

Intelligible Pitch: A Shared Topos in Mid-Twentieth-Century Ethnomusicology and Anthropological Linguistics

Judith Kaplan, *Integrated Studies Program/History and Sociology of Science,
University of Pennsylvania, USA*

ABSTRACT

Focusing on mid-twentieth-century exchanges between ethnomusicology and anthropological linguistics, this essay explores the challenges and special insights that came with the study of pitch variations in vocal communication. It surveys the interconnected material and conceptual resources that were available to researchers during this period, describes a number of attempts to discipline sounds for further analysis, and addresses the key conundrum of song in tonal languages. To what extent were researchers compelled by the substantive overlap between musical and linguistic phenomena, and to what extent did they seek to analogize models from one domain to the other? Pursuing this question reveals that sound fell between diverse research orientations that do not conform straightforwardly to “science” and “the humanities.” Methodologically, it was subject to variously formalist and contextual approaches; ontologically, it was recruited to the contiguous domains of fixed and free vocal production. These observations, along with an emphasis on language use in the disciplines, shed new light on intellectual cross-currents and claims to specific disciplinary competence during the 1950s and 1960s.

Art and the equipment to grasp it are made in the same shop.

—Clifford Geertz, “Art as a Cultural System”

In her 1974 survey of the research situated at the frontier between music and language, ethnomusicologist Norma McLeod drew attention specifically to archives of recorded speech and song.¹ Discussing the legacy of Boasian anthropology, she found

1. Norma McLeod, “Ethnomusicological Research and Anthropology,” *Annual Review of Anthropology* 3 (1974): 99–115. For further discussion of sound archives in Americanist anthropology, see Judith Kaplan and Rebecca Lemov, “Archiving Endangerment, Endangered Archives: Journeys

that a commitment to pursuing—and preserving—culture through the arts “led many of Boas’ students not only to take a kind view of music, but to actively collect it whether they knew how to handle it or not.”² This motivated the extensive collection of voice recordings from the dawn of the twentieth century that, in her view, were “sufficiently meticulous to allow a modern scholar to work successfully with them.”³

This essay has its origins in a related observation, namely, that these sound archives have tended to gather *people*, not just sounds. More to the point, they have sustained interactions between individuals who have since been remembered as musicologists or linguists, including Charles Voegelin, George Herzog, Roman Jakobson, George Trager, Dwight Bolinger, George List, and Alan Lomax. How did researchers associated with these different disciplines listen to the archive? What did it mean to those who contributed their voices? What epistemic and inscriptional strategies did they employ to make these sounds tractable for further analysis? What challenges did they face in doing so?

Guided by these questions, my essay focuses on Indiana University in Bloomington (IU), an important site for the study of intelligible pitch in the mid-twentieth century. The essay shows that IU provided exceptional support for research on diverse human groups and their symbolic productions. It further demonstrates how this setting fostered rich interdisciplinary exchange.⁴ Theoretical models from twentieth-century linguistics, for example, were used by ethnomusicologists for the analysis of song. As it appeared to Steven Feld, a sound anthropologist who was just beginning graduate school in the early 1970s, ethnomusicologists adopted the stance that “everything is

through the Sound Archives of Americanist Anthropology and Linguistics, 1911–2016,” *Technology and Culture* 60, no. S2 (2019): S161–S187.

2. Franz Boas, an exceedingly influential Americanist anthropologist, also made recordings of his own. His wax cylinder recordings of Kwakwaka’wakw musicians from the 1893 Columbian Exposition in Chicago are widely known, and they are held today by the Archives of Traditional Music at Indiana University.

3. McLeod, “Ethnomusicological Research,” 102. On the Boasian tradition, see Regna Darnell, *Invisible Genealogies: A History of Americanist Anthropology* (Lincoln: University of Nebraska Press, 2001).

4. Indiana University, for example, is home to the oldest department of folklore in America, founded in 1948—the same year Herzog brought his collection of “primitive” recordings to campus. Bloomington’s WWII-era Army Specialized Training Program (1943–46), the largest such program in the country, seeded rich resources for linguistic research and area studies. On the kinds of metadisciplinary questions touched upon here, see, e.g., James Turner, *Philology: The Forgotten Origins of the Modern Humanities* (Princeton, NJ: Princeton University Press, 2014); Rens Bod, *A New History of the Humanities: The Search for Principles and Patterns from Antiquity to the Present* (Oxford: Oxford University Press, 2013); Lorraine Daston and Glenn Most, “History of Science and History of Philologies,” *Isis* 106, no. 2 (2015): 378–90.

semiotics,” including “language, music, magazines, clowns, breakfast, haircuts,” indeed “all human behavior.”⁵ Thomas Sebeok’s Research Center for Language and Semiotic Studies (1956–65) at IU was a motive force behind this extension.⁶ At the same time, musical notation was borrowed by linguists to capture intonational patterns of discursive speech.⁷ Where these conceptual and representational strategies proved insufficient to the task of disciplining the unruliness of sound—its ephemerality, ambiguity of reference, and expressive nature—researchers proposed ambitious systems of classification. From the taxonomy of vocalizations suggested by the ethnomusicologist George List to Feld’s efforts to communicate ethnographic findings through the medium of tape editing, I show that twentieth-century developments need to be understood in terms of a release of the speaking, singing voice from textual exemplars and Western standards.⁸

This essay, in other words, examines some of the myriad connections—methodological, material, historical—between the study of music and linguistics.⁹ Notably, work in both fields has embraced scientific and humanistic discourses in varying combinations over time. Sound fell between diverse research orientations that do not narrowly conform to stereotypes about “science” and “the humanities.” Methodologically, it was subject to variously formalist and contextual approaches. Formal representations enjoyed a high level of prestige during the 1950s and 1960s, justifying extensive analogizing from linguistics to the study of music. For the anthropologists Steven Feld

5. Steven Feld, “Linguistic Models in Ethnomusicology,” *Ethnomusicology* 18, no. 2 (1974): 202.

6. See the records of the Research Center in Anthropology, Folklore, and Linguistics in Sebeok’s papers in the University Archives, Indiana University. See also their exhibition “Thomas A. Sebeok and the Scientific Self” (a thumbnail sketch is provided at <https://libraries.indiana.edu/thomas-sebeok-and-scientific-self>).

7. The work of Dwight Bolinger is discussed in this regard below, though examples are numerous. See also Daniel Jones and Kwing Tong Woo, *A Cantonese Phonetic Reader* (London: University of London Press, 1912), ix. In his 1955 *Manual of Phonology* (Baltimore: Waverly), Charles Hockett develops an extensive analogy between phonology in practice and an orchestral score, with careful attention to different systems of notation.

8. For a complementary and primarily French trajectory, see Haun Saussy, *The Ethnography of Rhythm: Orality and Its Technologies* (New York: Oxford University Press, 2016); see also Judith Kaplan, “Language Science and Orientalism in Imperial Germany” (PhD diss., University of Wisconsin-Madison, 2012); Robert Brain, *The Pulse of Modernism: Physiological Aesthetics in Fin-de-Siècle Europe* (Seattle: University of Washington Press, 2015).

9. See Alexandra Hui, Julia Kursell, and Myles Jackson, “Music, Sound, and the Laboratory from 1750 to 1980,” *Osiris* 28, no. 1 (2013): 1–11; Brain, *Pulse of Modernism*, chap. 3. On putative historical connections, see Gary Tomlinson, *A Million Years of Music: The Emergence of Human Modernity* (New York: Zone Books, 2015) and its references to the evolutionary trajectory from music to language. On methodological links, see Judith Becker and Alton Becker, “A Grammar of the Musical Genre *Srepegan*,” *Asian Music* 14 (1982): 30–73.

and Aaron Fox, this impulse was part of “larger 1950s philosophical or information-cybernetic preoccupations with logical communicational models of music and language.”¹⁰ Sensitivity to cultural context thus appeared to be a challenge rather than an opportunity for studies of the human voice before the 1970s.¹¹ Ontologically, sounds moved between the contiguous domains of fixed versus free vocalizations. Whereas nineteenth-century figures in the “science of language” invoked the unwilling nature of linguistic utterance as a cornerstone of the discipline—differentiating their research object from the philological study of literary and artistic productions—the essay shows how distinctions between what was fixed or free, “casual” or “noncasual” language, speech or song continued to be open to empirical scrutiny and theoretical debate. The overlaps between ethnomusicology and anthropological linguistics thus transcend even the deepest metadisciplinary divide.¹²

Such issues of disciplinary instability and transfer are developed in stages below. The next sections survey the material and conceptual resources that were available to mid-twentieth-century researchers. Following this, I describe a number of attempts to categorize, for subsequent disciplinary analysis, sounds that fell between speech and song. The penultimate section focuses on the conundrum of song in tonal languages. Here researchers have asked, how does tone map onto tune, and why do these systems sometimes diverge? In the conclusion, I take a step back to consider the broader significance of imposing Western discourses on the study of decidedly “World” musics and languages in the postwar era.

