search, and I strongly recommend G's book to anyone interested in the syntax and semantics of control.

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The phonology of Welsh. By S. J. Hannahs. Oxford: Oxford University Press, 2013. Pp. xiv, 183. ISBN 9780199601233. $135 (Hb).

Reviewed by Thomas W. Stewart, *University of Louisville*

Hannahs's book has solidly caught the attention of phonologists, as is evident in the number of published reviews it has engendered (Breit & Harris 2013, Mondon 2014, Czerniak 2015, Hammond 2015, Morris 2015). Each of these reviewers takes up the phonological details and analysis in the book, and on the whole they find much more to praise than to criticize. Whether appraising the opening sociohistorical discussion of Welsh (Ch. 1), the segment inventories with dialect variants (Ch. 2), a range of prosodic and segmental phenomena (Chs. 3–5), or even the closing invitation to scholars with regard to topics meriting further investigation (Ch. 7), the reviewers without exception declare H to have made a welcome and substantial contribution to the studies of Welsh and phonology with this text.

A portion of the book that reviewers appear to have found less comfortable, however, is to be found in Ch. 6, 'Initial consonant mutation'.[1] The special status of this topic in a synchronic

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[1] Two of the reviewers independently merge (without comment) the clearly phonological discussion in Ch. 5 with Ch. 6 (Breit & Harris 2013:342, Morris 2015:198), while another reviewer succinctly distills the content of Ch. 6 to the drawing of 'a clear line between the phonology of Modern Welsh and that of its ancestor languages' (Czerniak 2015:193).

phonological description of Celtic languages is well known (reviewed by H on p. 120). H directly addresses the qualitative difference between those clearly phonological processes in Welsh, which may be accounted for in terms of optimality theory's (OT) constraint types, maximizing faithfulness and minimizing markedness in preferred candidates (e.g. vowel mutation, vowel affection, and place and manner assimilation in consonants; see Ch. 4), and the phenomena referred to under the rubric of INITIAL CONSONANT MUTATIONS (ICMs), namely the grammatically and/or lexically conditioned alternation patterns that frequently reduce the phonological faithfulness of forms vis-à-vis their roots. They may involve the neutralization of distinctions (e.g. both /b/ and /m/ soft-mutate to /v/), or they may introduce marked segments with limited distributions (e.g. a series of voiceless nasal segments) in lieu of generally distributed phonemes (p. 123).

(1) 'dog'   *ci*   [kiː]   citation form
     'his dog'   *ei gi*   [i ɡiː]   <soft> alternant
     'her dog'   *ei chi*   [i χiː]   <aspirate> alternant
     'their dog' *eu ci*   [i kiː]   <radical> alternant

Clearly the ICMs had their origin in a phonetically motivated past state of affairs, but those environments as such no longer obtain and cannot be simulated theoretically without opting for a credulity-testing level of abstraction (Iosad 2010). H cites Green (2006) in this context, who concludes that a synchronic phonological analysis for the Celtic ICMs is not sustainable, arguing not merely that a phonology that could handle them would be excessively powerful, but furthermore that OT-phonologists themselves should not WANT these exercises in unfaithfulness and in rising markedness to turn out to be phonological in principle (H, pp. 133, 135). Assuring the reader that he 'subscribes entirely' (125) to the view that 'ICM in Welsh … has become independent of the phonology' (123), H nevertheless sets a three-part, phonologically oriented mission (125).

(i)   To what extent is phonology involved in the mutations?
(ii) How are the alternations represented phonologically?
(iii) Are there aspects of ICM that can be related to phonological structure?

In light of the metaphor implied by the term *mutation*, the focus is understandably on the sounds that alternate within the ICM system, as follows (p. 126; orthographic representations in angled brackets).

(2) RADICAL   p   t   k   b   d   g   m   ɬ   r̥
    (UNMUTATED)   <p>   <t>   <c>   <b>   <d>   <g>   <m>   <ll>   <rh>

    SOFT   b   d   g   v   ð   Ø   v   l   r
                    <b>   <d>   <g>   <f>   <dd>   zero   <f>   <l>   <r>

    NASAL   m̥   n̥   ŋ̊   m   n   ŋ
                    <mh>   <nh>   <ngh>   <m>   <n>   <ng>

