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David Wessel (October 6, 1942 – October 13, 2014): Tributes and Remembrances

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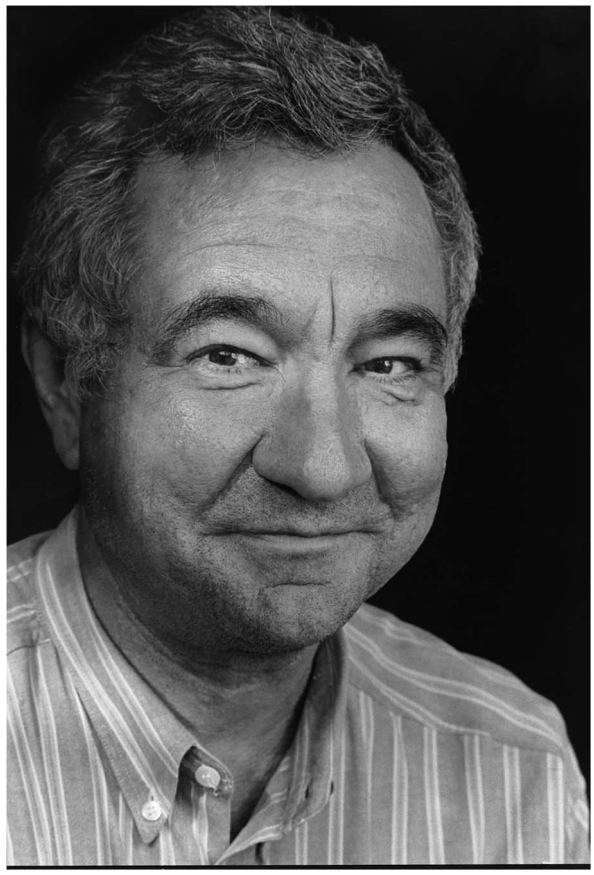
Scholar, inventor, composer, percussionist, improviser, mentor, leader, and friend, David Wessel passed away suddenly in the fall of 2014, ending a creative life of immense influence centered at the music research institutions of the Institut de Recherche et Coordination Acoustique/Musique and Center for New Music and Audio Technology. The following tributes acknowledge his impact on individual careers and the field of music psychology as a whole. Former postdoctoral fellow, Johanna Devaney, provides a factual biographical sketch and personal remembrances. Psyche Loui describes the extraordinary opportunity of being his doctoral student, and Ervin Hafter sheds light from the perspective of a professorial colleague at UC Berkeley. Longtime friend and colleague, Carol Lynne Krumhansl reflects on shared interests and his paving the way along parallel early career paths at Stanford University and Institut de Recherche et Coordination Acoustique/Musique. Together these tributes express the respect, gratitude, and loss of all those in the music psychology community whose lives he touched in many ways.

Keywords: David Wessel, tribute, obituary, musical psychoacoustics, CNMAT, IRCAM, biography

Biographical Compilation and Remembrances From Johanna Devaney, Former Postdoctoral Fellow

David Wessel was an innovative researcher, composer, and improviser; his work had a major impact on the fields of both music psychology and computer music. He applied his training in psychoacoustics to pioneering work on the perception of musical timbre and worked extensively on questions of human–computer interaction for musical improvisation. He passed away on October 13, 2014, aged 72.

David Wessel was born October 6, 1942, in Belleville, Illinois. While attending the University of Illinois, where he earned a B.S. degree in Mathematical Statistics in 1964, he heard Lejaren Hiller give a talk on computational analysis of music. He would later relate in a 2005 interview for *Cycling '74* that this event was pivotal to his developing research interests: "I was studying information theory at the same time in another class and well . . . suddenly it just connected up my interest in music and science and technology. That was sort of the first piece of connective tissue" (Taylor, 2005).



David Wessel

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After graduating from the University of Illinois, Wessel pursued graduate work at Stanford University, culminating in a Ph.D. in Mathematical and Theoretical Psychology in 1972. At Stanford, he worked with famed learning theorist William K. Estes and joined the Institute for Mathematical Studies in the Social Sciences. Although his doctoral work focused on detection of signals in briefly presented visual arrays (Wessel, 1972a), his time at Stanford also afforded him the opportunity to explore his musical interests through interactions with John Chowning. Wessel first met Chowning when enrolled in his percussion class, but subsequent conversations with Chowning introduced him to computer music. In reference to his introduction to computer music, Wessel would later observe that, "I heard about the idea of doing it before, but it became real. I decided at that point that I really wanted to orient my work in psychology and perception toward musical problems" (Taylor, 2005).

