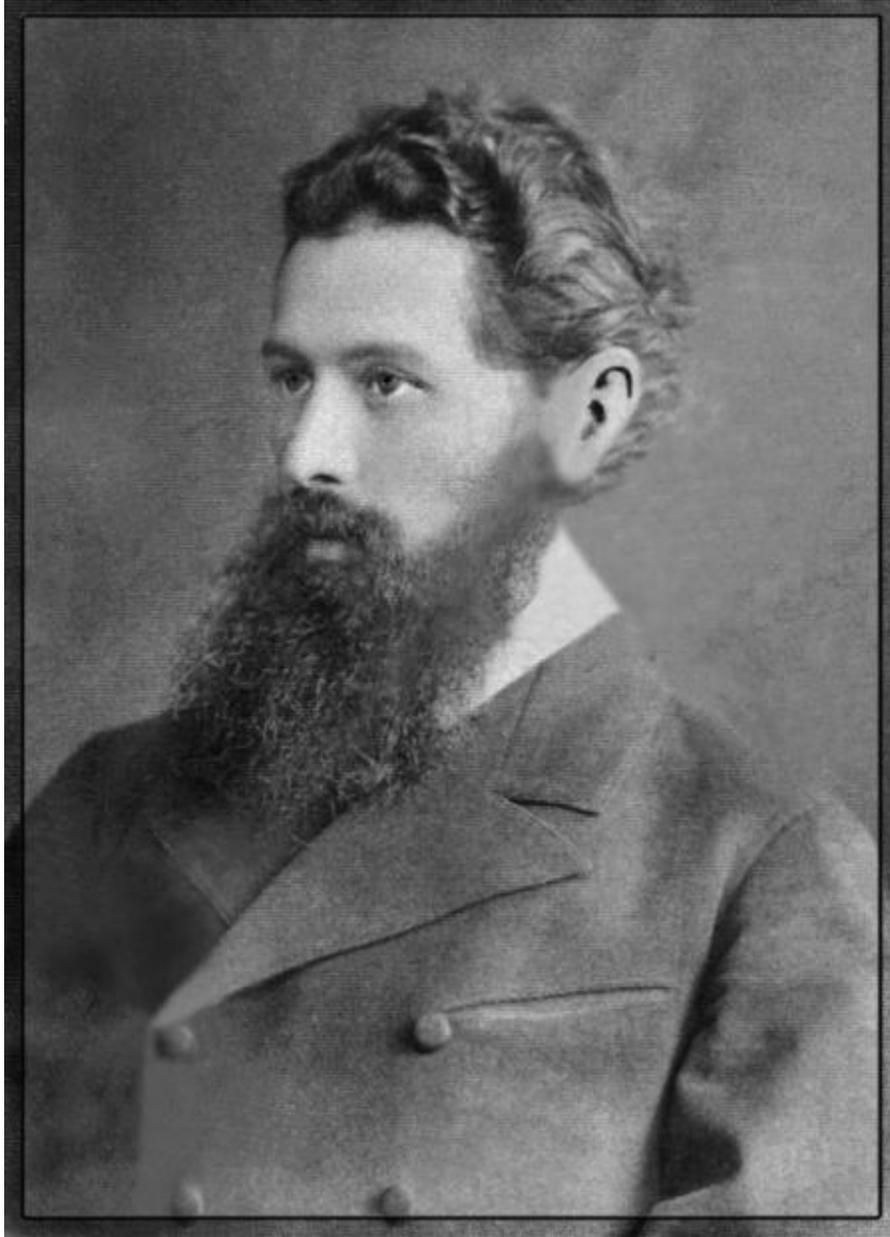


Mikołaj Kruszewski in the 21st Century

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“Sounds and words do not exist, but are pronounced.” (1883:56)

Prefiguring many advances in linguistic theory, the scholarship of nineteenth century scholar Mikołaj Kruszewski is today largely forgotten. In this presentation I discuss some of his major insights, and place his work in the context of modern approaches to language structure

