You can learn a lot about the Cambridge Handbook of Biolinguistics (henceforth CHB) from just
the table of contents. The first impression is one of diversity. There is diversity of subject matter:
are there any other field in which chapters on fossils would sit alongside chapters on birdsong,
experimental methodology, benefits of bilingualism, and the intellectual antecedents of a nascent
discipline? There is also diversity of writing style: Millotte et al’s chapter on word learning
and prosody is eight pages long, in the classic tradition of the cognitive science review article;
Wexler’s chapter is a spectacular 35-page position piece.

But what really stands out from the table of contents is this: the bibliography is 132 pages
long. Almost 20% of this 676-page volume is a list of works cited. The bibliography is longer
than Syntactic Structures, and almost as long as The Modularity of Mind. Of course, handbooks
are meant to be compendious, and to review the extant literature in the area, but even so, this is
enormous. In the same series, only 9% of the Cambridge Handbook of Second Language Acquisi-
tion (Herschensohn and Young-Scholten 2013) is bibliography. Elsewhere, the bibliography
occupies only 7% of the Oxford Handbook of Compositionality (Werning et al. 2012).

Why is this bibliography so big (and, for the record, unwieldy: you need a couple of minutes
to find an average reference, and the Bs alone go on for 15 pages)? Of course, there is no
definitive answer to this: the bibliography is the size that it has to be, according to the rules of
citation etiquette. However, I have some hunches. In fact, I believe it is indicative of much that
is currently exciting and daunting about the biolinguistic enterprise.

In short, I think that the bibliography is enormous, not because this is a handbook, but because
its subject matter is biolinguistics. Given the current state of the field, one useful contribution
to biolinguistic research is enlightened synthesis: pull together disparate ideas, because no-one
can keep on top of everything that’s out there. One consequence of this approach to research is
inevitably a huge, groaning, bag of references. I’m sure enormous bibliographies exist in other
disciplines too, but they must at least sometimes reflect attempts to synthesize a diverse group
of current ideas, and I wouldn’t be surprised to find that that is a particularly common way for
biolinguists to work.

That is not to say that CHB necessarily represents such a work of synthesis. Of its 2,228
references, the vast majority (around 93%) are only cited within a single chapter. This is un-
surprising: we are, after all, talking about an average of four new references on every page; or
93 per chapter, not counting the slim introduction. There has to be some text between all those
references. However, given that most chapters are intended as reviews of a particular subject,
this tells us that experts in one area don’t necessarily know much about the rest of biolinguistics:
paleolinguists may not know the first thing about Bengalese finches, or categorial perception, or
how to interpret an ERP plot, and really, why should they?
As a result, although CHB is not a particularly weighty handbook, it is an incredibly dense read, as each chapter tries breathlessly to cram an entire research programme into a handful of pages. The cumulative effect can feel a little like Phone call to the 14th century, the fictional NPR game show in which contestants have one minute to impart as much 21st-century wisdom as possible to the people of the dark ages (“Wash your hands! Boil your water! There’s no such thing as witches: everybody floats!”). Here, rather than veering from hygiene to witchcraft, we veer from birdsong syntax (ch.22) to computer simulations of the evolution of communication (ch.23). Biolinguists have to be comfortable flitting between such diverse subjects, as is mandated by their belief that such pluralism is necessary to address questions as intractable as the genetic underpinning and evolution of the language faculty.

Because CHB is so dense, I will make no attempt to produce an (even denser) overview of the contents here, or discuss individual chapters in any depth. Here, though, is a very brief outline: the chapters are grouped thematically into four parts: we begin with four chapters containing an introduction plus overviews of the historical development and philosophical underpinnings of biolinguistics, followed by six chapters on aspects of language development (Part I), ten on “mind, brain, behaviour” (Part II), and five on language evolution (Part III). The different themes are quite encapsulated from each other, but a further theme, invisible from the above, concerns the genetics of language, addressed in chapters by Wexler (ch.8 in Part I), Benítez-Burraco (ch.20 in Part II), and Balari et al (part of ch.25 in Part III).

Most of the chapters are original reviews, either of an author’s own work or of a general field. Two chapters (ch.16 by Pylkkänen et al, and ch.17 by Marcus et al) are reprints of pertinent earlier articles. Most of the chapters seem to fit well into the general perspective of the handbook, although the chapters on bilingualism and executive control (ch.10, by Hernández et al) and experimental syntax (ch.11, by Sprouse and Almeida) appear as outliers in the volume, whatever their individual merits. Likewise, there is a fair amount of redundancy in the inclusion of two historical chapters (chs.2 and 3, by Jenkins and Piatelli-Palmarini, respectively). These are minor quibbles, though: editing a volume of this size necessarily involves letting the chips fall where they may to an extent.