During the period of his doctoral work at Stanford, Wessel taught at San Francisco State University in 1968 and then Michigan State University from 1969. While at Michigan State he began working directly on music perception and cognition, focusing on the application of psychoacoustics to the perception of musical timbre (Wessel, 1972b, 1973). He also organized the inaugural International Computer Music Conference at Michigan State in 1974.

In 1973, Wessel read about Pierre Boulez's ambitious plans for the Institut de Recherche et Coordination Acoustique/Musique (IRCAM) in Paris and arranged a sabbatical to visit in 1976 and was subsequently involved in its creation in 1977. As program chair for the IRCAM/GALF Symposium on Musical Psychoacoustics that summer, he created a forum for discussion of the relationship between psychoacoustics and musical creation. He officially joined IRCAM in 1979, as the head of the Pedagogy group. While at IRCAM he continued his research into timbre, including collaboration with Jean-Claude Risset (Risset & Wessel, 1982/1999; Wessel & Risset, 1979), and he placed a particular focus on the application of multidimensional scaling to produce low-dimensional representations of timbre that could be used for synthesis control (Ehresman & Wessel, 1978; Wessel, 1979; Wessel, Bristow, & Settel, 1987). Wessel was also actively engaged in promoting the use of personal computers for real-time computer music. This latter interest led him away from the Pedagogy group to start the Personal Computing Systems and Development group in 1986. Throughout his time at IRCAM, he continued to be actively involved with the field of computer music. He organized the International Computer Music Conference for a second time in 1984 and taught the first course in computer music at the Paris Conservatory. In recognition of his work at IRCAM, Wessel was made a Chevalier dans l'Ordre des Arts et des Lettres by the French Minister of Culture.

In 1988, Wessel was recruited to the Department of Music at University of California, Berkeley, and helped establish the Center for New Music and Audio Technology (CNMAT), serving as codirector until his death. He was affiliated with the Cognition, Brain, & Behavior area of the Department of Psychology and collaborated with people in the Department of Statistics and the Department of Electrical Engineering and Computer Science, where he was a member of the Parallel Computing Laboratory (ParLab). While at CNMAT, Wessel continued to merge art and science in both his research and creative output. His published papers from this time primarily addressed issues related to musical improvisation with computers, with a particular focus on the development of gestural controllers (Momeni & Wessel, 2003; Wessel, 1991) and the development of Open Sound Control, a robust communication protocol for digital instruments (Wessel & Wright, 2002). He chaired the biennial meeting of the Society for Music Perception and Cognition, held at Berkeley, in 1995.

As an improviser, Wessel performed both nationally and internationally with a range of collaborators, including Roscoe Mitchell, Steve Coleman, Ushio Torikai, Thomas Buckner, Vinko Globokar, Frances-Marie Uitti, Jin Hi Kim, Matthew Goodheart, Vijay Iyer, Shafqat Ali Khan, and Laetitia Sonami, and he engaged in a series of CNMAT "duos" with a host of internationally known avant garde and jazz artists including Michel Doneda, Georg Graewe, Earl Howard, Steve Lacy, Urs Leimgruber, George Lewis, Joelle Leandre, and Louis Sclavis. Wessel also forged industry connections, such as with Meyer Sound, to commercialize some of the musical performance and spatial audio devices developed at CNMAT, and with Starkey Laboratories, where he contributed to the development of a patented interface for hearing aid fitting. He sat on numerous advisory boards, including IRCAM, the Centre for Interdisciplinary Research in Music Media and Technology (CIRMMT), the Berkeley Center for New Media, and the Beam Foundation and was invited to give numerous talks, including recent keynotes at the 12th International Conference on New Interfaces for Musical Expression in 2012 at Ann Arbor, MI, and the Re-New Digital Arts Festival in Copenhagen, in 2013.