- *The non-teleological nature of the linguistic system*
- K.'s strict proscription against any teleological influences on the linguistic system ("We do not know any facts in language which would have...a teleological nature") has been opposed by many thinkers over the intervening years.
- In recent times, advocates of teleological pressures on phonological systems include Kirchner (2004) (who, adapting the long-proposed "articulatory undershoot" and "articulatory anticipation" models, considers speaker "laziness" as an active pressure on the linguistic system), Kingston and Diehl (1994) (who propose that speakers' "phonetic knowledge" influences their choice of certain allophonic values over others), Jun (1995) and Steriade (2001) (who have similar proposals regarding the role of speakers' knowledge of cue robustness affecting their choice of allophone), and Kingston (2002) (who actually goes so far as to suggest that speaker "altruism" plays a role in the acoustic dispersion of phonological values). By contrast, a number of scholars, among them Martinet (1952), Vincent (1978), Ohala (1981), Labov (1994) Johnson (1997), Bybee (2001), Blevins (2004), Silverman (2006), and Wedel (2006), reassert K.'s proposal that the functionally beneficial structural properties of the linguistic system are an emergent consequence of passive diachronic pressures, and in no way whatsoever point to any teleological factors that affect such structures.

- The generative or creative character of language, termed “production” (as opposed to “reproduction”)
- K.’s proposals vis-à-vis the generative nature of linguistic knowledge center on his discussion of *production* versus *reproduction*. This rather simple and straightforward distinction prefigures virtually all the major assertions of the generativist program.
- Words are either *produced* (generated) for the first time, or are *reproduced* (recited) from memory. Regarding produced words, due to words’ mental organization into complex *nests* or *systems*, we have the ability to effortlessly create (and understand) novel constructions. *Produced* words may thus induce disharmony in the sense of creating novel forms alongside established ones, the two forms then competing for dominance in usage. “Since the forms produced will always be similar to one of the existing types in the language...and since, of the two types serving with the same function, only one of them usually remains in the language with the passage of time, we may conclude that production introduces only a *temporary* and *relative* disorder into the linguistic system” (p.93).
- Whereas Chomsky places the generative ability of language users at an intrinsic mental—nay, genomic—level completely independent of the “systems and nests” that characterize the extrinsic properties of linguistic structure, K. proposes that the extrinsic structural organization of language actually drives the generative capacity.
- Phonological rules (“sound laws”) are universal
- A *static law* of sound is one that is relevant at the synchronic level of analysis: “any sound which occurs acoustically and physiologically under identical conditions is approximately the same among all individuals of a given dialect and time” (p.17).

However, “If children were completely identical to their parents, no *development* could take place. The situation is entirely the same in language...” (p.17:fn.6).

- Such simplifications may readily take the form of static syntagmatic *laws* operating on the sound system: “*only sound z₁, never sound z, can be combined with sound x*” (p.22). Such static (i.e. synchronic) laws governing the distribution of sounds may derive from one or both of two sources. Some such laws may be *physiologically necessary*, while others may be *historically necessary*.
- **The connectionist organization of the lexicon in “systems” or “nests” of morphemes and words, an organization that makes acquisition, lexical storage, and linguistic creativity so speedy and effortless: *laws of similarity* (phonetic and semantic) and *laws of contiguity* (which prompt the mental association of words that tend to be contiguous in the speech stream)**
- “*Every word is tied to other words by bonds of similarity association*” (p.65). Words are similar to each other in *external* ways (in terms of their phonetic properties) and also in *internal* ways (in terms of their semantic properties): referencing Mill, K. writes, “because of a special psychological law, every word is capable both of calling forth in our mind other words to which it is similar and of being called forth by these words” (p.65). In addition to these “laws of similarity” that affect the mental organization of words, there are “laws of contiguity” which prompt mental associations among words that tend to be contiguous in the speech stream. Thus *horse* and *neigh*, *dog* and *bark*, for example.
- Moreover, words are not indivisible wholes, but instead, consist of morphological units. “*Each of [their] parts is connected by separate bonds of similarity with the same or almost the same part in thousands of other words*” p.69).

