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UNDERSTANDING THE ARCHITECTURE OF THE MENTAL LEXICON

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The present collection stems from the 1st NetWordS Workshop “Understanding the architecture of the mental lexicon: Integration of existing approaches”, held in the Pisa Research Area of the Italian National Research Council, in November 2011. “NetWordS: the European network on Word Structure in the languages of Europe” is the Research Networking Programme of the European Science Foundation launched in May 2011 with the ambitious goal of paving the way to the European interdisciplinary research agenda on the Mental Lexicon, with particular emphasis on the following three main challenges:

- lexicon and rules in the grammar,
- word knowledge and word use,
- words and meanings.

On the occasion of the first NetWordS workshop, leading scholars from over 15 countries were invited to probe the cross-disciplinary potential of their specialised knowledge areas, and broach realistic scenarios for a growing synergy between existing approaches and innovative research efforts. In particular, speakers were asked to focus on the potential impact of these efforts on our current understanding of the architecture of the mental lexicon.

Since the advent of connectionism in the 80’s, paradigm-based “abstractive” approaches to complex inflectional systems, evidence of developmental and process-oriented human language performance, together with the computational analysis of finite state automata, hierarchical lexica, stochastic classifiers and dynamic self-organising memories, have prompted a radical reappraisal of the traditional dichotomic view of grammar as consisting of a lexicon and a battery of rules. The coexistence of distributed patterns of combinatorial (rule-like) and lexical knowledge in the mental lexicon suggests that stored morphological representations imply and are strongly implied by word processing principles. In the current debate on morphology, knowledge of “how” and knowledge of “what” can hardly be decoupled. Yet, full awareness of the enormous potential

of cross-disciplinary investigations in this area is still to be attained. The present collection suggests that this step can considerably advance our understanding of the fundamental issues at stake.

THE VOLUME

WOLFGANG DRESSLER and SABINE LAAHA investigate the early phases of morphological development in child language acquisition, by focusing on the extensive use of analogy-based induction and its deep interconnection with both language competence and language performance. On the one hand, analogy appears to be regimented, during development, by the growing role of rule-based morphological processes in the child's linguistic awareness. Contrastive plural formation in German, together with verb inflection, diminutive formation and compound formation, provide ample evidence of ubiquitous (over)generalisation strategies, in accord with gradient levels of rule-based productivity. This picture contrasts with a view of morphological processes as being dichotomised between exceptional and default mechanisms, modularly segregated into distinct grammar components. On the other hand, it lends support to the hypothesis that different generalisation strategies may simultaneously coexist in the child's transitional grammar, their use being adjusted to specific communication needs and tasks and modulated by other usage-oriented factors such as word frequency distributions.

That token frequency factors play a pervasive role in the organisation of lexical competence is shown by HARALD BAAYEN, who provides robust empirical support to the view that distributed many-to-many mapping relations between form and meaning in the mental lexicon can account for catastrophic effects of letter transposition in Semitic reading. This dispenses with the need for a morphological level of access to the lexicon, mediated by the "root and pattern" structure of Semitic morphologies.

In a similar vein, IRIS HANIQUE and MIRJAM ERNESTUS argue that there is no convincing evidence of a distinct role of morphological structure in acoustic reduction, to conclude that words must be phonetically stored as complete units in the mental lexicon, and accessed directly. This view supports analogical models of speech production, with no or little role for morphological structure as an intermediate level of access to acoustic information, and a prominent role for word acquisition and generalisation.

According to PAOLO ACQUAVIVA and PHOEVOS PANAGIOTIDIS, morphological roots appear to provide a weak basis for conceptual decomposition of lexical items, the mapping between invariant roots and their conceptual and grammatical content being highly non-linear. This conclusion supports the view that different levels of lexical information

(morphological, syntactic, conceptual) are structured according to autonomous principles of emergent self-organisation, and are eventually associatively interfaced in the lexicon in ways that are only weakly compositional and partially motivated.

