frequent use as an ideological submarine to bash into the idea of core capacities and core knowledges?

### **Culture and Relationality**

**SF:** The question I really want to ask is: how big is culture and how small is culture? I like your paper because it gives us some tools to think about that. That culture can be very very big, and we need to think about it in very very big ways in terms of the dynamic capacity for expansive agency—Culture with a capital C. But at the same time, we have to recognize that culture is in many cases more about the level of deep nuance in the

way of doing things, in the way of listening, in the way of understanding things—culture with a lowercase *c*.

It just happens that there are some people in the world who are only interested in that particular form of nuance and other people who are interested in the story of what that nuance and the persistence of that nuance and the power of that nuance have to do with the importance of the core that we're talking about, and understanding how to refine experiments and refine our discourse so we are not overwhelmed by culture and at the same time we are not diminishing it into a kind of default basket category of everything that's outside what we really want to understand about the mind or about knowing or about listening or about sound. I think that Lisa's little book [Margulis, 2018] gives a sense that the reason why there is much more to do is because the good questions are yet to be asked and to be explored. I think that's the generosity that's intellectually necessary in order for any kind of conversation to take place across disciplines.

**NJ:** Yes, it seems like one of the recurring ideas here is the interaction between details, nuance, and structure. I think that is very difficult to articulate: How exactly can we be very sensitive to details while keeping the big questions in view? How can we be more sensitive to and aware of the nuances? How can we go from the small nuances to the big ideas without losing both?

**SF:** I don't know. I am a worker, I'm not a shaman. I just consider myself a worker who learns things incrementally and tries to remain humble about it but at the same time tries to keep insight into those bigger questions I'm posing to you: Does the human mind need to economize on storage space? What level of subtlety or nuance are we talking about when we talk about culture? How do we need to define *culture* as really big and really small?

**PL:** I think that there's something really key here. I am not trying to answer Nori's question on behalf of Steven, that would be very silly, but I mean that trust is such a key component. Right? And Nori, I'm sure you're super familiar with this, but going into a different location and establishing the connections that you establish with the research participants. If they don't trust you, they are not going to give you the nuance that you're looking for, right? It reminds me of this gorgeous neuroscience study about the trust game. You can play these economic games where I give you some money and you invest that money and then you decide how much to give back to me, and if I play with someone who's trustworthy, over time I learn to trust them. They then showed the statistical contrast in brain activity between when you're looking at someone that you trust versus when you're looking at someone who consistently screws you over in the game. You get these reward system differences, and as you learn to trust

someone, there is a shift in the reward system activity [King-Casas et al., 2005], so that you become more attuned to their actions, you actually know what their actions are going to be, or you anticipate what their actions are going to be before they even do it, and I think that's what makes a successful musical interaction possible. I think that actually implementing that study would be really really hard, but probably Nori is at the forefront of folks who can do this.

**SF:** I love that. In Melanesia, there's a lot that's been written about exchange and gender and circulation. One of my first and most formative experiences working in Papua New Guinea was with the person who taught me the most about birds, who also taught me the most about song composition. This led me to constantly question why the people who are the most expert ornithologists are also the most expert composers. I mean, how does culture produce that? What kind of history of coevolution do I have to begin to grok in order to be able to even pose that question in some kind of empirically interesting way? So I go hunting with this guy, and we're looking at his traps and he's showing me this, because it's in the context of just hanging out with people and finding out about routine knowledges that all kinds of things happen, you learn about birds, you learn about the forest, ecology, and so forth. So I'm just hanging out with him while he is checking his traps. And he turns to me and says, "In your place, what do you do if another guy gives you two smoked marsupials?" So I look at the guy, and I've been there six or eight months and can barely speak the language well, and like a wiseass I say, "I give him two back." This is a version of Psyche's game. And the guy looks at me like, "What planet are you from, white man!" and he says, "I would give seven." Okay, welcome to New Guinea Sociology 101: if it doesn't grow, it's not a social relationship. Duhhh, I read all these books about this, so why am I not getting this? Okay, so one of the hardest things to adapt to when doing fieldwork in Melanesia is the idea of understanding the importance of inequality. If you want to be in good relationships with people, if you want to understand your place in the world, you have to understand that being owed a lot and owing a lot at the same time is a good way to be, that is *the* way to be. Okay, this is what I would say is interesting about culture. What does it mean to inhabit a body, what does it mean to inhabit an orientation to the world where being owed a lot and owing a lot and never thinking about getting the score to zero is the way you are in everything you do? That this is trust and this is security. This is like the social security system. This is why everybody knows: no food, no problem. Pigs trash your garden, no problem; you can be fed. So, in terms of thinking about the expressive capacity of people and the way in which this kind of fundamental orientation to the world really puts its mark on expressive capacity like, for example, in the production of poetics, or ceremonialism, or art making, or anything like that.

It's essential to know that getting to zero is not the game. The game is remaining productively unequal. Being productively unequal is a way of reimagining the relationship between generosity and security. This is exactly what Psyche is describing. It's like an extraordinary game in calibration, like how humans calibrate each other, how they tune each other, and we can use the word *trust*. I think that that is an important word in this, but it's also . . . I use the word *culture* because, for me, it's about the system of calibrations. It's about the core idea of relationality. Culture is like endless variations on the idea of relationality. What is this particular variation on relationality saying to us about what this place is, who these people are? What does it mean that the way you are about one thing is the way you are about everything, and that this is that way? So I think that an experiment like that, a game like that, I can imagine playing that game in New Guinea. I can imagine trust games as a really great way to do that kind of experimentation in a Melanesian context. People would love to play that game.