In part because of the sheer breadth of material in CHB, any linguist (indeed, any cognitive scientist) will surely find ideas in here to pique their interest. Moreover, the organization of the volume is logical, roughly mirroring the following five central questions attributed to Chomsky and enumerated at the start of Boeckx & Grohmann’s Biolinguistics Manifesto:

1. What is knowledge of language?
2. How is that knowledge acquired?
3. How is that knowledge put to use?
4. How is that knowledge implemented in the brain?
5. How did that knowledge emerge in the species? (Boeckx and Grohmann 2007:1)

Nevertheless, the handbook, read from cover to cover, at times has an odd, somewhat disjointed feel: the same topics (FOXP2, Broca’s area, Specific Language Impairment) recur in several chapters, but crossreferences are vanishingly rare, and authors seem unaware of how their statements relate to others made elsewhere in the handbook (‘Language processing data from functional neuro-imaging in healthy adults converge on the finding that Broca’s area is crucially involved in the processing of syntactic dependencies’, Tsimpli, ch.5, p.56; ‘although there has been much discussion of the role of Broca’s area in syntactic computation, especially during
comprehension, there is little evidence supporting the claim for any linguistic-specific compu-
tation performed in Broca’s region’, Hickok, ch.18, p.347). Moreover, there is relatively little
detailed linguistics in CHB; that is, question 1 from the above list is largely unaddressed here.
The core of the handbook (chs.13–16) is a series of chapters on computational primitives in
phonology/morphology/syntax and possible neural correlates, complemented by Pylkkänen et
al’s chapter on semantics and cognitive neuroscience. However, a nonlinguist would struggle to
reconstruct much linguistic theory from the hints in these chapters.

There are other areas that I, personally, would love to see feature more prominently in biolin-
guistic research, and which don’t feature here. For instance, the handbook could be enriched by
chapters developing the suggestion in Hauser et al. (2002) to investigate comparisons between
linguistic computation and computations underpinning other cognitive domains (the abstract for
Hauser et al.’s paper mentions number, navigation, and social relations; comparisons with sev-
eral other domains have featured in research by authors as diverse as Jackendoff and Gallistel).
Likewise, there are two methodological sections in CHB: the chapter by Sprouse and Almeida
on experimental syntax, and the methodological appendix to Monahan et al’s chapter on com-
putational primitives in phonology, which contains a brief overview of cognitive neuroscience
methodologies. This far from exhausts the methodologies pertinent to biolinguistics, and a series
of chapters on how to do biolinguistics could well be of use (for example, I would have benefited
from a primer on the genetic concepts underpinning Benítez-Burraco’s two chapters, which left
me feeling particularly blinded by science).

I do not intend the above to be taken as a criticism of this handbook. Handbooks are not
necessarily meant to be read cover-to-cover, and many of the individual chapters here are ex-
cellent. Moreover, it is clear that a handbook of biolinguistics could be absolutely enormous,
and eventually practical matters like page limits will force editors to focus in some places at the
expense of others.

Above all, though, I would argue that to the extent that this handbook feels disjointed, it
is because biolinguistics is still in the process of crystallizing as a discipline, as invigorating
and frustrating as that may be. To see what I mean by this, consider the following: linguistics
is an interdisciplinary field. A standard linguistics undergraduate will have been exposed to
everything from acoustic phonetics to first- or higher-order logic, via variationist sociolinguistics,
language description, possibly an introduction to research in the psychology or philosophy of
language, and so on. There is no one way of doing linguistics, any more than there is one way of
doing biolinguistics. And yet linguistics feels like a single discipline: it is quite reasonable, for
instance, to expect someone with a specialization in semantics to be able to get something out of
a phonetics talk, and vice versa. We have linguistics curricula which generate linguists, capable
of engaging with a whole range of linguistic issues.

In contrast, we don’t yet have biolinguistics curricula generating biolinguists (a glance at
Piatelli-Palmarini’s “Design for a curriculum in biolinguistics” in ch.3 should be sufficient to
convince anyone of the gulf between what is currently taught anywhere and what would constitu-
ta a reasonably complete biolinguistic training). Rather, we have people trained as linguists
(typically), or occasionally psychologists or philosophers or biologists, looking at the bigger
picture beyond the usual confines of their discipline. Only a handful of schools seem to pro-
vide an environment which reliably nurtures even this level of interest in biolinguistic questions
(Maryland and Edinburgh stand out particularly, to my mind). It would surely be transformative
for biolinguistics as a discipline if curricula anywhere near as broad as Piatelli-Palmarini’s were
to be taught, but the practicalities look daunting, and the reality is that very few people indeed
possess that kind of breadth of expertise at present.
So whereas a typical handbook has its own ready-made audience (to come back to the examples mentioned above, the *Cambridge Handbook of Second Language Acquisition* has a core audience of SLA researchers, and further appeal to people in neighbouring disciplines; the *Oxford Handbook of Compositionality* will appeal primarily to syntacists, semanticists, and philosophers of language, for whom compositionality is bread and butter), *CHB* doesn’t have that luxury. Rather, it comes across as a series of invitations to theoretical linguists to reach beyond the usual business of theoretical linguistics, or to frame their theoretical inquiry in this particular perspective. This surely has to be welcome: theoretical linguists are notoriously hopeless about communicating to others why we are interested in our silly little theories, and our field suffers badly as a result, with the popular agenda often bypassing us altogether. As well as its intrinsic interest, a biolinguistic perspective can make theoretical linguistics less dry to the uninitiated. As an example, I was teaching an intro to syntax as I was reading through this handbook, and threw in a couple of classes on comparative material related to chs.21–2 here (by Zuberbühler and Okanoya respectively), as a way of situating syntactic theory within a wider context. The result was a noticeable spike in interest from students who had steadfastly refused to find Subjacency life-affirming. The moral of the story is that theoretical linguistics becomes more accessible when situated in this broader context, new questions open up, and things just become more exciting. If biolinguistics is becoming a buzzword, at least in certain circles, this is surely why: material like this can provide a shot in the arm for theoretical linguistics.