- It is due exclusively to the fact that morphological elements are cycled and recycled in different contexts (with predictable semantic consequences) that they possess their morphological status as separate elements in our consciousness.
- More broadly, elements of the speech stream may acquire their linguistic status due solely to their use and re-use. In time, such *complexity* may lead to *indeterminateness*, for example, as when a particular allomorph becomes unhinged from its associative network to become a separate form, much like speciation in biology, K. notes.
- It is only in the most recent times, with the advent of dynamic systems theory, connectionist theory, chaos theory, etc., that linguists have begun to entertain plausible models of linguistic mental representation. K.'s approach is thus close in spirit to connectionist models of learning, including (neural) networks, spreading activation, and probabilistic learning as factors in ontogenetic representational change. A fine overview of connectionist thought may be found in Elman et al., (1998).
- **The linguistic system may be analyzed as the product of pressures and constraints in inherent conflict with one another**
- The process of language development is presented as *a perpetual antagonism between the progressive force based on similarity associations and the conservative force based on contiguity associations* (pp.116-7).
- K. observes that language in its ideal state possesses a one-to-one correspondence "*between the world of words and the world of ideas*" (p.68). And although language never achieves this one-to-one match-up, there are usage-based pressures that prompt movement toward this idealized state, and others that prompt movement away from it.
- In order to satisfy this one-to-one correspondence, "a language must have one *special and unique expression* for each particular

idea and each of its particular nuances” (p.87) (i.e., no allomorphy; no total synonymy, no homophony). If achieved, “*a complete general and particular correspondence between the world of words and the world of ideas would result*” (p.87).

- These pressures acting on language structure—though each functionally beneficial when considered in isolation—are in inherent conflict with each other. Clearly, the very pressures that act to bind or integrate morphological units into words serve to stymie the one-to-one correspondence between sound and meaning. And while many (perhaps most) static laws are phonetic in nature—that is, produce “negligible (phonetic) differences” among the sounds in alternation—“the varieties of a given morphological unit which differ very little can, with time, develop into units which are much more different from one another, while the function which they must fulfill remains the same” (pp.88-9).
- Imbalance, indeterminacy, and *change* are the inevitable result: “we can imagine how much chaos the phonetic degeneration of words must inevitably introduce into the ideal system of language...” (p.89).
- It is the very tug-of-war among pressures on language structure that induces flux. The emergent result is that lexical and morphological structure is in part cued by the very product of this conflict: morphological units are “cemented” together into words, as governed by *sound laws*. This tug-of-war establishes an inherently unstable linguistic state involving both accretion and erosion such that words degenerate both phonetically and morphologically in an ongoing process of *reintegration*, thus constantly providing language with new material.
- Nonetheless, remarkable systematicity remains, such that words and their morphological units are mentally organized in both semantic (internal) and phonetic (external) nests or systems, which accounts for the ease and speed of their learning, and accounts for language users’ ability to effortlessly generate and

understand novel forms. Still, word *production* may disrupt harmony—albeit usually only temporarily—by introducing new forms that compete with older ones.

- Linguists working in the “optimality theory” framework have nonetheless taken and run with the idea that the linguistic system may be the product of—and may be modeled as—inherently conflicting constraints on well-formedness (e.g. Prince and Smolensky 2004). Surely, the proposed conflicts between the theoretic constructs (1) “markedness” and (2) “faithfulness” may be seen as modern reflexes of K.’s characterization of language development as “*a perpetual antagonism between (1) the progressive force based on similarity associations and (2) the conservative force based on contiguity associations*”.
- **The role of paradigm uniformity in allomorph selection**
- The process of language development is presented as a *perpetual antagonism between the progressive force based on similarity associations and the conservative force based on contiguity associations* (pp.116-7).
- Such a pressure toward “paradigm uniformity” has been most recently investigated by Steriade (2000). Paradigm uniformity has been previously considered in the context of *analogy* (Kuryłowicz 1949), *cyclic rule application* (Chomsky and Halle, 1968) and *output-output* correspondence (Burzio, 1994 1997; Benua 1995; Flemming 1995, Kenstowicz 1995; McCarthy and Prince 1995).
- **The positional prominence of morpheme-initial elements in terms of (a) the number of contrastive values found here, (b) the resistance to both phonetic change and morpheme re-association of these elements, and (c) these elements’ psycholinguistic “salience”**