**NJ:** There is something also about this relationality that opens its way to understanding this ever-evolving process. That's something we really don't grasp very well in music cognition. We understand snapshots, but we still don't understand how things transform, and that is essential for tackling the issue we are talking about right now.

**SF:** Yeah. The thing that made me first start thinking about this question and this idea of relationality—or, to put it in big words, acoustemology as relational ontology—was this experience in New Guinea. In the world of the Melanesian people and the rain forest they live in, where I worked for twenty-five years, one never has the experience of unison. One never has the listening experience of unison. It just does not exist. My sister studied the socialization, the language socialization, of Bosavi children and learned that, for example, mothers never scold children about interrupting, and in fact, there isn't a word in the Bosavi language for interrupting [Schieffelin, 1990]. And when kids are preverbal, the way mothers and elder siblings deal with those kids in social contexts is to face the child, the preverbal child, outward into a group and, as people are speaking, go “eeehhhh” and move the child's body so that the child learns to overlap and interlock and alternate with other voices sonically. I've got a video of this, it's incredible. They become so tuned to overlapping, interlocking, and alternating, right? So overlapping, alternating, and interlocking is the world that you hear. I mean, that's the world of the forest, it's the world of everything around you. It not only becomes stylized and aestheticized in speaking, but it's also really deeply socialized. And so, of course, this idea that everybody can be talking at the same time, and in a society that's pretty much egalitarian in many ways, this becomes another kind of token of this type, a kind of relationality which is about owing and being owed, about everybody constantly negotiating the tense relationality of not being exactly equal but not being



above or really below because you're always just . . . it's just a game of moving sweet potatoes instead of moving money. So, what I started to listen to was a history of listening, of overlapping and alternating and interlocking, for which there is actually one term in this language. And when I started working with singers and started to learn how to sing, every time I would get too close and sing in unison, somebody would knock me off by jumping ahead or whatever. So I had to resocialize my whole sense of timing and tuning to be a split second ahead or a split second behind, and then I observed the missionaries trying to teach people to sing hymns in unison, and immediately it was all over the place, and the missionary's asking me, "Why are you here? These people are so unmusical, they can't even sing together." And I realize, this is culture, right? These people are constantly in this world of seven smoked marsupials in return for two, and it really does have something to do with the way they talk, and the way they sing, and the way they listen, and the way they are attuned to one another. Understood this way, culture is a kind of relationality which predisposes you to the stylization of interaction. So there it is, acoustemology is a relational ontology, but, yes, a lot of it is very nuanced, it's very micro.

The rain forest is the perfect place for doing experimental psych with that sort of thing. Here you see this kind of way in which it is; this kind of core way of being with the world becomes elaborated in every cultural modality—speaking, interacting, exchanging, hunting, relations between women and women, men and women, men and men. I mean, there are all these different ways we see culture as the way in which new threads get woven into the fabric. It seems to me that this is my local way of summarizing in an ethnographic snapshot Nori's critical and foundationally rich question: Is the culture big or is the culture small? Does small *c* culture trump big *C* Culture ever or always? Or vice versa? It's the weaving of the threads on top of the threads that's the interesting story here. But really, the exciting part for me is to read experimentalists ready to ask, and find new ways to grapple with, this critical question in a cognitive framework: where and how is culture/Culture the difference that makes a difference?

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### References

Aucouturier, J.-J., & Canonne, C. (2017). Musical friends and foes: The social cognition of affiliation and control in improvised interactions. *Cognition*, *161*, 94–108.

- Bateson, G. (2000). *Steps to an ecology of mind*. University of Chicago Press.
- Bateson, G. (2002). *Mind and nature: A necessary unity*. Hampton Press.
- Berliner, P. (1994). *Thinking in jazz: The infinite art of improvisation*. University of Chicago Press.
- Berliner, P. (2020). *The art of Mbira*. University of Chicago Press.
- Feld, S. (1976). The use of play-back techniques in the study of oral polyphonies. *Ethnomusicology*, 20, 483–519.
- Feld, S. (2012). *Sound and sentiment: Birds, weeping, poetics, and song in Kaluli expression* (3rd ed.). Duke University Press.
- Feld, S. (2015). Listening to histories of listening: Collaborative experiments in acoustemology with Nii Otoo Annan. In G. Borio (Ed.), *Musical listening in the age of technological reproduction* (pp. 91–104). Routledge.
- Feld, S., & Fox, A. A. (1994). Music and language. *Annual Review of Anthropology*, 23, 22–53.
- Fitch, W. T. (2010). *The evolution of language*. Cambridge University Press.
- Jacoby, N., Polak, R., Grahn, J., et al. (2021). Universality and cross-cultural variation in mental representations of music revealed by global comparison of rhythm priors. <https://psyarxiv.com/b879v>.
- King-Casas, B., Tomlin, D., Anen, C., Camerer, C. F., Quartz, S. R., & Montague, P. R. (2005). Getting to know you: Reputation and trust in a two-person economic exchange. *Science*, 308(5718), 78–83.
- Margulis, E. H. (2018). *The psychology of music: A very short introduction*. Oxford University Press.
- Schieffelin, B. B. (1990). *The give and take of everyday life: Language socialization of Kaluli children*. Cambridge University Press.



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