I first met David at a CIRMMT event while I was a doctoral student at McGill University. What I remember most clearly from our meeting was his enthusiasm for both the research and creative activity that was going on at CIRMMT as well as the dining opportunities that a trip to Montreal affords. After spending time as a visiting scholar at CNMAT in 2010–2011, I officially joined David for my postdoctoral studies in July 2011. He had an amazing breadth of knowledge, not only of facts and techniques but also of other people's research interests. David was selfless in both connecting his advisees with other collaborators and in seeding fruitful research ideas. He was a continual source of encouragement, both in terms of research projects and professional development. The latter was particularly notable for me, finding him unfailingly supportive as I went on the job market. The last time I saw David was through a chance encounter at IRCAM this past summer. He was, as usual, rushing around, but he took the time to catch up with me on both personal and professional matters. Looking back, I am now incredibly grateful for that random meeting at IRCAM for the chance to see him one final time; his energy and enthusiasm will be sorely missed.

Remembrances From Psyche Loui, Former Doctoral Student

On Monday, October 13, 2014, I was shocked and pained by a phone call from Erv Hafter, saying that my PhD supervisor, David Wessel, Professor of Music at UC Berkeley and founding director of Berkeley's Center for New Music and Audio Technologies, had died of a heart attack that morning.

David Wessel was a great advisor and a wonderful scientist, musician, and friend. He was known for many things, among them pioneering work on timbre (Wessel, 1979), his significant role in the development and popularization of the Max/MSP programming language, and gestural control for instrument design (Wessel & Wright, 2002). He was also a great innovative thinker and teacher, and a famous lover of life.

I first met David in 2003 when I was a senior in college, applying for graduate school. I knew I wanted to study psychology and music, but did not know how I would find the union of these pursuits. During my interview weekend at UC Berkeley, David took me on a road trip from Berkeley to Santa Cruz, where he was helping Luc Ferrari put on a show, entitled "Sounds French," for percussion, DJ, and live electronics. It was my first concert of electroacoustic music, and it blew my mind. On the drive there and back, while sharing a large bag of chips for dinner in his little car, he told me bits and pieces about the classic work in music perception and cognition that I have now come to know and love so much: Carol Krumhansl's work on probe tone profiles (Krumhansl, 1990), his own and Stephen McAdams' multidimensional scaling methods to define timbre space (McAdams, 1999), Fred Lerdahl's attack on serialism (Lerdahl, 1992), and David's own well-known views on the theramin (he was critical of its lack of haptic feedback). I came back from that interview weekend thinking that graduate school could be quite unpredictable, but if I could spend a few years learning from David, those years would be time well spent.

David proved to be a constant source of inspiration in my own work, and a model mentor in many ways: He was a creative force, always cordial, always thoughtful, and always full of life. His was a mind constantly at work—fiercely, but gracefully, against all disciplinary boundaries—synergizing curious but beautiful ideas on everything from the proper way to marinate steak, to an auditory analog of the waterfall illusion, to a statistical algorithm for capturing the style of Steve Lacy's jazz solos, to daisy-chained hardware for parallel response collection (Wessel, Loui, Jacobs, & Avedonakis, 2004). It was in one of these brief but invigorating conversations in which I first learned about the Bohlen-Pierce scale, a quirky but elegant innovation in the mathematics of music that led to my dissertation work on human statistical learning (Loui & Wessel, 2008; Loui, Wessel, & Hudson Kam, 2006, 2010; Loui, Wu, Wessel, & Knight, 2009).

We mere mortals would find his effervescence frustratingly hard to pin down at times, but I owe much of how I think about music perception and cognition, and about research in general, to his guidance. Since I graduated and moved away from Berkeley in 2007, David remained both an unwavering supporter and a thoughtful critic of my work. Perhaps most remarkably, he also remained generous and fun as a friend: always passionately delivering new tips on sous vide cooking, always ready with a brilliant toast and an off-color joke with a twinkle in his eye.

Suddenly the world has lost a brilliant thinker, an exceptional musician, and an exhilarating human being. While it has been touching to see the response from the music cognition community since his passing, it is also bittersweet to think that I, among all these esteemed researchers in the field, was blessed with a firsthand experience of what it was like to work with David Wessel.

I'll miss you, David.

Reminiscences From Ervin Hafter, Professorial Colleague

David Wessel couldn't help himself. He seemed fascinated with every idea or topic he came upon and had the drive and genius needed to master it. He was like those polyglots who speak many languages and could as readily provide an interesting comparison of European and Pakistani classical music or a thoughtful appraisal of the benefits of cooking steaks on the barbeque or in a vacuum-sealed water bath. It was clear that he read voluminously, but I could never figure out when he found time to do it while keeping up with his own work, especially given his inability to say no to the many people who asked for his help. While I have for many years been in awe of the intellect and stamina that supported this whirlwind of ideas, I sit here thinking that what I most remember of David was his warmth, his humor, his generosity, his joie de vivre, his funny midwestern American accented French, and most of all, what a wonderful friend he was to all of us.