MATERIAL RESOURCES

“The tape recorder was always something that I wore,” Steve Feld recalled in a 2004 interview devoted to his more than three decades of commitment to “doing anthropology in sound.”¹³ As an undergraduate at Hofstra University during the late 1960s, Feld was captivated by his teacher Colin Turnbull’s recordings of the Ituri Rainforest and the Mbuti peoples of central Africa. It was love at first audition—the beginning of a career positioned between music and language, dedicated to the cultural meaning and epistemology of sound. When the time came to think about graduate school and

10. Steven Feld and Aaron Fox, “Music and Language,” *Annual Review of Anthropology* 23 (1994): 35.

11. McLeod, “Ethnomusicological Research,” 105.

12. Though the present analysis is restricted to sound, song *texts* have been “arguably the most widely used musical data throughout the social sciences” (Feld and Fox, “Music and Language,” 31).

13. Steve Feld and Donald Brenneis, “Doing Anthropology in Sound,” *American Ethnologist* 31, no. 4 (2004): 465.

professionalization, Feld recounted to interviewer Donald Brenneis, IU offered more opportunities to work with sound than anywhere else. At that time, the campus was home to the Archives of Traditional Music, as well as the Archives of the Languages of the World.

Carl Voegelin, a specialist in Algonquian and Uto-Aztec languages, was responsible for introducing Feld to the theoretical framework he would later use to think about sound. “It was Carl,” Feld said, “who made me think about how an anthropology of sound would have to grapple with poetics, with the space between language and music.”¹⁴ This involved a reckoning with contemporary research in paralinguistics, prosody, and gradience—issues discussed below; it required careful scrutiny of the work of Boas, Edward Sapir, and Roman Jakobson. Slipping into the shoes Feld wore as a graduate student in Bloomington, we can identify material and conceptual resources that were available to—if not necessarily taken up by—researchers interested in the sonic frontier between music and language during this period.¹⁵

As for the materials, the early history of sound archiving, whether primarily musical or linguistic in nature, was tightly connected to the anthropological investigation of non-Western groups.¹⁶ Efforts to preserve and compare sounds across cultures motivated the collection of numerous phonograph recordings, and the founding of archival repositories for them, in the decades around 1900. Anthropologist Jesse Walter Fewkes stands at the beginning of this tradition in Americanist research. In 1890, together with psychologist Benjamin Ives Gilman, Fewkes made extensive recordings of Zuñi orators in Arizona and Passamaquoddy vocalists in Maine. As Fewkes wrote for the *American Naturalist* that year, “The phonetic methods now in use are good, but phonograph records are easier to make and more satisfactory.”¹⁷ Not only was the phonograph expedient, it allowed researchers to capture sounds that were otherwise hard

14. Feld and Brenneis, “Doing Anthropology in Sound,” 463.

15. I am grateful to an anonymous reviewer for pointing out a common path *not* taken by Feld: the move from formalist analyses to cognitive ones in the subsequent development of ethnomusicology. See, for instance, Judith Becker, “Ethnomusicology and Empiricism in the Twenty-First Century,” *Ethnomusicology* 53 (2009): 478–501. Feld alludes to this trajectory by way of differentiating his own position, in the essay “Communication, Music, and Speech about Music,” *Yearbook for Traditional Music* 16 (1984): 1–18; he writes, “Rather than posit only psychological constants as the deep source enabling music to express emotions, we must posit also the centrality and complementarity of social experience, background, skill, and necessity as the constructs which shape perceptual sensations into conceptual realities” (6).

16. See Carolyn Birdsall and Viktoria Tkaczyk, “Listening to the Archive: Sound Data in the Humanities and Sciences,” *Technology and Culture* 60, no. S2 (2019): S1–S13.

17. Jesse Fewkes, “Additional Studies of Zuni Songs and Rituals with the Phonograph,” *American Naturalist* 24 (1890): 1097–98.

to transcribe. Two years later, the pair went on to make further recordings of Chinese musicians, mounting an explicit comparison with Western systems.¹⁸

Early phonograph recordings like these were gathered in institutional settings such as Ferdinand Brunot's Archives sonores in Paris and Wilhelm Doegen's Lautarchiv in Berlin, collections that subsequently informed developments at IU.¹⁹ Significantly, people, as well as research materials, circulated internationally among sound archives, sharing their knowledge and their expertise in new recording technologies. George Herzog, a leading ethnomusicologist between the 1930s and the 1950s, was one key figure linking sound archives on both sides of the Atlantic.²⁰ Following an assistantship with Erich von Hornbostel at the Berlin Phonogramm-Archiv, Herzog was recruited by Boas to Columbia University, where he founded the Archives of Folk and Primitive Music in 1939. He brought the collection with him to Bloomington some nine years later, where it eventually swelled to include the Archives of the Languages of the World.

With a \$60,000 grant from the Ford Foundation in 1957—a striking reminder of the close connection between linguistics and international politics during the postwar era—the archives undertook the construction of “seven air-conditioned and partly sound-proofed recording rooms suitable for use by a linguist working with an informant or for two or three linguists listening to and transcribing tapes; also, an air-conditioned tape-storage room and office.”²¹ Moreover, the funds enabled the purchase of “some twenty-five tape recorders for use in the Archives,” where speakers of “World” languages could be interviewed and tapes on loan could be copied. Recorders were also made available to graduate students and faculty spending summers at the university's summer field station hosted by the Museum of Northern Arizona in Flagstaff. Magnetic recording thus enabled linguists to work in field settings as well as the studio. It was a

18. Alexander Rehdig, “Wax Cylinder Revolutions,” *Musical Quarterly* 88 (2005): 131.

19. On the Lautarchiv, see, e.g., Judith Kaplan, “‘Voices of the People’: Linguistic Research among Germany's Prisoners of War during World War I,” *Journal of the History of the Behavioral Sciences* 49, no. 3 (2013): 281–305. On Brunot's Archives sonores in Paris, see the introduction to this theme issue.

20. Carol Inman, “George Herzog: Struggles of a Sound Archivist,” *Resound: A Quarterly of the Archives of Traditional Music* 5, no. 1 (1986): 1–5.

21. “Report on the Development of an Archive of the Languages of the World, Anthropology Department, Indiana University,” Indiana University Archives, Archives of the Languages of the World 1962–1963, folder C304.12. The disciplinary background here has roots in the comparative philological study of Indo-European languages and early twentieth-century fieldwork imperatives in the Americanist tradition. The prioritization of spoken over textual language corresponded to a shift in emphasis from diachronic to synchronic priorities in this period and rising interest in the structural description of language at various levels. American linguistics surged during and after World War II as recognition of its strategic significance garnered additional funding and institutional support. The period under scrutiny in this essay additionally witnessed the rise of transformational-generative grammar.

stable archival medium that allowed listeners to easily rewind and listen to samples again and again, enabling a more precise description and analysis of sonic phenomena.²²

The collections that resulted from these efforts included recordings of both speech and song, and they were a cornerstone of Carl Voegelin's graduate teaching. Voegelin's archive provided his students with a "mutually beneficial arrangement," sustaining numerous masters and doctoral theses and helping students to secure federal funding in exchange for their labor.²³ In this way, the archives anticipated the institutionalization of anthropological linguistics at IU. Material investments, specifically in tape, were of considerable significance to the discipline, and they provided the young Steve Feld with an opportunity to contemplate both the concrete overlap of musical and linguistic phenomena as well as the theoretical similarities between them. At the same time, one might argue that the conceptual tool kit of linguistics conferred a material advantage on ethnomusicologists seeking to obtain funding during the period, lending support to the co-productionist dictum that "knowledge and its material embodiments" (in this case, recordings or publications) "are at once products of social work and constitutive of forms of social life."²⁴

CONCEPTUAL RESOURCES

Feld explored the connection between music and language in a paper he wrote for a seminar with Voegelin on linguistic anthropology during the academic year 1972–73.²⁵ There, he pointed to the growing interest in the application of linguistic models to the description and analysis of ethnomusicology during the late 1950s and early 1960s. This, he claimed, had derived from an impulse to subsume language and music in a higher category of human communication.