The idea that organisation and competition of concurrently fully-stored items is a driving force of lexical competence receives independent experimental support from several fronts of psycholinguistic inquiry. The contribution of MILA VULCHANOVA, VALENTIN VULCHANOV, DINARA SARZHANOVA and HENDRIK ESHUIS into highly proficient bilingualism suggests that in lexical acquisition more is better. This is shown to be true not only in purely quantitative terms, but also in terms of quality of teaching, environmental input, and socio-cultural motivations. That such an advantage can also be motivated on cognitive grounds is suggested as an intriguing empirical hypothesis awaiting further investigation.

Not only are individual words stored and accessed as whole units in the mental lexicon. Also phrases and collocations can demonstrably have a comparable status, to the effect that people have stored knowledge of the combinatorial properties of – say – adjectives and nouns, and use this past knowledge in the interpretation of a novel adjective-noun combination. An interesting consequence of these memory-driven effects is shown by CARITA PARADIS, JOOST VAN DE WEIJER, CAROLINE WILLNERS and MAGNUS LINDGREN, who investigate the speakers' evaluative attitude towards antonymic pairs (such as *fast* vs. *slow* or *big* vs. *small*) which are not inherently positive or negative. It turns out that, although these pairs receive their valence status only in connection with the nouns they modify, people capitalise on deeply entrenched contexts of their use, to promote one member of an antonymic pair as the natural choice and the preferred valence value.

Competition between fully-stored word forms is thrown in sharp relief when we deal with surface realisational variants of the same paradigm cells (doublets) in complex inflectional systems. MADELEINE VOGA, HÉLÈNE GIRAUDO and ANNA ANASTASSIADIS-SYMEONIDIS focus on an interesting case of systematic doublets in Greek conjugation, which are equally regular and predictable, but are differentially primed by other forms of the same paradigm. This supports lexical competition and self-organisation contra derivational approaches to inflection. Moreover, it shows that synchronic morphological variation in language, a familiar issue in sociolinguistics, can be used as a probe into lexical organisation, pointing to novel, interesting synergies between rather complementary areas of scientific inquiry.

If storage and processing are assumed to interact in nontrivial ways, then it should not be surprising that morphologically complex words like compounds undergo different storage strategies depending on

their structural properties. CHRISTINA MONOUILIDOU, ANGELA RALLI and KONSTANTINA KORDOULI report differential priming effects of coordinative and subordinative Modern Greek compounds on their constituents used as targets. Semantically more transparent coordinative compounds are reported to prime more easily than subordinative compounds. This is interpreted as a consequence of the semantic relation linking compound constituents in the two types: the relation is asymmetrically dependent on the compound head in subordinative compounds, whereas it distributes “symmetrically” over both constituents in the case of coordinative compounds.

A computational analysis of the idea that storage and processing are mutually implied in language learning is offered by CLAUDIA MARZI, MARCELLO FERRO and VITO PIRRELLI, who investigate the impact of temporal self-organising maps on issues of paradigm induction, morphological alignment and lexical architecture. The proposed model integrates a number of insights coming from i) “abstractive” theoretical approaches to inflection, ii) psycholinguistic evidence of word processing, iii) the psycho-cognitive literature on short-term memory for time series, iv) neurolinguistic data of the perisylvian network supporting language processing, and v) the machine learning literature on morphology acquisition.

In this stimulating scenario, the NetWordS programme is acting as a catalyst of a robust trend towards multidisciplinary integration. All contributions presented here appear to point to a remarkable convergence between theoretical, psycholinguistic, computational and cognitive lines of scientific inquiry, supporting the view that grammar and lexical competence are acquired through minimal inferential steps, shaped up by performance-driven factors such as memory limitations, frequency-based sensitivity, modality-specific and even task-specific constraints, ultimately blurring the dichotomy between language knowledge and language usage.

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