Remembrances From Carol Lynne Krumhansl, Longtime Friend and Colleague

Writing a tribute after such a recent loss is difficult, especially when the person is someone whose life has intersected one's own in so many ways and over so many years. It is even more difficult when you know that the person has touched on the lives of so many others in so many other important ways. Over time, in various venues, we will piece together a fuller account of the life we celebrate. Here, I share some of my personal recollections, mostly from the time of David Wessel's early career.

Our early academic origins were uncannily similar. David Wessel studied mathematics as an undergraduate at the University of Illinois and then earned a Ph. D. from Stanford University in mathematical psychology. He published a number of papers with the eminent psychologist, William K. Estes (later one of my mentors), who developed mathematical models of processing visual letter arrays (Estes & Wessel, 1966; Wolford, Wessel, & Estes, 1968). I subsequently went to Stanford for a Ph. D. in psychology after studying mathematics, and published a number of papers on the same topic (Krumhansl, 1977; Krumhansl & Thomas, 1976, 1977). By then, David had moved on to the faculty of Michigan State and had begun his pioneering work on timbre scaling and analogies (Ehresman & Wessel, 1978; Wessel, 1972b, 1973). Roger Shepard encouraged me to write to David, I suspect to suggest it may not be a career-ending move to write my thesis on the musical topic I proposed, multidimensional scaling of musical tones in a tonal context. I received the most cordial reply, "Roger Shepard recently told me of your work and we seem to have a number of mutual acquaintances and interests. I hope we keep in touch." And so we did.

I was deeply impressed by the depth and creativity of his thinking about musical timbre, and mathematical issues in cognitive representation more generally, in the papers he sent. Quoting from his first publication on music (Wessel, 1973, p. 2), "Our suggestion is that subjectively based spatial representations of musical materials such as those produced by multidimensional scaling programs might prove useful as conceptual

aids in composition. We also wish to stress the importance of maintaining flexibility in the choice of representation scheme. The space need not be Euclidian or even Minkowskian. Perhaps a graph, hierarchical tree, or manifold structure would provide more insight into the materials. The choice of scheme will surely depend on the context and the preferences of the composer." At the time of his letter, he was packing to move to IRCAM at the Pompidou Center in Paris where he established a vibrant group spanning psychoacoustics, mathematical and cognitive psychology, composition, and music technology.

I joined David's group at IRCAM for my first sabbatical leave from Cornell University in 1987–1988. We were cloistered in the tower of an abandoned school next to the main IRCAM building where we often worked late into the evening listening through opened windows to the Stravinsky fountain splashing below. Although space was at an absolute premium, David carved out a small room for me to run experiments, and also wrangled a MacIntosh computer (rare because of France's restrictive import taxes) that I could use when it was not being used in a concert. David and I discussed at length representational issues in timbre research, which led to our testing of the quasi-nonmetric scaling model (Winsberg & Carroll, 1989) that allows for both specific features of timbres as well as common dimensions (Krumhansl, 1989). Of all the superlative adjectives that have and will be applied to David, generosity is likely to be the one that stands out most uniquely. In addition to the regular members of his group, visitors of all stripes from all over the world passed through daily, and David always hosted everyone graciously. He was truly curious about everything, open-minded, and was always delighted to pass along whatever he had just learned. In this way he opened up innovative projects for many in a wide range of domains. His influence was immense.

Soon thereafter David moved to the University of California, Berkeley, to head CNMAT. I visited him from time to time over the years when I was in Berkeley for one reason or another. Always I dropped by Arch Street unannounced, but he always seemed to be expecting me. One time, without even looking up, he said "can we have lunch?" and we took off for his newly discovered macrobiotic restaurant. More often, he included me in whatever was going on in the studio, introduced me to everyone and all the musical gear strewn around, and described with great enthusiasm the work of the current graduate students and postdocs. After a while, we would head off, him to ask about what I was up to, me to hear about his new projects, and us just to talk about our lives. I think of David as my academic big brother: he got to do all this good stuff before I could, but then he looked after me, and taught me many valuable things about art, science, and how to live an ethical life in the face of challenges. A brilliant man, a dear friend.

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