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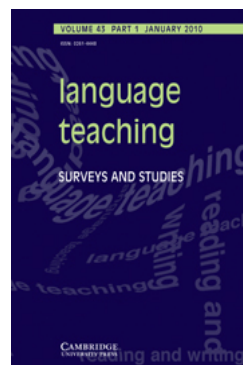
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**Computer-assisted language learning: Mapping the territory** Michael Levy, *Computer-assisted language learning: Context and conceptualization*. Oxford: Clarendon Press, 1997. Pp. xv + 298. ISBN 978-0-19-823631-3 (paperback). Carol A. Chapelle, *Computer applications in second language acquisition: Foundations for teaching, testing and research* (Cambridge Applied Linguistics Series). Cambridge: Cambridge University Press, 2001. Pp. xvii + 215. ISBN 978-0-521-62646-0 (paperback). Mike Levy & Glenn Stockwell, *CALL dimensions: Options and issues in computer-assisted language learning*. Mahwah, NJ: Lawrence Erlbaum, 2006. Pp. xviii + 310. ISBN 0-8058-5634X (paperback).

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# Comparative Book Review

## Computer-assisted language learning: Mapping the territory

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### 1. Introduction

Within the area of Second Language Acquisition (SLA), Computer-Assisted Language Learning (CALL) is among the most recent sub-disciplines to emerge, with a significant number of research publications developing only as recently as the 1980s.<sup>1</sup> Despite this, the bibliography of CALL is already substantial. The online bibliography of books available to members of EUROCALL, the European Association for Computer-Assisted Language Learning, contains over 350 volumes, including books on CALL dating from 1982 (Davies & Higgins) to the present. In addition, several journals are devoted to the publication of articles on CALL, including *ReCALL* (the journal of EUROCALL) *CALICO* (the journal of the North American sister organisation of EUROCALL), the freely available online journal *Language Learning & Technology*, *Computer Assisted Language Learning*, and several others. This apparent maturity, however, conceals a central characteristic of CALL research and practice, namely the quest for an accepted framework common to researchers and practitioners. It is easy to see the computer fulfilling the role of tutor or tool for language learners, providing researchers with the basis to investigate an aspect of language learning and teaching research which is itself a recognised research area, such as the development of the four skills, reading, writing, speaking and listening, or language testing. And yet, as Stubbs (1996: 231) and others point out in the context of corpora and language learning, the technology does not merely assist the process, it transforms it, just as the telescope transformed astronomy. Thus, after a brief initial period of enthusiastic discovery of the potential of the computer for language learning, CALL researchers have found themselves engaged in a quest for identity or, as Levy (this review,

<sup>1</sup> A list of abbreviations and acronyms will be found in the appendix.

p. xiii) expresses it ‘looking at CALL from within, and trying to make sense of it as a body of knowledge in its own right’. Chapelle (this review, p. 2) notes that ‘substantive progress in CASLA [Computer Applications in Second Language Acquisition] requires that its identity be defined, including principles for evaluation drawn from relevant work in applied linguistics’.

For a fairly lengthy initial period in CALL research, this quest for identity manifested itself in the search for a name. Levy (this review) and Chapelle (this review) illustrate this, with Levy using CALL while Chapelle preferred CASLA, with Computer-Assisted Language Learning, testing, and research as the three main subdivisions of CASLA. While CALL is now the accepted acronym for the whole area, and while the quest for identity present in Levy’s and Chapelle’s books is no longer as dominant in CALL research, the need to explicitly develop principles and criteria is still in evidence, and exemplified in Levy & Stockwell’s (this review) publication, which can be seen to a certain extent as a book-length literature review of CALL research, mapping the area so that future researchers and practitioners can situate their work.

The aim of this review is to chart the development of CALL as a research area as presented in these three books, published in just under a decade, from 1997 to 2006. After presenting an overview of the three volumes, the central themes common to the books will be discussed in turn, namely the history of CALL, its interdisciplinary theoretical underpinnings, and evaluation.