    ASPIRATE   f   θ   χ
                    <ph>   <th>   <ch>

From H's perspective, only those initial consonants that have a distinct alternant in the table above are seen as participating in the ICM system at all (125), and those initials that have no correspondent in the nasal and/or aspirate rows appear in their radical (canonical) shape in the respective mutation contexts (see 3 and 4 below). In this way, the table serves to capture the range of observable alternations, and it systematizes them in a way that hints clearly at the phonological relations that hold between the majority of the sets. Appropriately, this table does not seek to offer insight as to the conditioning environments, since '[t]he initial mutations occur in various contexts; many are lexically determined, others morphologically or syntactically determined' (127).
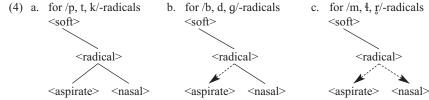
Whereas Green (2006) suggests lexical listing for all alternant forms, this step strikes H as injecting too much redundancy into the lexicon.[2] For H, the alternant patterns are to be extracted from the related full forms (cf. Bybee 1985) by learners/users of the language, and it is these EX-

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[2] Tantamount to 'abandon[ing] the notion of capturing generalizations' (148).

TRACTED PATTERNS that H assumes account for the ICMs in the Welsh lexicon (134–42; see also Hannahs 2013).[3]

(3) a. *tad* 'father'   b. *bwlch* 'gap'
       daːd _{<soft>}   vʊlχ _{<soft>}

               taːd _{<radical>}   bʊlχ _{<radical>}

       θaːd _{<aspirate>}   n̥aːd _{<nasal>}   bʊlχ _{<aspirate>}   mʊlχ _{<nasal>}

These patterns are generalizable as follows.

(4) a. for /p, t, k/-radicals   b. for /b, d, g/-radicals   c. for /m, ɬ, r̥/-radicals
       <soft>   <soft>   <soft>

       <radical>   <radical>   <radical>

   <aspirate>   <nasal>   <aspirate>   <nasal>   <aspirate>   <nasal>

For their distribution, these mutation designations are conveniently repurposed as a system of SUBCATEGORIZATION diacritics borne by those lexical elements and syntactic constructions that call for a form bearing a particular mutation type in a specified linear position (142–43). It seems, however, a false economy of representation to elide phonologically nondistinct reflexes from extracted patterns as H recommends (140), because although, for example, <radical> /m/ and '<as­pirate> /m/' are PHONOLOGICALLY equivalent, surfacing as [m], they are not GRAMMATICALLY equivalent. A construction bearing the <aspirate> diacritic will require an <aspirate> reflex and ought not be burdened with sorting through even a short list of segment-level exceptions (e.g. 'if /m, ɬ, r̥/-initial, refer to <radical>-reflex'). The most economical place to represent the generalization of formal identity between distinct reflexes is where it is predictable, that is, within the pattern itself, not factored out as identical sets of potential exceptions attending every context bearing the diacritic. By trimming the pattern representations for phonologically oriented elegance, the fact that the <radical>-reflex is effectively a default, inherited where necessary within a hierarchy of mutation-typed reflexes, is made less obvious.[4]

The ICM patterns are neither phonemes nor morphemes, but rather they are relational networks. Inasmuch as the patterns are also not roots, stems, or lexemes, it is unclear whether declaring the patterns themselves to be entities 'encoded in the lexicon' (136) settles the matter of their ontological status ipso facto. Perhaps, if ICM patterns were to be separately represented in the lexicon, they might reside in the metaphorical equivalent of a well-thumbed appendix, or in a footnote repeated with handy, albeit tedious, frequency (like the running guides to transcription conventions found in many dictionaries), but taking the step of affording the ICM patterns status alongside—and independent from—the lexical units of the language within which the ICMs are always instantiated seems open to further exploration.

H takes inspiration from Joan Bybee's NETWORK MODEL of lexical organization, in which frequent patterns of phonological and/or semantic links among lexical representations reveal morphological structure. Thus, the model is not concerned about minimizing redundancy in the lexicon, and the metaphor of 'building up words from pieces' is not the business of grammatical machinery. In contrast to this view, H focuses on that which changes among related words, that is, the mutating initials, casting the portions that remain stable among mutation reflexes as represen-

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[3] The dashed arrows in 3b and 4b–c bring out the parallel structure of the subpatterns as well as the direction of determination, but do so without losing the formal indication of phonological distinction versus systematic identity.

