

Steve Parker (ed.) (2012). *The sonority controversy*. (Phonology and Phonetics.) Berlin & Boston: De Gruyter Mouton. Pp. xvi + 487.

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The sonority controversy, edited by Steve Parker, comprises twelve contributions, written from a variety of angles, about sonority.* The book is structured around five sections: “Sonority and Phonotactics”, with six contributions; “Sonority and Phonetics”, with three contributions; and “Sonority and Language Acquisition”, “Sonority and Sign Language”, and “Sonority and Computational Modeling”, each with a single contribution. Preceding these sections, the reader will find a brief introduction, in which the editor identifies the need for a contribution on this topic, emphasizes the controversial character of the notion of sonority and allied topics, summarizes the articles that integrate the volume and shows how they are interconnected.

Despite the long-established argumentations based on sonority, dating back at least from Sievers (1876), the subject of sonority alone had never previously been the explicit focus of an entire book. Aware of this, the editor has sought to fill the gap with a fresh, comprehensive overview of the field. The new summary provided is extremely valuable. As discussed below, most contributions provide cutting-edge results framed within the latest phonological models and nourished by the most advanced phonetic and computational techniques. Several phonological models, submodels and refinements, including Optimality Theory, Stochastic Optimality Theory, Harmonic Grammar, the Split Margin Theory, relational alignment, relational alignment in stringency form, or the P-map, and a rich set of techniques and methodologies, including real-time magnetic resonance imaging (MRI), motion capture, or the latest connectionist networks, support the proposals.

The weight of the book lies, somewhat conspicuously, with the relationship between sonority and phonotactics, a distribution that reflects their traditional reciprocal interest, and which has in fact been highlighted as one of the volume’s main shortcomings (see Hyde 2013). The empirical interest of most contributions, including those categorized under the label of “Sonority and Phonetics”, are instances of consonantal contact, which allow the authors to test classic sonority-based generalizations on segmental organization within the syllable and across syllables, such as the Sonority Sequencing Principle (SSP), the Minimum Sonority Distance (MSD) principle, the Sonority Dispersion Principle (SDP) or the Syllable Contact Law (SCL), from different perspectives.

In accordance with the title of the volume, the articles also echo the classic polemics around the notion of sonority, and shed new light on them: whether sonority has a phonetic base, which phonetic correlates best define phonological sonority, and whether sonority even exists at all. Of special interest are the reflections made on some of the most charged debates, and which the reader can find disseminated among the chapters: reflections about the explanatory adequacy of traditional sonority-based argumentations, about whether sonority-based principles are universal or just

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apparently universal, about whether they are too specific to be encoded in the human genome, about their diachronic genesis and their perceptual grounds, and finally about the synchronic knowledge speakers have about them and how this knowledge is achieved.

The kaleidoscopic nature of the volume, on the other hand, brings to the reader a multidimensional perspective about a variety of topics. This is the case, for instance, of sibilant segments followed by a consonant word-initially, classic SSP disobeying structures, which in the volume are analysed either as appendices or extrasyllabic segments (see, for instance, the contributions by Baertsch and by Cser), as exponents of excellent carriers of phonetic cues (see the contribution by Henke et al.), or taken as an illustration of formal reversals (see the proposal in Smith & Moreton). It is the case too of liquid segments, which have an ambiguous behaviour with regard to sonority and which are the target of a formal analysis by Baertsch, of a descriptive approach by Cser, of a typological examination by Parker, and even of an MRI analysis by Proctor & Walker.

This overlapping of subjects, though, does not always guarantee fluent communication between chapters. A deeper interconnection between chapters would have enriched the overall result and would have avoided the redundancy concerning the basic facts of sonority. This is perhaps the only aspect of this volume that I would identify as a shortcoming. In what follows I review each of the chapters in order.