Having said that, many of the chapters stay well within linguists’ comfort zone: most of part II, on language acquisition and development, and most of part III, on language in the mind and brain, could fit comfortably within a handbook of psycholinguistics. Other chapters (mainly those in part IV, as well as earlier chapters by Wexler and Benítez-Burraco) range further afield, by comparing modern human cognition to the cognitive capacities of other species or of our ancestors, by discussing models of the evolution of language and communication, or by engaging with aspects of the genetics of language, and even those chapters on more traditional linguistic topics often offer a distinctively biolinguistic slant (the aforementioned series of chapters on computational primitives certainly appears to have been intended that way).

The handbook does seem very much designed as a tool for linguists, rather than a tool aimed at fostering an equal collaboration between linguists and researchers in other disciplines. This is evidenced by the relative lack of linguistics in the volume, and the fact that greater familiarity with linguistic theory is presupposed than, for example, primatology. Curiously, this also means that the handbook covers material that is largely complementary to the research reported in the journal *Biolinguistics*, also edited by Boeckx and Grohmann. 11 articles from *Biolinguistics* are cited here, but roughly half of these are manifestos, reflections on the state of the field, and so on. The reason for this, it seems to me, is because there is more theoretical linguistics in *Biolinguistics* than there is here. This is probably for the best: an invitation to further engagement in this kind of research is probably more appropriate at this stage than a recapitulation of *Biolinguistics*-style material in a handbook.

This apparent focus on encouraging specifically linguists to engage with biolinguistics also reflects a basic property of biolinguistics: it is just too big a subject to fit in a handbook without trivializing it. In fact, it is notable, particularly reading through the historical chapters in Part I, just how many of the seminal biolinguistic developments have their roots in discussions between experts in different fields. Most of these involve Noam Chomsky: a surprising example of the impact of biolinguistics on linguistic theory comes with the development of the Principles and Parameters model on the basis of an analogy with a biological model, apparently developed largely during a series of seminars and discussions bringing together biologists and linguists in
the late 1970s. Equally, it is Chomsky’s interactions with two biologists that led to Hauser et al. (2002), the most cited work in CHB by some margin (incidentally, the three next-most frequently cited works in the handbook are Chomsky 1995, Chomsky 1965, and Chomsky 2005, an indication of the extent to which biolinguistics is still moulded in Chomsky’s image. I would contend that this is due in part to his longstanding readiness to enter into dialogue with researchers in other disciplines, a distinctive aspect of Chomsky’s approach to research which shines through in Part I of CHB and is arguably at odds with the widespread perception of Chomsky among nonlinguists).

So whereas most handbooks aim to communicate the state of the art in a given field, and provide a way in for interested outsiders, I prefer to think of CHB as a catalyst: almost everyone is an outsider when it comes to biolinguistics, with the vast majority of interested parties being specialists in only a small subset of the core subject matter (as McGilvray accurately remarks in his chapter, “biolinguistics” is something of a misnomer, as the discipline is much broader than the simple intersection of biology and linguistics. The name plausibly has historical interest, insofar as the roots of biolinguistics lie in discussions between linguists and biologists, and even McGilvray’s ‘very awkward’ “bio-chemico-physico-compulinguistics” stops short of really encompassing the breadth of the subject matter). It may even be premature to say that there is a state of the art in biolinguistics. Rather, there is an approach to research, suggested by Hauser et al. (2002) and Chomsky (2005) (those papers again!), as well as older papers like Pinker and Bloom (1990), which appears to be producing promising, interesting results, a decade down the line. If, historically, biolinguistics grew out of interdisciplinary exchanges, we might hope that CHB will encourage more linguists to seek out such exchanges in future.

In sum, this is less a conventional handbook than an energetic, committed attempt to lay out a good chunk of the raw material on the basis of which a “future science of biolinguistics” (Tecumseh Fitch’s term) may be formed as mainstream theoretical linguistics and neighbouring disciplines become increasingly intertwined (note also David Poeppel’s comment, on the back jacket, about ‘the potential for future interdisciplinary progress’ — emphasis added). Taken in that sense, there is much here to interest and stimulate linguists of all stripes. If you are looking for a conventional handbook for this vast area, I don’t expect this to be anything like the last word, but rather a snapshot of a discipline still in the process of coalescing.

References