## 2. Overview

The differing structures of the three books can be seen as illustrating the development of CALL as a research area in the decade in question. The first two chapters of Levy’s book follow the same pattern as Chapelle’s, focusing first on the history of CALL and secondly on its interdisciplinary nature. As we shall see, their perspectives on these two areas differ in a number of respects, most notably in relation to Levy’s preference for Human–Computer Interaction (HCI) as a key area of relevance to CALL. Levy then examines how CALL is conceptualised, firstly in the literature and then by a survey of CALL practitioners. In a chapter entitled ‘Emerging themes and patterns of development’, he brings together the diverse themes from the previous chapters, emphasising the breadth of CALL as a research area. While Communicative Language Teaching is the approach favoured both in the literature and in the survey (p. 154), there is considerable variation in the means by which CALL projects are carried out, with many different points of departure, such as a theory of language learning, a strategy, or a specific problem (p. 156). A chapter is then devoted to the tutor-tool framework, in which Levy traces the computer-as-tutor tradition back to behaviourism (p. 182), while noting that the current adaptive intelligent tutoring systems bear little resemblance to early experiments (p. 184). In considering other frameworks, he links the computer-as-tutor and as tool to the notions of revelatory and conjectural learning (p. 191), with the learner playing a more active role in the latter, as the computer provides data which encourage the student to develop and confirm or refute hypotheses, rather than playing a passive role. Both the tutor and tool functions come together in the idea of the computer as

learning environment, prefiguring more recent developments such as Second Life (Stevens 2006). In a final chapter Levy, while acknowledging the importance of theories from other areas, stresses the importance of integrating theory and practice.

This integration is also present in the other two books reviewed here. Indeed, the essence of Chapelle's book is the relevance of SLA research for CALL applications. After two chapters on the history and interdisciplinary nature of CALL, she devotes three chapters to the three subdivisions of CASLA which she has identified, concentrating first on CALL, in particular on evaluation. Emphasising the need for evaluation principles and criteria, she devotes this chapter, arguably the central one in the book, to laying out such principles. An aspect of her work which has become even more evident since 2001 is her conviction that CALL is not simply an aspect of SLA research which others in the area can ignore. Rather, she stresses that electronic literacy is an aspect of the everyday lives of language learners, and that 'anyone concerned with second language teaching and learning in the twenty-first century needs to grasp the nature of the unique technology-mediated tasks learners can engage in for language acquisition and how such tasks can be used for assessment' (p. 2). More precisely, she notes that, in the context of authenticity, the CALL task must afford 'the opportunity to use the target language in ways that learners will be called upon to do as language users, which today includes a variety of electronic communication' (p. 89). Once again, the reader in the 2010s can see this as prefiguring the more recent emergence of the use of new technological developments and applications for language learning, such as Mobile-Assisted Language Learning or MALL (Shield & Kukulska-Hulme 2008), and social media (see e.g. Murray & Hourigan 2008). In the chapter on testing Chapelle notes that Computer-Assisted Language Testing (CALT) 'is becoming a fact for all language learners in educational settings' (p. 95), and focuses on principles for validation and empirical evaluation. In the penultimate chapter, on research, principles for evaluation are once again the focus, with particular attention devoted to the issue of whether 'the results from laboratory settings may have limited generalizability to L2 classrooms' (p. 141). Finally Chapelle, like Levy, looks to the future, reiterating her belief that the study of the area from the 1980s until the end of the century demonstrates the need to base research on 'the relevant perspectives in applied linguistics rather than relying solely on work in related fields' (p. 157).

While the books by Levy and Chapelle share the same ambition to chart the developments in CALL, define it in all its complexity, and point to future directions, Levy & Stockwell's publication illustrates the greater level of maturity which characterises the area in 2006. No need to chart the history of an emerging area, as that has been done by the two previous books and in other publications (see e.g. the special issue in 1995 of *CALICO* (12.4), devoted to the history of CALL). No need to list the other disciplines relevant to CALL, and discuss their importance in comparison to SLA research. Rather this book begins where the others ended, no longer reflecting the need to define the area, but nonetheless still aware of the importance of charting developments in what the authors still describe as an emerging discipline (p. 9). The origins of the book lie in a research project which aimed to 'describe the breadth and depth of CALL in a way which was systematic rather than anecdotal' (p. 9). This was done by creating a CALL corpus from 'a large and representative sample of recent publications' (p. 8). The major descriptors used to describe the literature serve as the chapter headings for this book, namely design, evaluation, Computer-Mediated Communication (CMC), theory,