In the chapter “Sonority and sonority-based relationships within American English monosyllabic words”, Karen Baertsch expands the applications of the split margin hierarchy that she herself developed in Baertsch (2002) to consider the sonority relationships established between the syllabic constituents of American English monosyllables. The split margin approach refines Prince & Smolensky’s (1993/2004) sonority hierarchy by establishing a straightforward correlation between the constituents of the syllable. This hierarchy identifies three types of constituents that behave alike and which are logically targeted by three distinct universal hierarchies: M1, which stands for a singleton onset, for the first element of a complex onset and for the second element of a complex coda; M2, which stands for a singleton coda, for the second element of a complex onset and for the first element of a complex coda; and, finally, P, standing for the peak. The constraints governing the M1 constituent give preference to low sonority segments, whereas the constraints governing the M2 constituent give preference to segments of high sonority. The split margin hierarchy has already proven to have compelling applications to account for mirror effects between the syllabic constituents (see, for instance, Davis & Baertsch, 2011, where the proposal is applied to the intricate behaviour of liquids in Campidanian Sardinian) and, as argued by the author, it avoids some of the drawbacks of alternative approaches, such as relational alignment (Gouskova, 2004) or relational alignment in a stringency form (de Lacy, 2004), which target sequences with an identical intra- or inter-syllabic distance in the same way. (For a critical comparison of these three approaches, see Pons-Moll, 2011: 110-113; 160-164).

In this chapter, the author shows how this hierarchy is able to capture not only the classic sonority sequencing principle and minimum sonority distance effects – and how it succeeds in circumventing their main shortcomings, but also additional unnoticed effects that occur either in the onset, in the peak, in the coda, or even in the rhyme, without the need to resort to additional constraints unrelated to sonority, such as the OCP. Most of these effects are what the author categorizes as the “worst of the best”. In the cases identified, a dispreferred segment is tolerated when it occurs in isolation but it is not when it occurs in a branching structure, i.e., in combination with

other elements. Nasal consonants, for instance, are acceptable as singleton onsets but they are not as the first element of a complex onset (a nasal followed by a glide cannot constitute an onset in American English, although it satisfies the minimum sonority requirements of the language, as it does for instance a sequence of an obstruent followed by a liquid). Similar situations are detected within the coda and within the rhyme (for which Baertsch provides a thorough and novel account): although nasal and lateral segments can be the peak in unstressed syllables, they fail to appear followed by otherwise well-formed coda segments. Rhotic segments, which are more acceptable as peaks given their higher sonority, are allowed to surface both in unstressed and stressed syllables and followed by a consonant, but not by a consonant cluster. It is only the best peaks (i.e., vowels) that succeed in surfacing with coda clusters, an instance of what we might call “best of the best”. Baertsch provides convincing arguments that the relationships between the constituents of the syllable extend much further than classic statements about the structure of the syllable tend to tell us, and that the split margin approach is a clever tool for dealing with them.

András Cser’s chapter, entitled “The role of sonority in the phonology of Latin”, provides a good descriptive survey of the phonological patterns of Classical Latin governed by sonority requirements. The chapter, which deals both with the static distribution of segments within the syllable and across syllables and with dynamic phonological processes occurring in various morphological domains, invokes standard principles such as the SSP and the SCL, which interact with more unorthodox – and rather ad hoc – generalizations such as the Place Condition, the Inverse Place Condition or the Generalized Place Condition. The data are drawn from various poetic corpora, and the author openly acknowledges the problems derived from dealing with the pronunciation of a dead language: conjecture is inevitable.

Following an instructive review of the segmental inventory of Classical Latin, Cser introduces the basics of the syllable structure in this language, and illustrates how it largely conforms to the SSP and the SCL. The author highlights, however, some well-known disobeying structures, such as the ones generated by [s], which can appear flanked by stops (*dexter* ‘right’ [ks.t], *depstum* ‘pastry’ [ps.t]) and at word boundaries (*spirare* ‘breathe’ [sp], *stare* ‘stand’ [st]; *ops* ‘help’ [ps], *rex* ‘king’ [ks]), structures that have persisted, to differing degrees, in Romance languages. He likewise points out other more intricate structures, such as the way in which the intervention of coronal segments, either in the coda or in the onset, impede fulfilment of the SCL (e.g., *ipse* ‘himself’ [p.s] and *parvus* ‘small’ [r.w] are both allowed, although the intersyllabic sonority is rising), a behaviour that the author relates, respectively, to the above-mentioned Place Condition and the Inverse Place Condition. (Similar place interferences are found in the survey provided by Henke et al. – following chapter, so it would have been constructive to see how the perceptual approach might account for those).

Of interest is the author’s observation concerning the onsets of a stop followed by a liquid: those with a lateral as a second member are much rarer than those with a rhotic, and also more prone to being broken up by the insertion of a vowel, a fact that the author attributes to the lower sonority of the former. This tendency is consistent with the phonetic results in Parker (2008) and it seems that it has persisted in Romance languages, where this asymmetry manifests itself in various ways (see Pons-Moll 2008, 2011).

