John Truscott and Michael Sharwood Smith: The Internal Context of Bilingual Processing

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How the mind works has been a central question of several research areas for decades, and different disciplines have developed their own frameworks and approaches to answer this question. The study of bi/multilingualism and second language acquisition has also proposed various models accounting for how the mind stores and processes different languages (e.g., Dijkstra & van Heuven, 1998; Green, 1986). However, many such models use different terminology to label the (presumably) same phenomena or adopt different explanations/interpretations for one notion, which results in a lack of coherence among bi/multilingual research.

The Internal Context of Bilingual processing by John Truscott and Michael Sharwood Smith presents a new perspective to solve this issue. As the authors highlight, "We cannot properly explain language processing of any kind, that is to say how we represent, store and operate the languages at our disposal, without involving a view of how the mind works in general." (p. 1). Thus, the authors propose the Modular Cognition Framework (MCF), within which the Internal Context of Bilingual Processing is explained in details.

The book consists of twelve chapters. The first chapter introduces the basic terminology of cognitive linguistics is presented (language user, conceptual and semantic meaning, etc.). Much like the rest of the book, the chapter is coherently organized into numerous subsections and paragraphs for easier navigation and convenient reading. The authors introduce the notion of internal context as "…what else is going on in his/her (person's) cognitive system (mind) at the time." (p. 2). This basic explanation is a starting point for the discussion and develops throughout the book. "Deconstructing" (p. 9) of language-related context, input, and output notions are introduced, followed up with an analysis of the "models of the mind" (p. 11) and in response to the reviewed models, MCF is introduced, which is explained in more detail in the following chapters. Even though it might seem that some of the notions and explanations are lacking in clarity, it was purposefully done to make the writing more understandable – once again, providing more detailed explanations in the following chapters.

Chapter 2 is devoted to outlining the main features of MCF. The first few notions under review are *representations*, *modules,* and *processing*, which are used as the foundation for defining other elements of the framework. The aforementioned *cognitive representation* is the label adopted by MCF to denote the simplest units of information stored in the human brain. These modules unify the cognitive representations of similar content and function, creating the areas of cognition responsible for processing specific types of information. The first modules to consider are conceptual, affective, phonological, and syntactical, all of which are most closely involved in language processing. Explaining each

notion motivates the selected views on the system of human cognition within MCF – namely, its heterarchical and modular nature. Additionally, the second chapter introduces the central notions used in the rest of the book, including *activation & co-activation*, *indexes & co-indexing*, *goals*, *self*, and *context*.

Chapter 3 starts to break down the MCF and define what is meant by *context* within this framework. The chapter particularly focuses on explaining the "external sources" of the aforementioned contexts. The authors highlight that when one considers the context of cognition, it is only possible to talk about "internal context" as everything that happens around the subject of cognition has to be perceived and interpreted – "internalized" and turned into the representations of the internal context. Furthermore, the central role of the "cognitive module/system" is highlighted, which is revisited repeatedly in the following chapters. The underlying cognitive "schemas" of cognition are explained in detail. In addition to describing the general cognitive mechanism, the established notion of context and associated processes are compared to the existing knowledge about linguistic processing.

Chapter 4 "revisits" and expands on some of the key concepts mentioned in Chapter 2: goals, self, values and emotions. The vague definition of these key terms varies greatly across cognitive studies, highlighted as one of the major issues in modern research that must be resolved. Goals are presented as complex sequences of cognitive representations associated with certain states and their evaluations, finalized with "SEEK"/"AVOID" (p. 83) conceptual representations attached to them. Even though the information about any given state is stored in the conceptual module, a variety of evaluations reside within co-indexed representations of the affective system, namely simple values (positive/negative) and their more complex combinations – emotions.

Chapter 5, "Bilingual representation," is devoted to language-related cognition. Unlike the previous chapters, this part of the book focuses specifically on applying the MCF to language processing. The first half of the chapter serves as the revision of the existing definitions of language, conceptual and language-related representations in the human mind, and the processing of sign language from the perspective of MCF. It is specifically highlighted that the basic mechanisms of mono- and bilingual language processing are the same, and the only difference is in the size of co-activation networks of linguistic representations. Moreover, language processing also involves the activation of conceptual and affective cognitive modules. It is highlighted that MCF does not deny the former findings of psycho- and neurolinguistics, but explains their relevance to the Modular Cognition Framework. Multiple models of conceptual representations in bilingualism are mentioned and reviewed.