Generally speaking, Feld found exemplars of this move—notably, the work of Bruno Nettl and Charles Seeger—to be undertheorized with respect to the nature of music, and insufficiently empirical with respect to musical practice.²⁶ While my purpose here

22. See Kaplan and Lemov, "Archiving Endangerment, Endangered Archives," on the Voegelins' conception of tape; for a more general historiographic reflection on tape, see Andrea F. Bohlman and Peter McMurray, "Tape: Or, Rewinding the Phonographic Regime," *Twentieth-Century Music* 14, no. 1 (2017): 3–24.

23. "Report on the Development of an Archive of the Languages of the World, Anthropology Department, Indiana University," Indiana University Archives, Archives of the Languages of the World 1962–1963, folder C304.12.

24. Sheila Jasanoff, "The Idiom of Co-production," in *States of Knowledge: The Co-production of Science and Social Order*, ed. Sheila Jasanoff (London: Routledge, 2004), 2.

25. Feld, "Linguistic Models."

26. Bruno Nettl, "Some Linguistic Approaches to Musical Analysis," *Journal of the International Folk Music Council* 10 (1958): 37–41; Charles Seeger, "On the Moods of a Music-Logic," *Journal of*

is not to evaluate his argument, it does reflect a core concern of the present theme issue: the scholarly awareness of language use. Part of what Feld was diagnosing in the midcentury literature on patterned sound communication was a tendency to decontextualize observations of human behavior and to present them in formal language.²⁷ This was, to put it bluntly, a tendency to make linguistics and musicology read more scientifically by isolating sound from the situations in which it might be produced or encountered. One commentator cited by Feld described the reciprocal impact of structuralist models and academic prose by analyzing Claude Lévi-Strauss's well-known essay on Ravel's *Boléro*: Lévi-Strauss contends "that music and myth function the same way. . . . [H]is analysis of myth proceeds along the lines of an orchestral score."²⁸

Feld developed such criticisms because Voegelin had given him a broad grounding in linguistics and poetics—the latter constituting "the space between language and music."²⁹ There was a strong precedent for thinking along these lines in Bloomington; indeed, Roman Jakobson had famously set out the connection between linguistics and poetics in his concluding commentary at the 1958 Indiana Conference on Style in Language.³⁰ Sponsored by the Social Science Research Council's Committee on Linguistics and Psychology, which had been established in response to the "rebirth of interest in communication" during the early 1950s, the conference represented an ambitious attempt to unite anthropologists, folklorists, linguists, literary critics, philosophers, and psychologists in the joint investigation of style, literature, and poetics.³¹ Growing out

the American Musicological Society 13 (1960): 224–61. See also Fred Lerdahl and Ray Jackendoff, *A Generative Theory of Tonal Music* (Cambridge, MA: MIT Press, 1996).

27. Confirming this point, see Steven Feld, "Sound Structure as Social Structure," *Ethnomusicology* 28 (1984): 478–501. He differentiates the two approaches, writing, "I think we need to pioneer a qualitative and intensive comparative sociomusicology, one without reified and objectified musical and social structural trait lists, without unsituated laminations of variously collected and historically ungrounded materials" (385).

28. Jean-Jacques Nattiez, "What Can Structuralism Do for Musicology?," paper presented at the 1972 meeting of the Society for Ethnomusicology, Toronto; quoted in Feld, "Linguistic Models," 203.

29. Feld and Brenneis, "Doing Anthropology in Sound," 463.

30. This talk was subsequently published as "Linguistics and Poetics" in the proceedings volume, *Style in Language*, ed. Thomas Sebeok, 350–77 (Cambridge, MA: MIT Press, 1960).

31. C. E. Osgood, "A New SSRC Committee on Linguistics and Psychology," *American Psychologist* 8, no. 5 (1953): 206. Osgood's account of the disciplines circa 1950 is fascinating: "Evolving as specialists within language departments, linguists have generally found professional organization within the humanities and have participated in research and planning groups sponsored by foundations other than those supporting the social sciences. One exception to this has been the close and fruitful collaboration among linguists and anthropologists; another was two conferences between linguists and information theorists held recently at the Massachusetts Institute of Technology; and yet another was the Interdisciplinary Summer Research Seminar on Linguistics and Psychology" (206). See also Thomas Sebeok, "Introduction," in *Style in Language*, ed. Thomas Sebeok (Cambridge, MA: MIT Press, 1960), 1.

of Sebeok's long-standing teaching collaboration on campus, both style and poetics were crucially framed as manifestations of human *behavior*. Not only did members of the conference reflect on stylistic behavior in the sources they studied, they were also highly conscious of their own language use. "Everything that was said was recorded on tape," Sebeok boasted in his introduction to the proceedings that were published two years later. And "a deliberate and self-conscious attempt was made to initiate a departure from the perpetual humanistic engagement in the solution of a subtle and elusive puzzle—the fluid and dissonant notion of style—by offering an opportunity for experts in philosophic speculation to commingle . . . with men of scientific temperament . . . [and] to bring together some whose primary concern is with the systems of accepted norms in relation to which we speak and write—in a word, tradition—with others who are more fascinated by problems of method."³²

Jakobson saw his contribution as an effort to "vindicate the right and duty of linguistics to direct the investigation of verbal art in all its compass and extent."³³ Thus, he posed a direct challenge to academic specialization on the basis of supposedly distinct research objects—the "'casual' designless nature" of the linguist's object as opposed to the "'noncasual' purposeful character of poetic language."³⁴ This paper was Jakobson's first full articulation of his theory of the six functions of language, the poetic function assuming center stage.³⁵ It also highlighted the emotional register of vocal communication and asserted the tight connection between sound and meaning—a challenge to the idea that human language was characterized by the arbitrary relationship between linguistic form and semantic content.³⁶ As Jakobson concluded, "Poetry is not the only area where sound symbolism makes itself felt, but it is a province where the internal

32. Sebeok, "Introduction," 4.

33. Jakobson, "Linguistics and Poetics," 377.

34. *Ibid.*, 351. See also C. F. Voegelin, "Casual and Noncasual Utterances within Unified Structure," in *Style in Language*, ed. Thomas Sebeok (Cambridge, MA: MIT Press, 1960), 57–68.

35. The six functions were anticipated in such earlier writings as Jakobson's 1952 presentation "Results of a Joint Conference of Anthropologists and Linguists" and his 1956 research essay "Description and Analysis of Contemporary Standard Russian." See Roman Jakobson, *Selected Writings: Word and Language*, vol. 2 (The Hague: Mouton, 1971), 130–31, 146, 555–61. See Linda Waugh, "Preface to the Second Edition," in Roman Jakobson and Linda Waugh, *The Sound Shape of Language* (Berlin: Mouton de Gruyter, 2002), 1. The six functions are the emotive (expressive), the conative (focused on the addressee), the referential (focused on things in the world), the metalinguistic (focused on the underlying code), the phatic (focused on standardized social use), and the poetic (focused on the message itself). On Prague Circle functionalism, see Dell Hymes, *Foundations in Sociolinguistics: An Ethnographic Approach* (Philadelphia: University of Pennsylvania Press, 1974), 5–6.