- K. observes that root-final values tend to undergo accommodating changes to suffix-initial values far more often than vice versa, a pattern that may be rooted in both pressures on the phonetic system, and in pressures on the functional (morphological) system.
- Regarding the former, “preceding sounds change in order to accommodate the following sounds. The change of a following sound to accommodate a preceding sound is much rarer”.
- Regarding the latter, “if a suffix is not rich in sounds—and this happens very often—the consequence of a change in its initial sound in one case and of invariability in another is not variation but its disappearance as a suffix” (p.79).
- Erosion and accretion thus act in harmony to continually renew the linguistic system. As the posterior ends of morphemes erode, their remnants (their anterior ends) may be incorporated into pre-existing structures, a development that K. notes may or may not be accompanied by semantic change.
- A century later, certain of these and related observations were reintroduced by Nooteboom (1981), and have even more recently been considered by Beckman (1997, 2004), who notes the “privileged” status of initials, expressing their character with the notational devices of optimality theory.
- **The relevance of transitional probabilities to parsing**
- K. observes that even if we have no knowledge of the morphological structure of a particular language, it is possible to infer, solely by the regularities of phonetic patterning, the various forms roots might take.
- The re-association of phonetic material both at the level of sound production and morpheme affiliation thus establishes the “cement” that helps cue lexical and morphological structure.

- The “cementing” of phonological structure across spans of the speech stream has more recently been observed by Goldsmith (1976), though to be sure, Goldsmith’s so-called “autosegmental” phonology is merely a schematic and descriptive characterization of a subset of such patterns (those present across spans), and is totally silent on such spans’ functional relevance. Scholars antecedent to Goldsmith, however, were far from silent on the functional role of this “cement”: both Trubetzkoy’s (1939) “boundary signals” and Firth’s (1948) “prosodies” reference cues to lexical and morphological structure. Most recently, Aslin and associates (for example, Saffran, Newport, and Aslin 1996a,b, and Aslin, Saffran, and Newport 1998) investigate the utility of “transitional probabilities” in both adult and infant learning of contrived mini-languages, finding that, indeed, statistically rare sound sequences found at “word” boundaries (of course, in these experiments they are not real words) may serve to cue these boundaries.
- The recycling of entrenched motor routines as a contributing factor to phonological regularity**
- With respect to the physiology of speech production, K. points out that we likely retain a memory of the muscle sensations involved. He suggests that, even upon thinking, the muscle memories are activated, “striving to be released as muscle movements” (p.15), and points to the dream and ruminative states of deaf mutes—during which hand movements are readily visible—in support of this proposal. Speech acts, then, entail a recycling of remembered muscle movements. Such motor routines become entrenched, and are readily re-summoned as necessary: “This quality of our organism is very advantageous: it contributes to the self-preservation of the organism with the least possible loss of strength” (p.15).

- **The relevance of memory of recent versus remote speech tokens as a factor in sound change**
- The role of memory—and in particular the memory of recent versus remote speech acts—comes to the fore when considering the phenomenon of accent shift upon prolonged interaction with new speech communities: “we unconsciously reproduce the sound we hear in the speech of those around us”. Yet still, there exists a well-defined opposing tug towards stasis. K. mentions the (Russian) Jewish guttural *r* ([ʁ]) as an example of a sound that persists “in several generations which have people of Jewish origin among their ancestors despite the admixture of outside blood” (p.16).
- The spontaneous changes of a sound depend on the gradual change of its articulation. We can pronounce a sound only when our memory retains an imprint of its articulation for us. If all our articulations of a given sound were reflected in this imprint in equal measure, and if the imprint represented an average of all these articulations, we, with this guidance, would always perform the articulation in question approximately the same way. But the most recent (in time) articulations, together with their fortuitous deviations, are retained by the memory far more forcefully than the earlier ones. Thus, negligible deviations acquire the capacity to grow progressively greater... (pp.51-2)
- **The inevitable mismatch between articulatory and acoustic configurations that, just as inevitably, leads to both sound change and the “reintegration” or “re-association” of sounds into other (neighboring) morphemes**
- A sound necessarily fluctuates within certain parameters in terms of its articulation, but such fluctuations do not necessarily possess isomorphic analogs in terms of their acoustic impression. Minor articulatory variations may go unnoticed by a listener, perhaps