research, practice, and technology. There is thus considerable overlap with the earlier publications, although more recent projects are cited to illustrate the themes. Two final chapters concentrate on institutional integration and normalisation, a subject which was not a major concern in the earlier volumes, and, once again, a final look to the future. As the authors note (p. 228), the importance of integrating CALL in classroom and institutional settings has been present in the literature since the late 1980s, but the term has given rise to controversy, as technology cannot simply be integrated into existing practices, but rather fundamentally changes the learning experience. Levy & Stockwell nonetheless retain the term, noting that the goal of fundamental change, while they accept it, 'is not easily accomplished in educational settings and institutions with well-developed cultures and practices' (p. 229). Unlike the content of the other two books, the final chapter focuses not on established CALL (using established and accepted technologies), but rather on emergent CALL, a critical approach in which practitioners look at the technology rather than through it (p. 242, citing Haas 1996), noting both the opportunities and the limitations of the technology. The authors give a number of examples, including online tuition. In discussing the Lyceum Project, which involves synchronous computer-mediated communication using the Internet, they extend their definition of emergent CALL to include adopting a critical approach not only to the technology, but also to theoretical and pedagogical issues.

### 3. Discussion

#### 3.1 The history of CALL

Although Levy and Chapelle are broadly in agreement on the principal milestones in the history of CALL – the PLATO and TICCIT projects in the United States in the 1970s, the increasing availability of the microcomputer in the 1980s and of the Internet in the 1990s – their approaches differ in a number of ways. Levy begins by noting that the history of CALL is already well documented, and limits his review to aspects most relevant for his purpose. He aims to stress invariant qualities, and to focus on methodological and technological developments, and approaches to evaluation (p. 13). His chapter is organised by decade, from the 1960s to the 1990s (the 1960s and 1970s form one section), and a small number of major projects are examined in each decade to illustrate what he sees as the major developments. Thus, in the 1970s, the PLATO and TICCIT projects, intended for the teaching of languages and other subjects, are presented in some detail. For Levy, the PLATO project, initiated at the University of Illinois in 1960, represents the birth of CALL (p. 15). Its innovatory aspects are highlighted, including an authoring system and a 'Talk' facility, an early form of email which allowed communication between learners. He stresses that PLATO was not theory driven, but motivated by immediate utility (p. 17). At the same time he notes that, while influenced by behaviourism and the audiolingual approach, it has proved adaptable to more recent approaches (p. 15). TICCIT, on the other hand, is presented as 'devised solely around a specific theory of teaching and learning' (p. 18), a characteristic which appears to have led to negative reactions from teachers. More explicit information would have been welcome at this point in the book. In general, however, this chapter will be of interest to those readers

in search of fairly detailed presentations of a number of major CALL projects, those named above in the 1960s and 1970s, *Storyboard* and *Athena* in the 1980s, and the International Email Tandem Network, *CAMILLE/ France Interactive* and *The Oral Language Archive* in the 1990s.