36. See, e.g., Charles Hockett, "The Origin of Speech," *Scientific American* 203 (1960): 88–111.

nexus between sound and meaning changes from latent into patent and manifests itself most palpably and intensely.”³⁷

This opened up new research avenues on the metrical and prosodic structure of language, and sustained functionalist interest in what became known as the ethnography of communication.³⁸ The emphasis on poetics was particularly important for the study of languages without writing or codified grammars. For one linguistic anthropologist working in this tradition, the key take-away was that “poetry [and by extension popular song] is the grammar of unwritten languages.”³⁹ This claim suggests that interdisciplinary investments in sound in the postwar era restored some kind of trans-historical evidentiary foundation to a field, linguistics, that had turned away from philology a generation before.

Jakobson is known for having facilitated the transfer of structuralist linguistics to other disciplines, particularly through his relationship with Lévi-Strauss. In the words of his commentary at IU, “many poetic features belong not only to the science of language but to the whole theory of signs, that is to general semiotics,” supporting the view that “language shares many properties with some other systems of signs or even with all of them.”⁴⁰ This recalls Feld’s professional autobiography, especially his readings under Voegelin in the domain of paralinguistics.

George Trager set forth the scope and aims of paralinguistics, which Feld studied under Voegelin, in a programmatic statement that engaged a similarly broad conception of semiotic communication.⁴¹ Over the course of a long career that spanned many institutions, Trager became affiliated with the International Auxiliary Language Association, founded *Studies in Linguistics*, and presided over the Linguistic Society of America.⁴² Taking as its focus the study of all nonverbal patternings of the speaking voice, paralinguistics offered, among other things, a systematic approach to vocal “tone.”⁴³ Trager derived his theory initially from the study of recordings made in the course of “psychotherapeutic interviews” and extended it to the analysis of speakers of indigenous languages

37. Jakobson, “Linguistics and Poetics,” 373.

38. See Dell Hymes, “The Ethnography of Speaking,” in *Anthropology and Human Behavior*, ed. Thomas Gladwin and William C. Sturtevant (Washington, DC: Anthropology Society of Washington, 1962), 13–53.

39. Bruce Mannheim, “Popular Song and Popular Grammar, Poetry and Metalanguage,” *Word* 37, nos. 1–2 (1986): 70.

40. Jakobson, “Linguistics and Poetics,” 351.

41. George Trager, “Paralanguage: A First Approximation,” *Studies in Linguistics* 13 (1958): 1–12.

42. For biographical information on Trager, see A. Kaye, “Trager, George L. (1906–1992),” in *Encyclopedia of Language and Linguistics*, 2nd ed. (Amsterdam: Elsevier, 2006), 15–17.

43. Trager, “Paralanguage,” 8.

	spread lips	puckered lips	dental	alveolar	palatal	dorsal	glottal	velic	bronchial
Closure and release	P	P _•	T	T	C	K	ʔ	V	θ
Continuant	Φ	Φ _•	κ	S	ϕ	X	H	⊗	⊗
Closed-lip nasal		M							
Open-lip nasal		N							
Lateral		L							
Trill		R							
Vowel-like-higher		E							
lower		A							
Inspiration		ʔ							
Expiration		ʔ							
Voiced		V							
Voiceless		V̄							
Clicked		ɔ̣							
Zero-segregate		ɔ̣							

Diagram annotations:
 - A bracket on the right side of the 'Continuant' row is labeled "combined with".
 - An arrow points from this bracket to the 'Lateral' and 'Trill' rows.
 - An arrow points from the 'Expiration' row to the text "are modified by".
 - An arrow points from the 'Voiced' and 'Voiceless' rows to the text "are modified by".

Figure 1. Selection from George Trager's notation system, described as something to be used "more or less like regular phonetic symbols." Source: Trager, "Paralanguage," 11.

of the Americas.⁴⁴ He proposed a classificatory system that enabled the rigorous analysis of three types of extralinguistic vocalizations—intensity, pitch height, and extent⁴⁵—and detailed the novel representational system that research along these axes seemed to require (fig. 1).⁴⁶

44. Trager wasn't alone among linguists in his engagement with the psychiatric interview. See also Robert Pittenger, Charles Hockett, and John Danehy, *The First Five Minutes: A Sample of Microscopic Interview Analysis* (Ithaca, NY: Paul Martineau, 1960). Here, too, was a highly detailed notation system, utilizing a Dutch-door book format, for capturing every sound created within the confines of such an interview as an aide to diagnosis. This example complicates the formalist/contextualist binary used throughout this essay somewhat. To be sure, the authors attempted to capture every detail of the event. At the same time, however, they assumed that individual differences could be subsumed in an "overall-pattern" system of transcription. See also the introduction to Ray Birdwhistell, *Kinesics in Context* (Philadelphia: University of Pennsylvania Press, 1971), in which he argues that "body motion is a learned form of communication, which is patterned within a culture and which can be broken down into an ordered system of isolable elements" (xi). This approach, like Hockett's, emphasizes decipherment over relationship, demonstrating that "context" could both be contained within the formalism or seen as an alternative to it.

45. Trager, "Paralanguage," 2; see also George Trager, "Taos III: Paralanguage," *Anthropological Linguistics* 2, no. 2 (1960): 24–30.

46. "The number of different noises . . . led the present writer to establish a table, something like those used in phonetics. The classification turns out to be multi-dimensional, requiring special arrangement if depicted on paper. One dimension is that of articulating organs or areas, with closure and release, or as continuant; then comes a dimension of manners of articulation, including vowel-like resonance, and then there is a final dimension dealing with voice and with clicking" (Trager, "Paralanguage," 7).

Methods were spelled out in relation to Trager's ongoing fieldwork with Taos speakers, recorded for the Archives of the Languages of the World:

The data were to be secured by recording on tape various kinds of utterances: free conversation, speeches, stories—anything the informants could be induced to talk about. All the accompanying circumstances—external noise, distractions, persons present, weather conditions, and so on—were to be noted. Everything recorded in this way was then to be analyzed in the presence of the informant, and the whole process of analysis was to be recorded, so that all comments, opinions, and “folk analyses” would be part of the record. . . . [N]o attempt was made to create artificial conditions of silence and isolation beyond the usual kind of admonitions to the author's children that work was going on and that excess noise should be avoided. On the tapes there are, therefore, all kinds of extraneous noises: telephone bells, children's cries, traffic noises, dogs barking, and others. It was summer time, windows were open, and the conditions were “natural” in every possible way.⁴⁷

This description is not too different from Feld's characterization of his own naturalistic practice of “doing anthropology in sound.”

Gradience was the last element Feld recalled from his training under Voegelin that I will consider here. It is associated most prominently with the work of Dwight Bolinger.⁴⁸ Simply put, gradience offers a framework for analyzing continuous phenomena in language, as opposed to the kind of strictly dichotomous categorization that took hold among the generation of American structuralists who followed Leonard Bloomfield. The idea has been applied to grammar and other levels of linguistic analysis, but Feld would have been most impressed with Bolinger's exploration of phonological gradience, the main focus of *Generality, Gradience, and the All-or-None* (1961). Here, Bolinger discusses the interpretation of a graded increase in loudness, length, and intonation.⁴⁹

Like many linguists, Bolinger studied music extensively—he would have gone on to study at a conservatory had it not been for a shortage of funds.⁵⁰ He eventually parlayed his undergraduate interests in Spanish and music into a career in linguistics, and is remembered especially for his contributions to the study of intonation—not only

47. Trager, “Taos III,” 25. For a rich comparison, see Rehding, “Wax Cylinder Revolutions,” on “Recording ‘Nonsense’” (128–33).

48. See Bas Aarts, “Conceptions of Gradience in the History of Linguistics,” *Language Sciences* 26, no. 4 (2004): 343–89.