Eric Henke, Ellen M. Kaisse & Richard Wright’s chapter “Is the Sonority Sequencing Principle an epiphenomenon?” is intended to show that a cue-based approach to consonant phonotactics has a broader empirical coverage than traditional

segment sequencing generalizations, such as the SSP or the SCL. Indeed, the authors claim that a perception-based account is superior in that, besides subsuming the correct predictions of the SSP and the SCL, it avoids the incorrect ones, and covers a wider range of phenomena about which those principles have little or nothing to say, without the need to introduce additional mechanisms and stipulations. They illustrate the proposal by focusing on the phonotactics of obstruents and sonorants in Korean and Modern Greek.

The authors argue that the primary cause of phonotactic phenomena typically addressed in terms of sonority is the activity of objective and well-understood acoustic dimensions, including cue robustness and cue precision, that contribute to the auditory recoverability of segments; sonority is thus a mere epiphenomenon or, in the best-case scenario, one more factor. The main body of the chapter is devoted to explaining the basics of cue theory, to show how it manifests across segments, and how it transcends segmental organization across a variety of languages. The authors specifically apply the proposal to the phonotactics of Korean (where various assimilation processes, originally analysed in terms of the SCL, are interpreted as a consequence of perceptually weak sequences) and Modern Greek (where a series of enhancement processes are interpreted as a means to avoid perceptually weak sequences, rather than as an OCP effect). They also illustrate how the cue-based approach is able to explain those patterns in both languages that escape sonority-based approaches, in addition to making the otherwise correct predictions. The chapter is conspicuous in highlighting the belief that sonority based accounts are over-rated. Indeed, a significant part of the chapter is devoted to pointing out the main shortcomings of traditional approaches to consonant phonotactics rooted in sonority.

The authors claim that the phonetic correlates of sonority are problematic, although acoustic intensity and segmental duration have proven to be their most reliable manifestations (see Parker 2008); once these parameters are tested cross-linguistically they vary dramatically, with no consequences for the phonotactics. However, acoustic intensity and segmental duration are precisely included among those that define cue robustness (e.g., loudness, temporal distribution, impact and modulation), which, as we have seen, is one of the key features of their proposal. In a similar vein, the phonological details of the sonority scale, they state, have been claimed to vary from language to language. This point of criticism is not clear to me, since this variability in the details of the sonority scale is a common way to explain contradictory patterns across languages, and they remain as such whatever the theoretical perspective adopted.

More compelling are the criticisms concerning the under- and over-generation of structures within the sonority-based approaches. It is well-known that sonority sequencing generalizations fail to account for some sonority plateaux and reversals, such as those of sibilant + stop; for these, they propose an account that relies on the intrinsic internal cues of sibilants, which make them less dependent on formant transitions and which explains their resistance to change in such clusters. On this point I have to agree that the proposal is much more realistic than any other account based on the extrasyllabicity or the appendixal character of sibilant segments. At the same time, though, these internal cues of sibilant segments do not seem to prevent them from undergoing a series of processes in (internal) coda position, which range from debuccalization in Spanish, gliding in Occitan, to rhotacism in Galician and some varieties of Catalan and which can be better understood as a means of improving the intersyllabic sonority distances (see Pons-Moll 2011). On the other hand, classic sonority generalizations lead to the generation of tautosyllabic clusters

like [tl] and [dl], which are unattested in most languages; nothing is said, though, about how the perceptual perspective would deal with those.

In any case, the most problematic aspect of their criticisms lies with the insistence of deriving all phonotactic phenomena from the same kind of principles. They argue, for instance, that the SCL has nothing to say about changes in place of articulation so additional principles are needed, and this is not necessary under the perceptual account. But the interaction of principles is precisely in the essence of current theoretical frameworks, such as Optimality Theory; moreover, the perceptual-based account itself needs to be supplemented with independent principles, like those referring to ease of articulation. On the other hand, one might wonder why these perceptual factors have no influence on the languages in which these seemingly sonority sequencing generalizations do not apply.

My contention is that there is no doubt that the SSP and the SCL are part of the speaker's synchronic knowledge (see Daland et al. 2011), and that it is very likely that these principles are grounded on perception. Rather than incompatible views, these are two sides of the same coin. What remains to be better understood is where this knowledge comes from (see, in this respect, the review of the following chapter by Van de Vijver & Baer-Henney, and the references therein), how these perceptual factors have crystallized in the form of these principles and whether they are actually active in the synchronic grammars.

