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## **Report on the work submitted by Dr. Eva Maria Luef in pursuit of Habilitation**

It is my pleasure to provide my assessment of Eva Maria Luef's Habilitationsschrift, as requested by the Faculty of Philosophy at Charles University, Prague. First of all, I would like to congratulate the candidate on the achievements presented in this work of scholarship.

Having read Eva Maria Luef's submission for Habilitation, I can confirm that in my opinion she meets all the relevant criteria for the award of this status. Her work is methodologically sound and sophisticated, it provides new scientific insights and demonstrates her command of the relevant scientific fields, second language acquisition, corpus linguistics and network science, as well as her ability to enhance and promote them. My report presents the evidence I have found in this work for the fulfilment of these criteria.

### **Originality**

Research on lexical storage and lexical access has a long history in psycholinguistics as well as in first and second language acquisition research. In most parts this work has been characterized by bottom-up, small-scale and/or experimental approaches, focusing on small sections of a speaker's actual lexical knowledge, something like mini-case studies, from which general principles were postulated. Only very recently a whole new top-down approach using network theory has started to be used by scholars in the areas of lexical access/retrieval and first language acquisition. Against this backdrop, this project takes a bold new step and takes network science approaches, combines them with corpus linguistic methods and applies them to second language acquisition. The project is thus timely and relevant to debates in the areas of psycholinguistics, theoretical linguistics and language acquisition and has excellent potential to attract attention and be relevant beyond the immediate research area. The candidate's clear command of her research areas is shown both in positioning the volume, the discussion of the literature and the execution of the case studies. Time and effort have gone into the presentation of the work and the book reads well, not least because of the state-of-the-art visualization techniques which the author has at her command.

## **Overview of the book**

This is a substantial two-phase project organized into five chapters (plus introduction and conclusion).

- The mental lexicon as a phonological network
- English learner networks
- Network growth algorithms
- Growth of learner networks
- Growth and the learning environment

As is already shown by the overview of chapters, the volume applies principles and methods of network science to first model the representations and inherent structures of the body of words known by learners of English as a foreign or second language. For this purpose, the study makes use of corpus linguistic data instead of data generated by experimentation, which automatically makes for a database incorporating the language produced by almost 200,000 learners of English, taking the database to a totally different order of magnitude. In the shape of BNC wordlists, the corpus linguistic approach also provides a native-speaker data-set for comparison. The phonological networks of learners at six different proficiency levels (A1-C2) as well as English the network-structures exhibited by native speakers (BNC) are described along macro-, micro- and meso-level parameters of network connectivity. The book then moves from the description of a status quo to the modelling of growth, arguably the central question in the study of learner language. Network growth algorithms are discussed and applied to the learner vocabularies at the different levels of proficiency, considering also the changing learning environment as learners' lexical knowledge expands. The conclusion maps out possible avenues for taking the network science approach to lexical learning further.

## **Main strengths**

This monograph has a number of qualities, including depth as well as breadth, solid and clear questions, sophisticated methodology, rich data, and discussion of theory in and through application. In my view the book demonstrates the value of revisiting, re-evaluating and expanding completed research through productively linking it to complementary and innovative research area, in this case corpus linguistics and network science. While network science has very recently been applied to phonological networks by other scholars, Luef expands the approach to the study of learner language and second language acquisition as well as unlocking the potential of large linguistic corpora for the undertaking.

In doing this, the candidate demonstrates mastery of her methodology, displaying expert use of mathematical and statistical modelling as well as contemporary state-of-the art data visualization techniques.

The online appendix provides the research community with all one-phoneme neighbours of all words in the learner networks per proficiency level, which can be used for further studies as well as the replication of the present one.

Building on the candidate's broad as well as in-depth knowledge of the literature, the book advances conceptualization and theory-building concerning second language learners' lexical networks on a high level of abstraction. The argumentation is cogent and couched in transparent and elegant language. It makes a convincing case that network analysis beyond the micro-level

might be able to explain hitherto conflicting results of micro-analysis regarding different languages, but also lexical production and retrieval. The candidate successfully shows how her approach can be used to confirm and extend but also to question earlier research findings.

### **A point of critique**

One thing that I would have appreciated in the present book is a fuller presentation and critical discussion of the corpus data, both the CLC and the BNC (chapter 3.1). For example, while the CLC-derived wordlists stem from clinically elicited learner productions and are thus arguably conditioned by the task setting in the exams, the BNC data aggregate naturally occurring spoken and written language. Also, it is said that the EVP word-lists were supplemented from course-books and other sources. Was this done by the researcher or the compilers of the EVP lists? Why? Doesn't this compromise the usage-based nature of those wordlists?

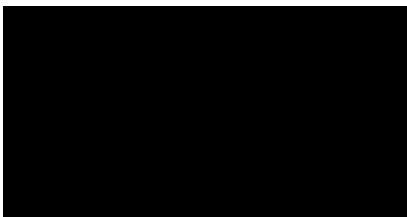
While I fully appreciate that the network analyses had to take precedence in the present study, a critical discussion of the necessary limitations of the approach would not, in my view, detract in any way from the impressive insights that the network approach has made possible.

### **Summary statement**

Dr Luef is a highly accomplished and versatile researcher who has presented a fresh and meticulously researched approach to lexical growth and lexical representation in second language learners of English. The book convincingly demonstrates the high potential and the usefulness of this approach and is likely to attract the attention of many colleagues in the field.

All in all I consider this an excellent piece of research that I enjoyed working on and from which I have learned a lot.

In my view the submitted manuscript fully complies with the requirements for the postdoctoral qualification of Habilitation and I fully recommend that Dr Luef be awarded that status.



Christiane Dalton-Puffer

Vienna, 30 July 2022