49. Dwight Bolinger, *Generality, Gradience, and the All-or-None* (The Hague: Mouton, 1961).

50. Robert Stockwell, “Dwight Bolinger,” *Language* 69 (1993): 101.

its gradient character, but also its emotional register.⁵¹ Bolinger's work illustrates the difficulty of representing the often elusive qualities of sound. He adopted a highly idiosyncratic system for communicating his ideas about intonation, using a typewriter (fig. 2). In this example, he spaces words transcribed from well-known television programs vertically, representing pitch variation as it would be displayed using diastematic musical notation in an open field without horizontal lines (*campo aperto*).⁵² Even without having heard the words spoken, he writes, one can "appreciate the tolerantly amused imputation of naughtiness" (fig. 2). This recalls the paralinguist's interest in communication registers beyond the strictly informational; it also suggests that Bolinger assumed his audience could read and understand the musical notation glossed by these words.

Feld's account of his graduate training at IU sheds light on the conceptual resources that were available to researchers interested in the relationship between speech and song in the middle of the twentieth century. What emerges from an analysis of his studies is the sense that American structuralism had reached its apogee: it was generalized to every aspect of human behavior; its analytic tools were extended to domains previously thought beyond the reach of science; and practitioners were beginning to question previous commitments to an "all-or-none" approach. Deep investments in the careful depiction of various *forms* of communication partially gave way in the early 1970s to new questions about the *context* of audition. The foregoing survey of the resources available at Bloomington reveals the extent to which poetry and song provided a new evidentiary foundation to a linguistic discipline that had liberated itself from textual remains.⁵³

CLASSIFICATION OF SOUND

Though interest in communication was "quickening" during the 1950s and 1960s, its sonic encoding nevertheless challenged researchers to clarify the parameters of their disciplinary expertise.⁵⁴ The previous section considered why researchers were inclined to consider speech and song together, an impulse that points to the emancipation of

51. His major work in this area, Dwight Bolinger, *Intonation and Its Parts: Melody in Spoken English* (Stanford, CA: Stanford University Press, 1986), is a prime example of the "music in language" synthesis.

52. See the discussion of diastematic notation and *campo aperto* in Ian Bent et al., "Notation," Grove Music Online, <https://doi-org.proxy.library.upenn.edu/10.1093/gmo/9781561592630.article.20114>. Bolinger's technique shares features with notational styles in twentieth-century avant-garde music, for example, the use of unpitched quarter notes in the fourth movement ("Evadne") of *Le Visage nuptial* by Pierre Boulez.

53. Feld and Fox, "Music and Language," 29.

54. Osgood, "New SSRC Committee," 206.

sound from its connection to informational and material regimes, or *vox* and *frequency*, per the distinction emphasized by media scholar Jonathan Sterne.⁵⁵ Turning to attempts to classify vocal productions, I now ask why Feld's teachers tried to tease speech and song apart. A key factor is the formalizing tendency that cut across linguistics and musicology, traversing midcentury discourses of science and the humanities.

But perhaps we might just as accurately refer these taxonomic inclinations to the heightened twentieth-century awareness of linguistic and musical diversity that came with the collection of non-Western voices and the foundation of archival structures to preserve them.⁵⁶ Jakobson, for instance, praised Voegelin's work with indigenous languages of the Americas when he named the "monolithic hypothesis about language" as a principal obstacle to be overcome among structuralists.⁵⁷ Comprehensiveness seems to have been another important factor, motivating the preliminary classification undertaken by Voegelin's colleague George List, founder of the Archives of Traditional Music. Though List had retired from active university life by the time Feld arrived on campus, his influence continued to be felt. Writing in 1963, List observed:

There are several thousand languages in the world and it can be assumed that there exist at least an equal number of fairly well differentiated cultures. No one scholar shall ever be competent to develop a valid classification system of the type envisaged on the basis of his own work only. . . . All that can be done at this time . . . is to survey a few of the problems involved in carrying out such a project and to outline a tentative system of classification which may possibly be useful as a springboard for further development in this direction.⁵⁸

List's preoccupation with the limitations of any "one scholar" exemplifies a logic of distributed effort—he implicitly recognizes that information-gathering is supremely time-intensive, requiring coordination among researchers.⁵⁹ The problem was even

55. Jonathan Sterne, *The Audible Past: The Cultural Origins of Sound Reproduction* (Durham, NC: Duke University Press, 2003), 23.

56. Ann Stoler's analysis of the colonial archive is directly relevant to the kind of taxonomic work described in this section. As she writes in the opening of *Along the Archival Grain: Epistemic Anxieties and Colonial Common Sense* (Princeton, NJ: Princeton University Press, 2008), "Grids of intelligibility were fashioned from uncertain knowledge . . . epistemic uncertainties repeatedly unsettled the conceit that all was in order" (1). I think we see a similar conceit in List's attempt to classify (unsettling) sounds and in the formalist impulses described in the essay more generally.

57. Jakobson, "Linguistics and Poetics," 352.

58. George List, "The Boundaries of Speech and Song," *Ethnomusicology* 7, no. 1 (1963): 1–16.

59. Judith Kaplan, "Archiving Descriptive Language Data," in *Limn 6: The Total Archive*, ed. Boris Jardine and Christopher Kely (2016), <https://limn.it/issues/the-total-archive/>.

more pronounced given cross-cultural differences in the classification of the sounds of human vocal production:

It is quite possible that investigators who are members of a culture differing considerably from our own might assign forms with characteristics very much unlike those selected here as the two ends of the continuum. Certain cultures make a distinction between what is referred to as speech or talking and what is referred to as song or singing. Other cultures do not necessarily make this distinction. Other cultures distinguish forms other than speech or song which to us may seem to be intermediate forms. The nomenclature applied to these intermediate forms will vary considerably from culture to culture as will the social function of the form.⁶⁰

Just what anchored the continuum that made sense to List himself? He associated speech with free vocal production (“casual utterance”), whereas song was more fixed (“a form exhibiting relatively stable pitches”). So-called intermediate forms thus became the testing ground for what was hoped to be a maximally inclusive taxonomic system. List attempted a visual representation of the challenging sounds presented by intermediate forms (fig. 3).

This diagram, which List describes as being “analogous to a hemispheric map of the world,” did allow him to comprehend a great deal of the overlap between language and music.⁶¹ At the north pole, so to speak, he situated speech—defined above all as “casual” vocal production. Opposite this, at the south pole, he located a Western conception of song—thought to have relatively stable pitches, possess a scalar structure, and show little melodic influence of speech intonation. Moving along the equator, we see the rise and fall of intonation—an expanded influence on the left and reduced influence on the right. With cardinal directions plotted out in this way, List was able to locate, for instance, the rhymes uttered by American children while jumping rope at the node labeled “recitation”; the “lining out” of Micronesian women at the node of “intonational recitation”; the stable melody of a North Carolinian tobacco auctioneer at the location of “intonational chant”; and certain Buddhist chants at the equatorial “monotone.”⁶²

Looking forward to a fully realized version of this system, List saw two hopeful outcomes. The first was technological: subjecting data from an ever-broader survey of vocalizing groups to “acoustic devices such as the spectrograph or melograph,” as a

60. List, “Boundaries of Speech and Song,” 3.

61. *Ibid.*, 7.

62. *Ibid.*, 9.