Chapelle's historical chapter provides a more general overview than Levy's, beginning with early experimentation by individuals using equipment and software acquired by their universities for other purposes. She notes that the 'pedagogical principles tended to go beyond the behaviourist/audio-lingual paradigms of early teaching machines by providing learners with grammatical explanations and specific feedback about their responses' (p. 5). Comments such as this, alongside Levy's emphasis on the innovative aspects of early initiatives, such as the 'Talk' facility in *PLATO*, do not fundamentally contradict Warschauer's (1996: 3) presentation of the development of 'three somewhat distinct phases' in the history of CALL, namely behaviouristic, communicative and integrative CALL, but they help to present the reader with the history of CALL as a continuum, despite the existence of notable milestones in its development. While Chapelle devotes less space than Levy to individual projects, she pays more attention to the influence of SLA research on developments in CALL. In particular, the influence of Krashen's (1982) distinction between learning and acquisition is discussed, showing how it led to attempts to illustrate how the computer could create an environment conducive to acquisition. The structure of Chapelle's chapter also focuses on the three subdivisions which she has identified within CASLA, namely CALL, testing and research. This has the considerable advantage that much more attention is devoted to testing and to research than in other publications on the history of CALL. It does, however, make for a somewhat unwieldy structure at times, forcing the reader to consult the table of contents for a reminder of how a subsection fits into the chapter. For example, if the subsections in the chapter were numbered, the subsection on computer-adaptive testing on p. 17 would be 1.3.2.1. However, this is perhaps a small price to pay for the detailed information on testing and research in the sections. Testing, in particular, is not covered in any detail in the other two books, and Chapelle thus provides researchers and practitioners with a valuable means of situating developments in testing in the broader context of CALL research. In summary, the differences between Levy's and Chapelle's approaches to the history of CALL do not appear to arise from any fundamental divergences in their conceptualisation of the subject, and they thus provide readers, in particular postgraduate students, with complementary information on different aspects of the history of CALL.

### 3.2 The search for theory

It is in the definition of CALL as an interdisciplinary area that Levy's and Chapelle's views most noticeably diverge. While warning of the dangers of inappropriately applying findings from other areas to CALL, Levy lists 24 disciplines, theories and fields which have been considered to be of relevance, all supported by references (pp. 49–50). These are grouped in five categories: psychology, artificial intelligence, computational linguistics, instructional technology and design, and Human–Computer Interaction studies (HCI). Chapelle, on the other hand, limits the relevant fields to education, linguistics, and psychology, relegating

Human-Computer Interaction to a footnote (p. 27, fn. 1), in which she claims that there is 'little if any evidence that CASLA has in fact been influenced by HCI research', and refers the reader to Levy's chapter for an alternative view. A strange discovery which this comparison of the views of the two authors reveals is that one of the two references which Levy provides to justify his inclusion of HCI as a relevant disciplinary area is in fact Chapelle herself (1994). A detailed analysis of the two authors' presentations of the various disciplines of relevance to CALL is well beyond the scope of this review. Both give brief accounts of the ways in which each area they list is of importance in CALL, an aspect of the books which will once again be of particular interest to postgraduate students, or to researchers in search of direction if they feel that another related area of research may be of relevance to their work. Reading each text separately, it is difficult not to agree entirely with both authors. It would be counterintuitive, on the one hand, to disagree with Levy when he argues for the relevance of HCI, and instructional technology and design to Computer-Assisted Language Learning. On the other hand, Chapelle's view on the primacy of research focusing on language learning itself is equally convincing. It is important to note here that Levy does not exclude areas such as applied linguistics, psycholinguistics, SLA, educational psychology and educational technology, all of which are present in his list. As in the case of the authors' presentations of the history of CALL, their views are not so much divergent or conflicting, despite Chapelle's footnote on the dearth of studies showing the relevance of HCI research, as complementary.

The question arises as to whether, by 2006, Levy & Stockwell have maintained the broad view of the interdisciplinary context of CALL research. Has HCI fulfilled the promise suggested in Levy's earlier publication? Is SLA research given more prominence here, or is the broad perspective of the earlier work maintained? There are very few references to HCI, but consulting these reveals that the area is still seen as relevant, even central. Design is the starting point of this book, understood as a broad category including not only those actually designing materials, but also teachers and institutions. It is in the context of the importance of focusing on the learner that HCI is first mentioned (pp. 35–36), when the authors cite Hémard (2003), an article which proposes a user-centred method for designing online CALL materials using a methodology based on HCI research. Levy & Stockwell conclude that CALL designers 'whose principal interest is usually language teaching and learning are not usually aware of HCI approaches. Yet these approaches can be enormously helpful in bringing rigor and principles to the design process' (p. 36).