Steve Parker's chapter "Sonority distance vs. sonority dispersion – a typological survey" examines the typological consequences for onset clusters of two well-known tendencies derived from the SSP, namely the MSD and the SDP, which occasionally promote diverging patterns. Whereas the former demands that sonority increases maximally from the first segment of the complex onset to the second, the latter demands that the sonority from the first element of the complex onset to the nucleus vowel is maximally and evenly dispersed. According to the MSD, therefore, an onset with an obstruent followed by a glide is the best possible structure, but according to the SDP an onset with an obstruent followed by a liquid is the most harmonic structure, since the liquid is halfway between the obstruent and the vowel in terms of sonority.

On the basis of an exhaustive examination of the attested onset clusters in a corpus of 122 languages, the author concludes that neither of the principles can be neglected, inasmuch as in some languages the MSD has priority over the SDP and in other languages the opposite is the case. Collaterally to this finding, Parker establishes two novel kinds of category, the *glide offset continuum* and *liquid offset continuum*. The glide offset continuum gathers those languages that restrict the offset (C2) to glides but which differ in the kind of anchor (C1) they allow. The liquid offset continuum gathers those languages that restrict the offset (C2) to liquids and which also differ in the permissible segments in the anchor position. Within both categories, the possible anchor-offset combinations in each language follow classic implicational relations. Unlike other contributions in the book, such as the chapter by Henke et al., here the notion of sonority as a basic organizational feature of Universal Grammar is strongly vindicated.

The empirical coverage and the theoretical devices used in the proposal, which are rooted in the relationships between the syllabic constituents, overlap to a certain extent with those in Baertsch's chapter (and her previous work), and some cross-referencing would have been beneficial. Parker's contribution is valuable in that it explicitly confronts for the first time two tendencies with potentially opposite effects on onset clusters and tests them on the basis of an unprecedented set of languages.

This research agenda, I think, should also be applied to codas, whose inter-linguistic behaviour is much more unfamiliar and intricate than that of onsets.

In the chapter entitled “Sonority variation in Stochastic Optimality Theory: Implications for markedness hierarchies”, Jennifer L. Smith & Elliott Moreton evaluate some of the formal implications that the two competing approaches to markedness hierarchies have in constraint-based models, such as Optimality Theory or Harmonic Grammar, once intra-speaker variation is considered and implemented within Stochastic Optimality Theory. The analysis undertaken points to the preliminary conclusion that whereas the scale-partition constraint family (Prince and Smolensky 1993/2004) correctly predicts – in principle attested – true harmony reversals, the stringency approach (Prince 1997; de Lacy 2002, 2004) cannot. The rationale provided is as follows: if the ranking of a constraint external to a markedness hierarchy is seen to vary with respect to at least three of its members, then the ranking between these members must also be variable, and this can lead, of course, to a harmony reversal. This circumstance is only possible within a scale-partition approach, since in a stringency approach a violation of a constraint targeting a certain structure necessarily implies the violation of the constraints targeting more marked structures. Within the context of the scale-partition constraint families, the authors also provide numerical arguments to discriminate true harmony reversals (e.g., those situations in which a less harmonic structure is preferred over a more harmonic one) from just apparent ones (e.g., those situations in which the effects of a constraint unrelated to the markedness hierarchy interferes and leads to an apparent harmony reversal).

The chapter is technically appealing and formally rigorous, but on the whole ends up being somewhat speculative, given the lack of sufficiently detailed data to test most of its claims (most of the data that serve as illustration are drawn from previous studies dealing with L1 and L2 acquisition): the available data involving variation with respect to markedness hierarchies is not enough, both qualitatively and quantitatively, to distinguish between true and apparent harmony reversals, to discriminate real variation from change over time, and, above all, to confirm indisputably the distinct predictions of both approaches to markedness hierarchies alleged by the authors. Moreover, the number of tokens available in the studies taken as reference is not large enough to implement the stochastic model under ideal conditions. For this reason it is difficult to evaluate the empirical relevance and applicability of the findings. Finally, although the authors assert that their results for intra-speaker variation can be extrapolated to cross-linguistic variation, it remains unclear to me why this should be the case. In relation to this subject, I wonder whether sonority reversals across languages should be attributed to the specific phonetic differences of classes of sounds between languages within the context of a non-discrete, dense and gradient sonority scale, rather than to strict constraint re-ranking (see Pons-Moll 2011: fn. 3, and references therein, for more discussion of this topic).