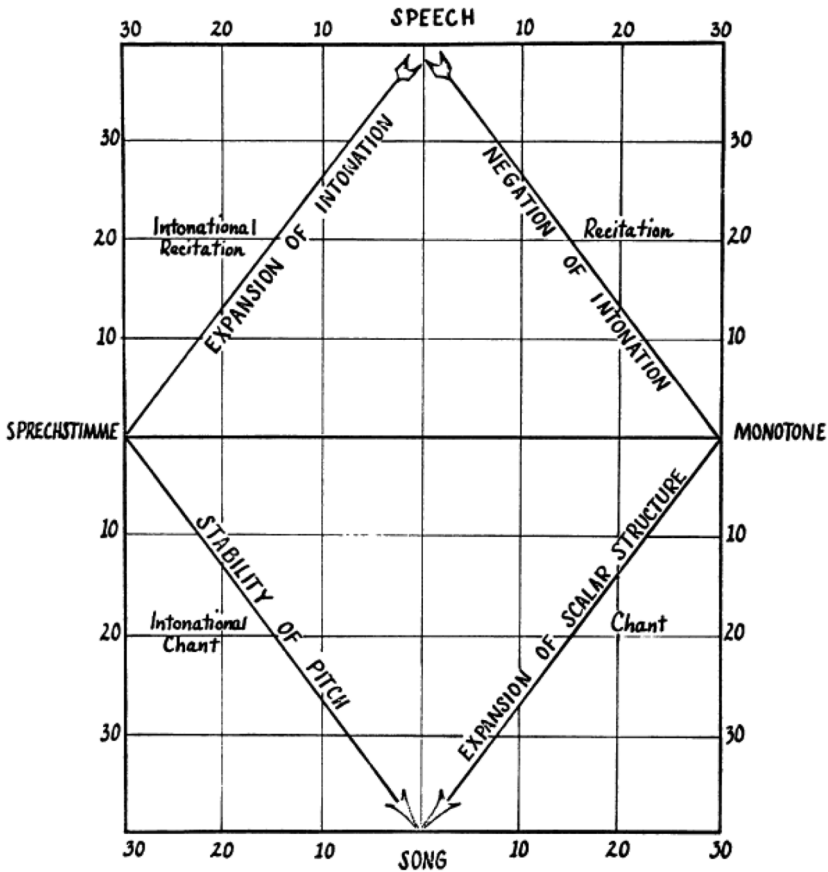


Figure 3. The “hemispheric map” classifying intermediate forms between speech and song. Source: List, “Boundaries of Speech and Song,” 9.

useful “check upon the ear.” This, he projected, could sustain an inductive classification system from “clusters” to “types.”⁶³ Alternatively, he envisioned a classification system able to reckon with characteristics, such as semantic content, that went beyond the limited engagement with melody in his first attempt.

Although I have emphasized List here, owing to the influences of his work on Feld’s education at IU, it is important to note that he was not the only researcher who tried to classify the sounds of the human voice during this period. Alan Lomax’s cantometric

63. Ibid., 13–14. Note the acknowledgment of Judith McCulloh’s assistance in having transcribed all of the paper’s spectrograph data. The incorporation of new technologies into the analysis also led to the incorporation of new labor relations.

approach provides a useful counterpoint. Taking the notion of a hemispheric map somewhat more literally, Lomax attempted an alternative areal classification meant to empirically describe “performance style from sound recordings.”⁶⁴ Significantly, throughout his discussion of the project in *Folk Song Style and Culture* (1968), Lomax explicitly stated his debt to high-fidelity tape recordings as well as his intention to extend analysis “beyond the border of the Indo-European language family.”⁶⁵ Moreover, he wrestled with the core themes of form and context, attributing form to the nature of song itself. Thus, he wrote,

from the outset song was seen to be the most highly ordered and periodic of vocalizations. In fact, song may be recognized and defined as more frequently redundant at more levels than any other kind of vocalizing. Most of the regularities of speech are carried over in song and are usually employed in some more formalized way in sung verse than in speech. Not only are the sounds, words, syntax and forms of a language all touched by the peculiar regularities of poetry, but the redundancy introduced in song at the nonverbal level gives rise to meter, melody, harmony, and the singing voice.⁶⁶

When Lomax mentions the context of song at all, it is within an abstract treatment of discrete, holistic cultures. In this light, cantometric analysis appears to have been a mere elaboration of the formalism inherent in song. That said, elsewhere Lomax, seemingly of a different mind, dismissed a purely formal approach as “unscientific”: “musical reality is three-quarters composed of [behavioral] materials, and it is therefore unscientific to focus our interest on formal musical patterns torn out of their context (as if music was intrinsically different from other human activities), or upon the precise measurement of particles of sound (as if musicology were a branch of physics).”⁶⁷

Clearly, Lomax was interested in context, though his methods for understanding it were formal in nature.⁶⁸ Writing later in direct response to Lomax, Feld highlighted the methodological differences at stake in this section of the paper. “My suggestion is true heresy to many committed comparativists,” he wrote, “but I think we need to pioneer a

64. The Cantometrics project was initiated in 1961 with support from the Humanities Division of the Rockefeller Foundation; see Alan Lomax, *Folk Song Style and Culture* (Washington, DC: American Association for the Advancement of Science, 1968), viii.

65. *Ibid.*, x.

66. *Ibid.*, 13.

67. Alan Lomax, “Folk Song Style,” *American Anthropologist* 61, no. 6 (1959): 928.

68. On this “Science of Folk Song,” see John Szwed, *Alan Lomax: The Man Who Recorded the World* (New York: Viking, 2010), chap. 15.

qualitative and intensive comparative sociomusicology, without reified and objectified musical and social structural trait lists.⁶⁹

Steeped in the taxonomic literature exemplified by List and Lomax, but belonging to a new generation, Feld turned to the context of audition. The goal was to figure out how to differentiate the culturally acceptable music produced in a given context from that which might sound strange or absurd—something akin to grammaticality judgments in language. His formalism, in other words, aimed to capture truths about the reception rather than the production of sound. This had proven to be most difficult in the study of song in tonal languages.

SONG IN TONAL LANGUAGES

The hemispheric map did not capture the data associated with songs sung in tonal languages, in which the relative pitch or inflection of a syllable bears meaning. “The classification of forms in tonal languages,” List reflected, “presents innumerable difficulties. Tone becomes a third variable to be controlled, making necessary the construction of a three-dimensional diagram.” This required further consideration of “many complex and little investigated relations existing between tone, intonation, and musical melody.”⁷⁰

List wrestled with these connections in his research on speech melody and song melody in the Central Thai dialect. This work unfolded from the key observation that understanding any given Thai song depended, to some degree, on the coordination of lexical pitch variations in speech and melodic variations in song. At stake was the nature and degree of constraints imposed on vocal communication—the intelligibility of fixed versus free sound patterning. List asked, “Is the musical melody subservient to that of the language or are the language contours modified to follow the musical contours? Must the contours of the music carefully follow those of speech so that complete intelligibility will be preserved or is the music free to construct its own melody?”⁷¹ This line of questioning reflected not only a desire to move beyond Western aesthetic norms, but also a fundamental interest in individual versus cultural determination and in patterns of cultural diffusion worldwide.

The data for List’s 1961 study came primarily from recordings made for the IU archives and interviews with five Thai graduate students: Swat Sukontarangi, Chalao Chaiyaratana, Kingkeo Attagara, Sakon Changsanit, and Kanda Thammongkol. These and other unnamed informants came to IU as part of an exchange program formalized

69. Feld, “Sound Structure as Social Structure,” 385.

70. List, “Boundaries of Speech and Song,” 12.

71. George List, “Speech Melody and Song Melody in Central Thailand,” *Ethnomusicology* 5, no. 1 (1961): 16.

in 1955. With eventual links to the Midwest Universities Consortium for International Activities, NGOs, the US Foreign Operations Administration, and the Agency for International Development, the partnership emphasized programs in education, political science, business, and public administration with a view to bolstering Thai infrastructures.⁷² The interviews and recordings List engaged with were a lesser-known product of this alliance.⁷³

In addition to spectrographic analysis, List's method involved playing back tape recordings of different kinds of chant or song to these students in order to rate intelligibility and agreement upon judgments of tone.⁷⁴ Recordings included school recitations of the alphabet and multiplication tables; a poetic recitation, *klong*; two lullabies; a classical song; a popular song in the classical style; and a Westernized contemporary song. Due to the auditory lacunae of different kinds of listeners, List endorsed (and implemented) a hybrid approach:

Two quite different methods can be applied in studying the degree of coordination of speech melody and song melody. The first would involve making spectrographic analyses of the recitations and song, and of their spoken texts, and comparing the graphs thus produced. The second would involve the transcription of the texts by the informants, transcription of the music in notation by the scholar, and the comparison of these results arrived at purely by ear. The results achieved by the first method would be acoustically accurate but not necessarily culturally valid. . . . [Among the difficulties of the second method is that] although the Thai informants used in the analysis have a high level of education, they have in most cases only the most general concepts concerning the contours and relative pitches of the tones they speak.⁷⁵

Working on both fronts simultaneously, List was able to determine that there was in fact a range in the degree of complementarity between lexical and musical pitch

72. IU was instrumental in helping to establish the National Institute of Development Research in Bangkok, among other initiatives.