due to inherent sensory limitations; again we see the indeterminacy of elements that possess linguistic significance.

- K.'s proposals regarding the complex relationship between articulation and acoustics—another manifestation of linguistic *indeterminacy*—has been explored by a number of subsequent scholars in various theoretical guises, among them, Stevens' (1972) quantal theory and Ohala's (1981) listener-based approach to sound change, though, to be sure, both technology and the scholarship it has engendered have advanced considerably from K.'s mere speculation that infrequent or similar sounds are more readily subject to listener confusion. The articulatory-acoustic mismatch bears an intimate relationship to K.'s uncontroversial assertion that listeners do not have direct access to the minds of speakers, but instead must (imperfectly) reconstruct speakers' mental states. Indeterminacy at this level of analysis has come to play a prominent role in self-organizational approaches to language structure and language change, among them the computational models of Steels (2000), de Boer (2001), Liberman (2002), and Wedel (2004, 2006).
- **Frequency of usage effects on patterns of sound change**
- Frequency-of-use is an additional factor that may trigger a reintegration of morphological units. For example, if a suffix is infrequently used, its morphemic status may be jeopardized such that it merges with its neighbors.
- The most frequently employed words tend to be summoned from memory, and thus are more resistant to harmonizing (leveling). The *law of contiguity* also plays a role in resistance to harmony: idioms and rote expressions may retain archaisms
- The role of *frequency* in patterns of usage and patterns of change is not novel to K., of course. The scholarship of both Paul (1880) and Schuchardt (1885) indicates that several contemporaneous thinkers were mulling over these ideas. Nonetheless, K.'s

proposals on the matter are far more detailed and sophisticated than those of his contemporaries, and only in the most recent times are being explored in variationist/sociophonetic models of language representation and language change.

- **The role of *the listener as a source of sound change***
- Due to the imperfect correlation between articulation and acoustics, “we receive one acoustic impression” (p.12), but at the articulatory level, a number of distinct and vacillating articulatory components are involved. “Thus, the acoustically indivisible sound is physiologically complex; there is a group of varied but coordinated operations” (p.12).
- It is this inherent indeterminacy of linguistic units that establishes the preconditions for language change: “*the whole, which consists of such units, must be unstable and capable of change; the development of a language is explained by the nature of its elements*” (p.13).
- Sounds that bear an inherent perceptual similarity may be sporadically confused with each other—they are “*indistinct for everyone*” (p.31)—and may, over time, result in the change of one or both, especially in cases when the word is infrequent or unfamiliar. K. considers the palatalized velars and the palatalized alveolars of Russian as an example

Though elements of convolution and circularity are certainly present in the intellectual history of phonological theory (as in every field), it is best to regard this circularity not as akin to a wheel in motion wholly suspended in space, incapable of advance, but rather, as akin to a wheel in motion making (at least intermittent) contact with the ground, such that there exists genuine progress toward some destination. The scholarship of Mikołaj Kruszewski, largely forgotten, and never really having had a direct impact on phonological theory, should certainly be regarded as one of the most “grounded” chapters in the history of linguistic theorizing. It has thus been the goal of this presentation to introduce Kruszewski’s insights to modern discourse on phonology, and perhaps, as a fringe benefit, to instill at least a modicum of humility among current scholars as they gauge the originality of their own research (again, the present author among them).

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