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Silver Medal in Speech Communication for John J. Ohala

John J. Ohala, emeritus Professor of Linguistics at the University of California, Berkeley, is a towering figure in the field of linguistic phonetics and its application to understanding the phonological structures of the world's spoken languages and the way they change over time. John was born in Chicago. He obtained a degree in English (from Notre Dame) before converting to linguistics at UCLA where his Ph.D. was directed by Peter Ladefoged. At UCLA he met and married Manjari Agrawal (Ohala), herself a noted phonetician. His long career at Berkeley began in 1970.

← John's contributions are richly varied. By many, he is regarded as the founder of the field of laboratory phonology. A longstanding approach to phonology had been to sharply differentiate speakers' and listeners' cognitive representations of sound structures from the physical principles of phonetics. John's research agenda challenged this concept of the autonomy of phonology and phonetics. Through a masterful series of highly influential papers spanning from the 1970s through today, he demonstrated that neither is independent of the other. Moreover, he insisted on an experimental approach, arguing that, regardless of the relation between phonology and phonetics, rigorous testing of hypotheses concerning humans' knowledge of sound systems and the laws governing those systems was required. The 1986 volume titled *Experimental Phonology* he edited with his former student Jeri Jaeger, and the special issue of the journal *Phonology* that he edited in the same year, were milestones in this (then) new approach to phonological investigation.

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← John also revolutionized the way that linguists think about historical sound change, primarily by emphasizing two important perspectives that had tended to be ignored or underplayed. First, John insisted that perceptual processes play an equally crucial role as articulatory ones in fostering sound change. This view is epitomized in his seminal 1981 paper "The listener as a source of sound change". In accompanying detailed work he has pointed to specific ways in which the acoustic patterns of particular sounds are likely to bias perception and foster such a reinterpretation of the target, as in the case of labialized velars being interpreted as bilabial sounds. The second perspective is that of variation — not the obvious sort of variation that is readily apparent but what he called "hidden" variation in his equally influential 1989 paper "Sound change is drawn from a pool of synchronic variation". This variation comes (in part) from the imprecision of the control mechanisms in speech production, but is capable of generating just the kind of potential ambiguity that a listener might seize on in (mis-) interpreting the signal. Again, John's contribution lies not only in framing and forcefully arguing for the novel viewpoint but in constructing and carrying out clever experiments, often in collaboration with his students at Berkeley, that test predictions arising from thinking along these lines.

← An additional theme of paramount importance in his work is an enduring effort to examine the full extent of the ways that phonological patterns are shaped by the physical constraints governing the speech production system in the human animal. In John's view, a large proportion of phonological patterning has a direct source in such constraints. An extremely influential statement of this view is in the 1983 paper "The origin of sound patterns in vocal tract constraints" and this is followed up in numerous other publications such as 2005's "Phonetic explanations for sound patterns." One particularly insightful contribution in this vein (see, e.g. Ohala and Riordan 1979) has become known as the 'obstruent voicing constraint', which *inter alia* clearly accounts for why there is a greater likelihood that /g/ rather than stops at more forward places of articulation is missing from a series of voiced stops — there is simply more room in the oral cavity to accommodate trans-glottal air flow in the latter situation, and this is crucial to sustain voicing. Because he saw the importance of such factors in the design of linguistic systems he insisted that the lab he created and led at UC Berkeley be called the *Phonology Laboratory* rather than a phonetics lab.

John has also had another major impact on the field of speech communication through rehabilitating the concept that some part of the relationship between sound and meaning is non-arbitrary. In particular, he

pointed out that not only humans but many creatures are sensitive to the physical correlation between the size of an object and the frequency of the acoustic signal it is likely to generate. Hence, larger size — and derivative factors such as greater threat — is signaled by lower frequencies, and the converse by higher frequencies. Both the fundamental frequency of the voice source and the spectral shaping of the filtered sound output serve as cues. He argued that this ‘frequency code’ is implicated, for example, in the common occurrence of high front vowels in diminutives, as well as in predominant cross-linguistic patterns in intonation (1994’s “The frequency code underlies the sound symbolic use of voice pitch”). John argued that the uniquely human communication embodied in smiling was an effective signal of friendliness because of the frequency-raising shift it imposed on any spoken words (1980’s “The acoustic origin of the smile”), implicitly minimizing the threat level. This overall line of work established creative connections with colleagues working in bioacoustics (for example, in Tecumseh Fitch’s work with cranes) and as well as with linguists interested in issues such as gender identity and the presentation of self which may also involve some manipulation of the frequency code.

← Not only has John been of major importance for his intellectual contributions to the field but he has served in many generous ways to develop the capacities of others and to give back to the community. He was the President of the International Phonetic Association from 1995-99, he organized the first International Conference on Spoken Language Processing (ICSLP) conference in 1991 at Banff, Alberta, as well as the 14th International Congress of the Phonetic Sciences in San Francisco in 1999, he has been an editor of *Phonetica* and other publications and served on many boards, committees, juries and panels and often in unacknowledged ways has been a mentor to students and younger scholars not directly under his charge. In short he has given unstintingly of his time, wisdom and knowledge, as well as of his inexhaustible collection of jokes, to colleagues both senior and junior and to the academic community at large. His contributions have been recognized through an honorary doctorate (University of Copenhagen), a festschrift, conferences in his honor, and election as a fellow of several societies (ASA, Linguistic Society of America, American Association for the Advancement of Science, International Society of Speech Communication). Along the way, when the questions that he wanted to address were in advance of the available technology (in his case, not an infrequent occurrence), he donned the hat of a speech engineer and developed his own instrumentation for taking aerodynamic, respiratory, laryngeal, and articulatory measurements.

In short, John Ohala is among the top few of the world's foremost scholars in phonetics and phonology. For the past 40 years, his pioneering, sometimes controversial, but consistently insightful work has opened up new lines of investigation into sound structure and into human knowledge of these structures, setting the trajectory for the field and inspiring—by his example—other researchers to be imaginative and to broadly embrace other disciplinary approaches in their investigations.

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