73. Indiana University's Midwest Universities Consortium for International Activities records, collection C481, Indiana University Archives, Bloomington.

74. Indiana University's Midwest Universities Consortium for International Activities records, collection C481, Indiana University Archives, Bloomington. In "Speech Melody and Song Melody," List walked the line between "objective" and "subjective" delicately (23). He credited IU linguist Fred Householder—a syntactician who criticized Chomsky on phonological grounds and specialized in classical languages, Chinese, and Azerbaijani—with having helped him improve upon the ear through the use of spectrographic evidence.

75. List, "Speech Melody and Song Melody," 26–27. See also Indiana University's Midwest Universities Consortium for International Activities records, collection C481, Indiana University Archives, Bloomington.

variation across genres. In this finding, he confirmed earlier studies on the relationship between tone and tune in Chinese by Yuen Ren Chao.⁷⁶ List found that the mapping of lexical pitch variation onto musical pitch variation was highest in school chants and traditional songs such as lullabies. It was somewhat less aligned in classical genres, where he found a metrical explanation for discrepancies between the melodies of speech and song. The association was loosest, perhaps not unsurprisingly, in examples of popular contemporary music. On the basis of these findings, List concluded that song melody dominated in the kinds of “everyday” vocalizations under study. “Song melody,” he wrote, “has been subservient [to speech melody], and purely musical creativity operated within a small and limited sphere. In the artistic, aristocratic classical song musical creativity has played a much greater role, utilizing meaningless syllables and continuants as a basis for this musical elaboration. As the imitation of Western styles has spread throughout the culture coordination of register tones with the musical contours has tended to diminish in degree but the influence of the contour tones upon the musical line seems to have retained the greater part of its force.”⁷⁷

Midcentury interest in the relationship between tone and tune is where the *content* of musicology and linguistics overlapped most directly. List’s study of Central Thai, in line with the more general classification of sounds discussed in the previous section, illustrates a spectrum from fixed to free vocal production. Like contemporary investigations of the boundaries between speech and song in Chinese and West African (Ewe) song, it also reflects a wider preoccupation with the balance between cultural constraints and individual self-expression.⁷⁸ Throughout List’s work, novel systems of formal representation were used to convey the research to audiences, presuming certain technical competencies among the student informants and shifting focus away from the consideration of performative context and cultures of audition.

76. On Chao’s biography, see Ku-ming Kevin Chang, “Linguistics or Philology? Transcontinental Responses,” in *World Philology*, ed. Sheldon Pollack, Benjamin Elman, and Ku-ming Kevin Chang (Cambridge, MA: Harvard University Press, 2015), 311–32. In his 1956 festschrift paper for Jakobson, Chao reported two main findings: first, that tone categories, if not actual pitches, were conserved in song; and second, that the practice of mapping tones onto tune was characteristic in traditional (“cultural”) music but not necessarily a feature of contemporary compositions; Yuen Ren Chao, “Tones, Intonation, Singsong, Chanting, Recitative, Tonal Composition, and Atonal Composition in Chinese,” in *For Roman Jakobson*, ed. Morris Halle (The Hague: Mouton, 1956), 52–59.

77. List, “Speech Melody and Song Melody,” 30–31.

78. Marius Schneider, “Tone and Tune in West African Music,” *Ethnomusicology* 5, no. 3 (1961): 204–15. In this essay, Schneider takes aim at A. M. Jones’s *Studies in African Music* (London: Oxford University Press, 1958), the crux of the dispute being how to interpret *discrepancies* between song melody and speech melody where they occur. Schneider appealed to cultural determination—metrical constraints, specifically. Jones explained the discrepancies in terms of the musician’s artistic discretion.

CONCLUSION

Through the lens of Steve Feld's graduate education at Indiana University—home to List, Voegelin, and their archival legacies—this article has focused on encounters between ethnomusicology and anthropological linguistics in Bloomington during the 1950s and 1960s. From the archival recordings themselves, to formalist theories, to representational tools and systems of classification, it has shown how researchers working at the intersection of music and language attempted to deal with boundary-crossing sounds. This work had significant disciplinary ramifications, calling into question the contributions and competencies of musicology and linguistics. Whereas Feld's teachers were deeply invested in formalist approaches to pitch variations of the human voice, his entry into an "anthropology *in* sound" during the early 1970s coincided with a move to more contextual approaches.

The question of intelligible pitch explored in this article has focused on individuals, their research programs, and their specific languages of sound. But these pitches were known, in a larger sense, through sociopolitical relations and the logic of the archive. From the "colonialist beginnings" of Fewkes's recordings and the comparative musicology instantiated at the Berlin Phonogramm-Archiv, to Voegelin's summer field station in Arizona, to the funding of the IU archives, and the Bloomington-Bangkok relationship, the examples recounted here show that colonial and developmental schemes shaped key understandings of the comparanda offered by linguistics and musicology.⁷⁹ The definitions and social categories produced through such relations reflected the aspirations and anxieties of these disciplines as they were organizing and re-organizing in the post-war era. As Feld later put the question to Alan Lomax: "Compare what?"⁸⁰

In answer to that question, Feld argued, "meaningful comparisons are going to be the ones between the most radically contextualized case examples."⁸¹ This move, in turn, brought new ideas about how to communicate the results of studying sound. As he subsequently recalled, tape recordings became an important alternative to written expression in ethnographic practice. For Feld, the combination of language, sound, and the humanities ultimately revealed the limitations of academic prose. Well beyond the release of language from text and song according to Western paradigms, sound liberated the humanities from narrow forms of linguistic expression. I close with Feld's recollection of the opening track of his LP *Music of the Kaluli*: "You hear this structured

79. Vanessa Agnew, "The Colonialist Beginnings of Comparative Musicology," in *Germany's Colonial Pasts*, ed. Eric Ames, Marcia Klotz, and Lora Wildenthal (Lincoln: University of Nebraska Press, 2005), 41–60.

80. Feld, "Sound Structure as Social Structure," 384.

81. *Ibid.*, 384.

kind of whooping in between speech and song that people do when they're cutting trees. Simultaneously and in sequence you get the layering of speaking voices, the birds and ambience, the overlapping of axes, trees falling, and the whooping, whistling, yodeling, and singing different snatches of song. . . . [It] was a way of saying yet again, 'What about sound?' and . . . 'What about ethnography as tape editing?'"⁸²

WORKS CITED

- Aarts, Bas. 2004. "Conceptions of Gradience in the History of Linguistics." *Language Sciences* 26 (4): 343–89.
- Agnew, Vanessa. 2005. "The Colonialist Beginnings of Comparative Musicology." In *Germany's Colonial Pasts*, edited by Eric Ames, Marcia Klotz, and Lora Wildenthal, 41–60. Lincoln: University of Nebraska Press.
- Becker, Judith. 2009. "Ethnomusicology and Empiricism in the Twenty-First Century." *Ethnomusicology* 53:478–501.
- Becker, Judith, and Alton Becker. 1982. "A Grammar of the Musical Genre *Srepegan*." *Asian Music* 14:30–73.
- Bent, Ian, David Hughes, Robert Provine, Richard Rastall, Anne Kilmer, David Hiley, Janka Szendrei, Thomas Payne, Margaret Bent, and Geoffrey Chew. 2020. "Notation." Grove Music Online. <https://doi-org.proxy.library.upenn.edu/10.1093/gmo/9781561592630.article.20114>.
- Birdsall, Carolyn, and Viktoria Tkaczyk. 2019. "Listening to the Archive: Sound Data in the Humanities and Sciences." *Technology and Culture* 60 (S2): S1–S13.
- Birdwhistell, Ray. 1971. *Kinesics and Context: Essays on Body Motion Communication*. Philadelphia: University of Pennsylvania Press.
- Bod, Rens. 2013. *A New History of the Humanities: The Search for Principles and Patterns from Antiquity to the Present*. Oxford: Oxford University Press.
- Bohlman, Andrea F., and Peter McMurray. 2017. "Tape: Or, Rewinding the Phonographic Regime." *Twentieth-Century Music* 14 (1): 3–24.
- Bolinger, Dwight. 1961. *Generality, Gradience, and the All-or-None*. The Hague: Mouton.
- . 1986. *Intonation and Its Parts: Melody in Spoken English*. Stanford, CA: Stanford University Press.
- Brain, Robert. 2015. *The Pulse of Modernism: Physiological Aesthetics in Fin-de-Siècle Europe*. Seattle: University of Washington Press.
- Chang, Ku-ming Kevin. 2015. "Linguistics or Philology? Transcontinental Responses." In *World Philology*, edited by Sheldon Pollack, Benjamin Elman, and Ku-ming Kevin Chang, 311–32. Cambridge, MA: Harvard University Press.
- Chao, Yuen Ren. 1956. "Tones, Intonation, Singsong, Chanting, Recitative, Tonal Composition, and Atonal Composition in Chinese." In *For Roman Jakobson*, edited by Morris Halle, 52–59. The Hague: Mouton.
- Darnell, Regna. 2001. *Invisible Genealogies: A History of Americanist Anthropology*. Lincoln: University of Nebraska Press.
- Daston, Lorraine, and Glenn Most. 2015. "History of Science and History of Philologies." *Isis* 106 (2): 378–90.