The second reference to HCI occurs in the fifth chapter of the book, entitled simply 'Theory', in the context of activity theory. This chapter deserves particular attention in this review of three books on CALL in a decade where the search for a research agenda, particularly in relation to theory, was of particular interest in CALL research circles. Levy & Stockwell identify five categories here: the interaction account of SLA, sociocultural theory, activity theory, constructivism, and a category entitled 'Multiple Theories and "Rare" Theories'. The section on interaction begins with an acknowledgment of Krashen (1977) as its originator, and continues with a brief (three-page) account of how research in this area has been seen to influence CALL, quoting Chapelle and others. It is difficult to find the authors' voices in this account, except when they note that 'the interaction account has been particularly well used as a theoretical base in CMC-based CALL' (p. 113). The placing of the area first in the chapter, however, strongly suggests that Levy & Stockwell now accept the centrality of SLA in the CALL research agenda. The following sections, on sociocultural

theory, activity theory and constructivism, are all linked to the field of learning and education, thus firmly suggesting that these authors now see the research agenda of CALL firmly in that area, with a particular focus on SLA research. HCI is mentioned in the section on activity theory, but without being given the prominence of the earlier reference. It is mentioned again briefly on page 124 in the category of other theories used by researchers. The structure of this chapter gives the impression, not of distinct disciplinary areas as in the earlier books, but rather of a unified agenda based on research in language learning in the wider context of research on learning and education. The transitions between the sections make this clear. The interaction account focuses on the individual, whereas sociocultural theory and activity theory 'view language learning in a different way, primarily in social rather than individual terms' (p. 115). Activity theory 'is considered the contemporary formulation of Vygotsky's work' (p. 118), thus justifying the link between the sociocultural section and that on activity theory. This theory is given more attention than the others (3.5 pages), and, while the authors' do not explicitly express their own opinions in relation to it, they emphasise that its proponents see it as 'powerful . . . because of its capacity to capture the dynamic nature of activity systems and changing points of focus over time' (p. 119). Its link to learner autonomy, an important concept in current language learning research, is also stressed (Blin 2004). They conclude, however, that it remains to be seen if the potential of activity theory will be fulfilled in CALL research.

The 'Discussion' section of Levy & Stockwell's chapter on theory provides a detailed examination of an aspect of CALL research which is present in all three books, namely that while a theoretical perspective is important, it can be problematic in a number of ways. Firstly, as we have seen, no single theoretical approach will satisfy all researchers. Secondly, CALL research and practice is characterised by a tension between rationalism and pragmatism, between theory and practice. As Levy & Stockwell note (p. 129), this is frequently emphasised by CALL researchers, aptly summed up by their choice of quotation from Goodfellow (1999: 118):

Whilst a design may be based on psychological principles that are *a priori*, its educational effectiveness is often a more empirical matter, decidable only through an iterative process of development and evaluation, with attention being paid at all times to the context of learning and the learner's experience of it.

Evaluation thus occupies a key position, at the interface between design, theory, research and practice. It is therefore not surprising that it occupies an important position in all three books.

### 3.3 Evaluation

Levy includes sections on evaluation at several points in his book. In the historical chapter, for example, there is a section on evaluation for each decade. In the section on evaluation in the 1980s Levy (p. 30) quotes several researchers, in particular Chapelle (1989) and Yildiz & Atkins (1993), to show that it was in this decade that the complexity of CALL evaluation was recognised and that it came to be seen as a multifaceted activity rather than simply as a search for the perfect teaching machine. The section on evaluation in the 1990s also provides a discussion on developments in approaches to evaluation which will still be of relevance to CALL researchers and practitioners. Evaluation plays an even more central



role in Chapelle's book, focusing on the need for principles and criteria for evaluation as a fundamental part of CALL research and practice (pp. 51ff.). These are drawn directly from SLA research, and involve language learning potential, learner fit, meaning focus, authenticity, positive impact, and practicality. Chapelle also emphasises that evaluation is a complex issue, involving a context-specific argument rather than a categorical judgment of effectiveness. The application of these criteria is repeated for the three subdivisions of CASLA which she has identified, giving evaluation a fundamental role in the structure of the book and thus in the author's mapping of CALL as a discipline.