Ruben van de Vijver & Dinah Baer-Henney’s chapter, “Sonority intuitions are provided by the lexicon”, is a remarkable contribution to the pressing debate as to whether speakers’ knowledge of sonority is innate or learned from the structure and the frequencies found in the lexicon. The chapter also provides convincing arguments about how this referential lexicon is organized. While it is without doubt that the SSP is part of the speaker’s synchronic knowledge, what remains under debate is where this knowledge comes from. Studies such as Berent et al. (2007), focusing on English, Zuraw (2007), focusing on Tagalog, or Ren et al. (2010), focusing on Mandarin,

conclude that native speakers have sonority intuitions that go beyond the lexicon, and which can therefore be attributed to innate and universal grammatical knowledge, on the basis of a set of experiments showing that native speakers are able to discriminate the relative well-formedness of onsets that are unattested in the respective languages (see also Dumercy et al., 2014).

In this chapter, though, it is shown that such knowledge can be derived from the lexicon, provided that the learner has access to an analysis of the words in the lexicon in terms of distinctive features. The results obtained from a judgement experiment (on nonce words containing attested clusters differing both in frequency and sonority profile and unattested clusters differing in sonority profile) and a learning simulation lead the authors to conclude that the lexicon has sufficient structure for speakers to reach the generalizations concerning the SSP without having *a priori* knowledge of these. If this is the case, as it would seem to be, learning phonotactic statements about sequences of natural classes of sounds from the lexicon gives rise to sonority intuitions that go beyond what is directly observable in the language. It should be said that whereas the authors consider and reject the hypothesis that the learner only analyses words in terms of atomic segments, the data say nothing about the hypothesis that segments and features are two levels of analysis, both available to the grammar – as in Nazarov (2014). All that matters is that features must be present, but the data do not require absence of segments as a separate level of analysis. Furthermore, one might ask whether the features necessary to generalize beyond particular segments must be innate and universal, or whether they, too, can be learned from the lexicon itself. These are issues that the authors need to explore in the future.

This research strategy and its main findings are concomitant with those in Daland et al. (2011), who demonstrate that phonotactic generalizations are indeed projected from the lexicon and that any lexicalist model dealing with them must be equipped with both a sufficiently rich representation of the phonological context (e.g., syllabification) and a sufficiently rich representation of sonority itself (e.g., by means of features).

In the chapter “Sonority and central vowels: A cross-linguistic phonetic study”, Matthew Gordon, Edita Ghushchyan, Bradley McDonnell, Daisy Rosenblum & Patricia A. Shaw seek to determine whether it is possible to outline a specific acoustic dimension that can account for the low position of the schwa in the sonority scale, especially with respect to the peripheral vowels. In order to do so, the authors measure four potential acoustic correlates of vowel sonority (duration, maximum intensity, acoustic energy and perceptual energy) in five languages that differ in relation to the stress patterns associated with the schwa: Armenian, Javanese and Kwakwala, where the schwa, unlike the peripheral vowels, rejects the stress, and Hindi and Besemah, where the schwa and the peripheral vowels behave in the same way in relation to stress.

The study concludes that the low sonority of the schwa is indeed predicted by either one or another of the acoustic dimensions considered, but that, nevertheless, it is not possible to identify a single acoustic correlate that commonly explains the low sonority status of the schwa across the languages under examination, nor even the differences between vowels paired with schwa within the same language. For instance, while duration and perceptual energy appear to be relevant in most of the languages, they are not conclusive in Armenian. Nor do the distinct phonological patterns in relation to stress seem to have a decisive acoustic correlation: the schwa appears to be consistently weak, regardless of its phonological behaviour. In some more sporadic cases the results are even contradictory: in Armenian the schwa shows

a greater maximum intensity than both high vowels, although only the former rejects the stress. On a larger scale, the investigation points to the conclusion that phonological sonority cannot be grounded on a single acoustic parameter, but rather on a – as yet to be defined – combination of distinct acoustic and articulatory parameters, each with greater or lesser prevalence depending on the language.