82. Steven Feld, *Music of the Kaluli* (Port Moresby: Institute of Papua New Guinea Studies, 1981); Feld and Brenneis, "Doing Anthropology in Sound," 464.

- Feld, Steven. 1974. "Linguistic Models in Ethnomusicology." *Ethnomusicology* 18 (2): 197–217.
- . 1981. *Music of the Kaluli*. Port Moresby: Institute of Papua New Guinea Studies.
- . 1984a. "Communication, Speech, and Speech about Music." *Yearbook for Traditional Music* 16:1–18.
- . 1984b. "Sound Structure as Social Structure." *Ethnomusicology* 28 (4): 383–409.
- Feld, Steve, and Donald Brenneis. 2004. "Doing Anthropology in Sound." *American Ethnologist* 31 (4): 461–74.
- Feld, Steven, and Aaron Fox. 1994. "Music and Language." *Annual Review of Anthropology* 23:25–53.
- Fewkes, Jesse. 1890. "Additional Studies of Zuni Songs and Rituals with the Phonograph." *American Naturalist* 24:1097–98.
- Geertz, Clifford. 1976. "Art as a Cultural System." *MLN* 91 (6): 1473–99.
- Hockett, Charles. 1955. *Manual of Phonology*. Baltimore: Waverly.
- . 1960. "The Origin of Speech." *Scientific American* 203:88–111.
- Hui, Alexandra, Julia Kursell, and Myles Jackson. 2013. "Music, Sound, and the Laboratory from 1750 to 1980." *Osiris* 28 (1): 1–11.
- Hymes, Dell. 1962. "The Ethnography of Speaking." In *Anthropology and Human Behavior*, edited by Thomas Gladwin and William C. Sturtevant, 13–53. Washington, DC: Anthropology Society of Washington.
- . 1974. *Foundations in Sociolinguistics: An Ethnographic Approach*. Philadelphia: University of Pennsylvania Press.
- Inman, Carol. 1986. "George Herzog: Struggles of a Sound Archivist." *Resound: A Quarterly of the Archives of Traditional Music* 5 (1): 1–5.
- Jakobson, Roman. 1960. "Linguistics and Poetics." In *Style in Language*, edited by Thomas Sebeok, 350–77. Cambridge, MA: MIT Press.
- . 1971. *Selected Writings: Word and Language*. Vol. 2. The Hague: Mouton.
- Jasanoff, Sheila. 2004. "The Idiom of Co-production." In *States of Knowledge: The Co-production of Science and the Social Order*, 1–12. London: Routledge.
- Jones, A. M. 1958. *Studies in African Music*. 2 vols. London: Oxford University Press.
- Jones, Daniel, and Kwing Tong Woo. 1912. *A Cantonese Phonetic Reader*. London: University of London Press.
- Kaplan, Judith. 2012. "Language Science and Orientalism in Imperial Germany." PhD diss., University of Wisconsin–Madison.
- . 2013. "'Voices of the People': Linguistic Research among Germany's Prisoners of War during World War I." *Journal of the History of the Behavioral Sciences* 49 (3): 281–305.
- . 2016. "Archiving Descriptive Language Data." In *Limn 6: The Total Archive*, edited by Boris Jardine and Christopher Kelty. <https://limn.it/issues/the-total-archive/>.
- Kaplan, Judith, and Rebecca Lemov. 2019. "Archiving Endangerment, Endangered Archives: Journeys through the Sound Archives of Americanist Anthropology and Linguistics, 1911–2016." *Technology and Culture* 60 (S2): S161–S187.
- Kaye, A. 2006. "Trager, George L. (1906–1992)." In *Encyclopedia of Language and Linguistics*, 2nd ed., 15–17. Amsterdam: Elsevier.
- Lerdahl, Fred, and Ray Jackendoff. 1996. *A Generative Theory of Tonal Music*. Cambridge, MA: MIT Press.
- List, George. 1961. "Speech Melody and Song Melody in Central Thailand." *Ethnomusicology* 5 (1): 16–32.
- . 1963. "The Boundaries of Speech and Song." *Ethnomusicology* 7 (1): 1–16.
- Lomax, Alan. 1959. "Folk Song Style." *American Anthropologist* 61 (6): 927–54.
- . 1968. *Folk Song Style and Culture*. Washington, DC: American Association for the Advancement of Science.

- Mannheim, Bruce. 1986. "Popular Song and Popular Grammar, Poetry and Metalanguage." *Word* 37 (1-2): 45-75.
- McLeod, Norma. 1974. "Ethnomusological Research and Anthropology." *Annual Review of Anthropology* 3:99-115.
- Osgood, C. E. 1953. "A New SSRC Committee on Linguistics and Psychology." *American Psychologist* 8 (5): 206-7.
- Pittenger, Robert, Charles Hockett, and John Danehy. 1960. *The First Five Minutes: A Sample of Microscopic Interview*. Ithaca, NY: Paul Martineau.
- Rehding, Alexander. 2005. "Wax Cylinder Revolutions." *Musical Quarterly* 88:123-60.
- Saussy, Haun. 2016. *The Ethnography of Rhythm: Orality and Its Technologies*. New York: Oxford University Press.
- Schneider, Marius. 1961. "Tone and Tune in West African Music." *Ethnomusicology* 5 (3): 204-15.
- Sebeok, Thomas. 1960. "Introduction." In *Style in Language*, edited by Thomas Sebeok, 1-5. Cambridge, MA: MIT Press.
- Seeger, Charles. 1977. *Studies in Musicology, 1935-1975*. Berkeley: University of California Press.
- Sterne, Jonathan. 2003. *The Audible Past: The Cultural Origins of Sound Reproduction*. Durham, NC: Duke University Press.
- Stockwell, Robert. 1993. "Dwight Bolinger." *Language* 69:99-112.
- Stoler, Ann Laura. 2008. *Along the Archival Grain: Epistemic Anxieties and Colonial Common Sense*. Princeton, NJ: Princeton University Press.
- Szwed, John. 2010. *Alan Lomax: The Man Who Recorded the World*. New York: Viking.
- Tomlinson, Gary. 2015. *A Million Years of Music: The Emergence of Human Modernity*. New York: Zone Books.
- Trager, George. 1958. "Paralanguage: A First Approximation." *Studies in Linguistics* 13:1-12.
- . 1960. "Taos III: Paralanguage." *Anthropological Linguistics* 2 (2): 24-30.
- Turner, James. 2014. *Philology: The Forgotten Origins of the Modern Humanities*. Princeton, NJ: Princeton University Press.
- Voegelin, C. F. 1960. "Casual and Noncasual Utterances within Unified Structure." In *Style in Language*, edited by Thomas Sebeok, 57-68. Cambridge, MA: MIT Press.
- Waugh, Linda. 2002. "Preface to the Second Edition." In *The Sound Shape of Language*, edited by Roman Jakobson and Linda Waugh, 1-6. Berlin: Mouton de Gruyter.