Chapters 6, 7, and 8 deal with the notion of processes related to *cognitive control*. First, in chapter 6, the criticism of several aspects of modern perspectives is presented, summarized as a "homunculus issue" – representation of control

processes as some "intelligent entity" (p. 126). It is specified that cognitive control and *attention*, in particular, are not provided by some hidden "controlling agent" (p. 126) inside our brains. More precisely, it is a combination of regular activation and inhibition processes of varying strength and complexity. In the remaining part of Chapter 6, the authors provide a brief introduction to the understanding of control within MCF as a heterarchical modular system that involves inherently internal cognitive processes in its foundation, with additional examples from bilingual processing.

Chapter 7 expands the explanation of goals, values, and emotions as cognitive controllers. The function of all three elements is presented within general and language-related cognition. These mental representations are tightly connected structures that regularly co-activate each other. They can be separated for investigation but almost always "work" together in the human mind. Additionally, such a view is compared to the existing understanding of language control, such as the Bilingual Advantage theory, the Bilingual Interactive Activation Plus (BIA+), and the Bilingual Language Interaction Network for Comprehension (BLINCS) models of language processing. Once again, the authors do not propose their framework as an opposition to the existing theories, but as an attempt to make the comparison of existing language control models possible, by providing a more general framework for cognition.

Chapter 8 expands the explanation of the "self" as a cognitive controller. Self, believed to be a complex phenomenon, includes the strongest and normally most active cognitive representations associated with thinking. Such components of the *self* are the affective self, goal-based self, and meta self (conceptual knowledge about oneself). Further explanations for external influences are provided as self-based and selfless control form. The presented framework is compared with the existing views, which have not yet been generalized into any models. Special attention, once again, is paid to the application of the presented piece of MCF on language processing, including the review of the "L2 self" (Dörnyei, 2009) notion, "reinterpreting" it within the framework.

In Chapter 9, the authors focused on one of the fundamental phenomena in MCF – Coactivation. Indeed, it was included in most of the explanations in the previous chapters, but here, the theoretical understanding is developed further, specifically within linguistic processing. First, the existing knowledge about language processing is compared to the MCF framework – how the non-selective theory of bilingual language processing can be explained using the terminology of MCF. Then, the authors review the related research paradigms and their relevance to the MCF. After an additional, relatively brief review of the "optionality" phenomenon in SLA, a thorough explanation of the *code-switching* within the MCF is provided, explaining how all elements of cognitive control allow code-switching to happen. For the most part, this and the following chapters do not introduce a new theory of MCF, but are devoted to "translating" the

existing knowledge about language-related and non-related cognition into the terms of modular cognition.

Chapter 10 investigates the notions and phenomena that were not reviewed in the previous chapters, but are integral parts of the literature on cognitive control: *attention*, *working memory*, and *cognitive effort*. All these notions are reviewed within the MCF and explained as specific combinations of activations, representations, and interactions of the aforementioned cognitive systems. A separate review of each phenomenon within bilingual processing is also provided. It is important to highlight that the MCF does not adopt the phenomena of attention, working memory, and effort – these are the existing labels for specific cognitive processes that are simply perceived differently within modular cognition.

Chapter 11 is entirely devoted to reviewing the notion of *consciousness* within the MCF. Once again, it is interpreted in terms of activations and mental representations, including the terminology from the previous chapter. After that, "awareness" within bilingual processing and metalinguistic knowledge is reviewed in light of the internal context system. Generally, the "conscious," within the proposed framework, is synonymous with the most active cognitive representations at any given moment. When one is conscious of something, the relevant cognitive representation is above all others in terms of relative mental activity. The final part is devoted to a short overview of the cognitive processing behind translation and interpreting.

Chapter 12, the final chapter, provides a summary of the content of the book, as well as presents the implications and applications, followed by the final reflections.

Generally, the book provides a comprehensive presentation of the modular cognition framework as an essential part of understanding the internal context of bilingual processing. However, drawing the line between language-related and language-unrelated cognition within the MCF approach is still difficult. Once again, despite its title, this book focuses more on general than language-related cognition, but the authors provide reasonable and coherent motivation for such an approach at the beginning of the book. The writing and theoretical ideas are relatively easy to understand and follow, but basic knowledge about human cognition and language processing may be required before reading for better comprehension. It is hard to say whether the MCF will reshape cognitive studies in the future, but creating a unified model of human cognition is a reasonable and worthy endeavor.

References

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