The chapter “Sonority and the larynx”, by Brett Miller, is an attempt to identify and rationalize the articulatory primitives underlying the intrinsic perceptual properties of segments that have proven to be a fair alternative to sonority explanations for segment organization. The proposal thus builds on previous cue-based accounts of sonority effects (Steriade 2009; Wright 2004), and extends the empirical scope to less common sounds with which the “sonority literature” is not so familiar, such as implosive and glottal consonants, and which are difficult to characterize in terms of sonority given their placeless nature (e.g., Lloret 1992).

The author identifies two scalar primitives, the *source scale* (referring to the nature of the sound source) and the *aperture scale* (referring to the attenuation derived from the impedance in the vocal tract), each with its own organization of classes of sounds, and which combined give rise to a complex sonority hierarchy that reproduces the intrinsic relative perceptibility of segments.

The interesting situation arises when pairs of sound types show contradictory rankings in each of the scales. In this case, it is predicted that they are unranked for sonority, a lack of definition that has significant typological consequences. The members of unranked pairs are those that rarely or never occur adjacent within the syllable and even across the syllable boundary, so that it is impossible to find phonological evidence for their relative sonority ranking. Voiced stops, for instance, rank higher on the source scale than voiceless fricatives, but the latter rank higher in the aperture scale, and this is why it is hard to find phonological evidence of their relative sonority ranking. This chapter is a good complement to that of Henke et al., in that it explores the articulatory bases of the perceptual accounts of segment organization and includes an extensive survey of under-documented and controversial sounds in the literature devoted to sonority, such as implosives and glottals. Unlike the rest of the contributions in this volume, the author makes a noteworthy effort to integrate the results provided in the other chapters into his proposal.

In the chapter entitled “Articulatory bases of sonority in English liquids”, Michael Proctor & Rachel Walker examine the articulatory behaviour of tautosyllabic liquid-vowel and, especially, vowel-liquid sequences in American English, using MRI in three adult male speakers. The research conducted seeks to answer why vocalic contrasts are more reduced before the rhotic than before the lateral; why vowel contrasts are reduced when another consonant in the coda follows both liquids; and, finally, what determines which vocalic qualities survive in these specific contexts. The empirical focus, therefore, overlaps in part with that of Baertsch, in that the intricate relations between the elements in the rhyme also come under scrutiny, but in this case the argumentation follows another angle. Among the findings are that, first, the overall vocal tract aperture, on which most sonority studies exclusively rely, is not enough to account for the different behaviour of liquids in the contexts mentioned, and other factors (such as the dorsal configuration, the degree of stricture, the articulatory stability, and the coordination of gestures) must also be considered. Second, the fact that there are more restrictions on the rhyme with a rhotic than with a lateral in the coda is due to the articulatory characterization of the English rhotic as more intrinsically vocalic than the lateral, a result that is consistent with some of the premises in Baertsch’s chapter. Third, the greater articulatory overlap between the

vowel and the class of liquids explains the reduction of vocalic contrasts in this context. Finally, the vowels that tend to survive with both kinds of liquids are those that better align with the dorsal position of the liquid, that is, [ɑ] and [ɔ] before the rhotic, and [ʌ], [ɔ] and [oʊ] before the lateral. On the basis of these results, the authors conclude with a vindication of the need to enrich the notion of sonority by taking into account a wider range of articulatory properties.

“The Sonority Dispersion Principle in the acquisition of Hebrew word final codas” is an insightful, compelling chapter in which Outi Bat-El describes and evaluates the acquisition of word final codas in three Hebrew-acquiring children, two presenting normal development and one diagnosed with a mild development disorder. Although the Sonority Dispersion Principle (SDP) would predict that in coda position sonorants should be acquired first, the author shows how this is not the case when it comes to production data. Bat-El identifies, instead, a U-shaped development, with an early phase of dominance of obstruent codas, followed by an interval of dominance of sonorant codas, and a final consolidated phase with obstruent codas (in accordance with the frequencies of the target language).

Rather than taking this behaviour as an argument to undermining the role of the SDP in the acquisition of codas in Hebrew, the author argues that the principle does emerge once perception data are considered. While it is true that production data show a clear preference for obstruent codas (for which the articulatory invested effort is less than for sonorants), perception data show a clear preference for sonorant codas, which is reflected in the higher number of attempted targets with sonorant codas (especially in the slow learner) and which conforms to their higher perceptual accessibility. The dichotomy between production and perception in relation to sonority has, therefore, a clear-cut translation in the acquisition of consonant codas in Hebrew. Another interesting conclusion to be drawn from the data collected in this study is that the slower the development the more evidence there is for the SDP, and in general for any universal principle not supported by the ambient language: fast learners produce word final obstruents very early in order to meet the frequencies in the language, so that the SDP has little chance of materializing; in contrast, slow learners, are less receptive to the ambient language and so universal principles, such as the SDP, have an opportunity to surface.