[4] Allowing for default inheritance has further implications for ostensibly nonmutating initials (those not listed in the top row of 2), such that the radical initial is inherited in all three branches, allowing mutation subcategorizations to operate uniformly across the board.

tationally problematic, in that they serve to make the mutations less salient (134). In Bybee's terms, the ICM relations would instantiate 'product-oriented schemas, [which] have no counterpart in generative theory. They are generalizations over sets of complex or "derived" forms … which show what features these derived forms have but without stipulating the operations it takes to produce such forms' (Bybee 1995:430). Under Bybee's formalization system, gradient strength of connection is indicated graphically through the relative SOLIDITY (degree of match, up to identity) and THICKNESS of connecting lines (number of matching dimensions, across form and meaning) that link corresponding segments in related words. By contrast, H extracts the alternating initials from their lexical sources and uses a uniform line style to represent mutation correspondence. Granted, for any single example set of mutation reflexes, the initial segments will be (graphically) less strongly connected with respect to the identical remainders of the forms (see examples in 3 above). For example, whereas […aːd] is consistent across all the reflexes of *tad*, the initial /t ~ d ~ θ ~ n̥/ pattern is far more type-frequent in the lexicon as a whole, in principle uniting all (mutable) /t/-radical content words. If such a word is found in a mutation context, exactly one of these alternants will be selected by rule to determine the shape of the initial segment (see Stewart 2015:102–3). The pattern-obscuring effect that H observes under full lexical listing is a side effect of the practical consideration of representing word sets just a few at a time.

In analyzing and publicizing the often-overlooked space between components that (the Celtic) ICMs necessarily implicate, H adds to a small but vibrant theoretical literature with this chapter. Other formal tools that have been proposed for the purposes of describing nonmorphemic but morphologically significant sound alternations include Zwicky's (1990, 1992) SHAPE PROPERTIES, which are distributed via syntactic rules; Janda and Joseph's (1992) META-TEMPLATES, invoked by particular constellations of morphological rules; Stump's (2001) MORPHOLOGICAL META-GENERALIZATIONS, which link particular morphophonological rules by stipulation with (sets of) realization rules of inflection; and Booij's (2010) PARADIGMATIC SCHEMAS, which are in some ways quite close to H's analysis, in that they state the mutated initial, reduce the stable remainder of the reflexes to a variable, and tag alternant schemas with mutation diacritics, but which differ in scope owing to the integral use made of inheritance among construction hierarchies (see Stewart 2015:95–97; cf. Stewart 2004).

While it is perhaps tempting to answer H's three phonological questions ((i–iii) above) in generally negative terms, as indeed H does himself at intervals throughout the chapter, earnest consideration of the questions is nevertheless useful. Processing evidence shows that the sound patterns are useful to speakers and hearers for word identification and production, that the patterns aid in the full integration into Welsh of new words as well as borrowed words (and phonemes), and that initial-segment ambiguities provoke everything from punctual on-line errors to diachronic reanalysis of initial segments, especially in cases where a particular word is dramatically more frequently encountered with its initial segment mutated rather than in its radical shape (143–48). The featural composition of the individual initial sounds and the residual phonological coherence of a substantial portion of the ICM patterns continue to influence the language and its users, and so neglecting the phonological aspect on the grounds that, despite appearances, it does not afford a broad or deep explanation of ICM in the modern Celtic languages is not advisable. H has successfully rebutted any who would phonologize these sound-structural patterns beyond what is warranted. In the end, therefore, it is reasonable that phonologist-reviewers have had less to say about Ch. 6. It seems that it is not exactly their thing.

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Keeping languages alive: Documentation, pedagogy, and revitalization. Ed. by MARI C. JONES and SARAH OGILVIE. Cambridge: Cambridge University Press, 2013. Pp. xiv, 269. ISBN 9781107029064. $99.99 (Hb).

Reviewed by LINDSAY J. WHALEY, *Dartmouth College*

This volume of sixteen articles was born out of the first Cambridge International Conference on Language Endangerment held in March 2011. Paralleling the structure of the conference, *Keeping languages alive* is divided into three sections: Documentation, Pedagogy, and Revitalization. This provides a useful overarching organization for the volume, though the content of many of the articles straddles two, or even all three, of the categories.

The Documentation section provides helpful examinations of a range of issues that arise when considering how best to develop materials to capture not only the structures of a language, but also its various usages. PETER AUSTIN ('Language and meta-documentation') makes an appeal for the development of a new subfield of linguistics that he refers to as meta-documentation. The focus of this enterprise would be to 'document the goals, processes, methods and structures of language documentation projects' (15), and it would have the goal of developing more self-reflection by the field, so that linguists would use best practices in project design, archiving, providing access to data, and standardizing how metadata is applied. In 'Re-imagining documentary