Levy & Stockwell devote a chapter specifically to evaluation, but, as we shall see, it also plays a fundamental role in other chapters, particularly that devoted to research. (There is a useful discussion on the difference between evaluation and research on page 41, emphasising that it is difficult to make a clear-cut distinction.) The chapter on evaluation is particularly worthy of note, as it would make excellent reading for researchers new to CALL in search of guidance on methodology alongside standard works such as Cohen, Manion & Morrison (2007) and Nunan (1992). As these two works, while of relevance to CALL researchers, are set in broader contexts, education and SLA respectively, Levy and Stockwell in this chapter have taken the first step in providing detailed guidance on methodology to CALL researchers. In the chapter on research, evaluation is covered in two ways. Firstly, evaluation is clearly involved in a large number of the research articles which are surveyed. Secondly, there is also a brief, but nonetheless useful reference to the importance of evaluation criteria for approaches to research, although the reference given (Johnson 1992) is situated within the area of SLA and not specifically CALL. Finally, Levy & Stockwell devote a considerable amount of space to the role of the designer-evaluator (pp. 52–59), presenting four projects to illustrate how they have a 'deeper understanding of the learner context and learner needs' and can tailor the design and evaluation accordingly. Following this, the account of larger-scale methodological frameworks will also be of considerable use to postgraduate students and other researchers.

#### 4. Conclusion

As I was deciding on the books to review, the question arose as to whether CALL was a suitable subject for such a publication. Would, for example, a book written more than a decade ago at a time when communication technologies were advancing particularly rapidly still have any relevance? It is true that mobile technologies, Second Life, social media, online pedagogic corpora and other recent developments are obviously not mentioned in the two earlier books. Yet the books are all still relevant, as their focus is not on keeping up to date with technological developments, but, as Levy in particular emphasises, on building on what has gone before.

A detailed review of all the issues which are raised in the three books would be well beyond the scope of an article of this length, and for clarity of presentation it was at times necessary to omit details relating to the complex nature of CALL. (To give just one example, see Levy & Stockwell, page 111, in relation to the interconnections between research, theory and practice.) The selection was guided by the issues which were felt to be of most importance in the development of a framework for CALL research and practice, an area which the

three books amply illustrate. Indeed, the considerable diversity in their structure both reflects and illustrates the complexity of the subject. The books do, however, have one characteristic in common: they all present CALL as a complex web of interconnections between design, theory, practice, evaluation and research, involving central concepts such as task, teacher and learner roles, and context-specific requirements. There is no fundamental divergence between the authors, with the exception perhaps of the view which Chapelle expressed on the lack of evidence to support the importance of HCI. Rather the books are complementary, covering the same area but placing emphasis on different aspects of it, and presenting and, more importantly, combining the various components in differing ways. For this reason it would be difficult, if not impossible, to answer the question, 'If I can only read one of these books, which should it be?' The response would have to be that it depends on the specific interests of the questioner. For accounts of the history of CALL, clearly Levy and Chapelle provide versions which are detailed in different ways. For information on Computer-Mediated Communication, Levy & Stockwell is clearly more up to date but also more detailed than the earlier publications, devoting a whole chapter to the topic. For a researcher in search of advice on methodology, Levy & Stockwell provide valuable guidance, fully supported by references to the relevant literature which they have surveyed. In conclusion, all three books make valuable contributions to the mapping of the territory of what is nonetheless still an emerging research area.

## Appendix

Abbreviations and acronyms used in the present paper:

CALICO	Computer Assisted Language Instruction Consortium
CALL	Computer-Assisted Language Learning
CALT	Computer-Assisted Language Testing
CAMILLE	Computer Assisted Multimedia Interactive Language Learning Environment
CASLA	Computer Applications in Second Language Acquisition
CMC	Computer-Mediated Communication
EUROCALL	European Association for Computer-Assisted Language Learning
HCI	Human-Computer Interaction
MALL	Mobile-Assisted Language Learning
PLATO	Programmed Logic for Automated Teaching Operations
SLA	Second Language Acquisition
TICCIT	Time-shared, Interactive, Computer-Controlled Information Television

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