The early production of obstruent codas, on the other hand, is interpreted as an effect of the excessive accumulation of independently marked elements in the acquisition of new elements, which makes it unfeasible for them to be acquired at once. Codas are prosodically marked and sonorants are segmentally marked, and this explains why children pick the less marked and the “already acquired” segments (e.g., obstruents) as opposed to the more marked and the “not yet acquired” segments (e.g., sonorants) when having to acquire a new marked prosodic structure (e.g., coda). This chapter provides an in-depth account of child language acquisition which has the virtue of being much more than an obvious, superficial interpretation of the observable facts.

The main purpose of Tommi Jantunen’s chapter “Acceleration peaks and sonority in Finnish Sign Language syllables” is to test the Acceleration Peak Hypothesis, according to which the physical manifestation of a sonority peak in sign language is an acceleration peak, as has been claimed in previous pioneering studies, such as Luck & Sloboda (2008). This follows from the general belief – paradoxically one not yet tested – that peaks in signed syllables are associable to phonologically definable movements that are meant to enhance the visibility of the signing. In order to assess the correlation between sonority and acceleration in sign language, the author

measures the number of acceleration peaks that signed syllables can include and how exactly these peaks are distributed along the syllable-to-syllable transitions. The analysis is based on an unprecedented corpus of motion capture data consisting of about 52 seconds of a continuous monologue signing performed by a native Finnish deaf subject.

Contrary to the presumed hypothesis, the author finds that, although acceleration is indeed involved in the production of signed language syllables, these can contain from zero to three acceleration peaks – not just one, as would be expected to confirm the hypothesis, and that peaks are also found in transitions – not just within syllables, as would also be expected to confirm the same hypothesis. As such, the Acceleration Peak Hypothesis cannot be maintained, at least according to the results obtained in this study. In the light of these results, the author also considers alternative correlates for sonority in signed language, such as velocity, force and displacement, but shows them to be just as problematic. The chapter's main conclusion is that the actual correlate (or correlates) of sonority in signed language, if they exist, are still to be discovered and that the collection of more data is needed to find them. Although the results of the study remain inconclusive, the methodology used (based on motion capture data) makes this contribution an interesting precedent for future studies of signed language.

In “Sonority and syllabification in a connectionist network: An analysis of BrbrNet”, Paul Tupper & Michael Fry evaluate the original version of BrbrNet, a connectionist implementation of syllabification in Imdlawn Tashlhiyt Berber (ITB) analyzed within the framework of Harmonic Grammar by Legendre et al., in line with Dell & Elmedlaoui (1985). The authors identify some problematic cases related to timescales in which an incorrect syllabification is obtained, and they propose an alternative set of parameters (which differ largely in time scales) for which BrbrNet produces the correct syllabification for all input strings. The drawback of this necessary modification of the set of parameters, though, is that the network is no longer sound from a neurological point of view. The authors show that even with more moderate modifications of the time scales, BrbrNet is not neurologically plausible, when phonological systems with many more constraints, which are in fact more realistic, are considered. This is the case because the scale range of the parameter weights grows exponentially with the number of constraints. The authors conclude that the new generation of models that integrate linguistic and neurological analyses and which have rendered BrbrNet outdated, such as the Gradient Symbol Processing (Smolensky, Goldrick & Mathis 2010), have to be similarly tested to prove both their soundness and feasibility when a large number of constraints is taken into consideration.

Leaving aside the limitations identified in the introduction to this review and some of the shortcomings raised in my review of the individual chapters, *The sonority controversy* makes a remarkably positive contribution to the field of phonology and phonetics in terms of both the quality and novelty of its proposals. The diverse perspectives provided by the volume's contributors, adeptly supported by their respective areas of expertise, provide on the whole an enriched approach to the topic of sonority. Beyond any doubt, this collection will prompt a re-thinking of many issues related to the topic and will supply researchers with fresh ideas, new experimental methods, and the latest formal devices.

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