

Sociocultural Theory, CALL, and Beyond

Nathaniel CARNEY

CALL における社会文化理論：その現在と将来展望

Nathaniel CARNEY

要 約

Computer-Assisted Language Learning (CALL、計算機支援言語学習) 研究の中でも、その理論についての研究はさかんだが、その中でもレブ・ヴィゴツキー教授の社会文化理論 (SCT) は最もよく知られているセオリーの一つである。当論文は、まず SCT の概要、及び CALL における SCT の歴史的 position を手短かに説明する。そして SCT 構造を用いた CALL 研究分野の最近の動向を検討するが、特に研究者にとって SCT のどの特徴が、研究者にとって最も関心があるか、またどんなタイプの技術や言語学習事象が分析されているかを検討する。また、研究者が SCT をどのように考えているかにも細かく注目する。論文の最後には、将来の CALL 研究に関して考察するだけでなく、異なる SLA 理論 (第二言語習得理論) をどのように統一すれば、将来の CALL 研究がよりよくなるかについても議論する。

キーワード：社会文化理論、CALL、第二言語習得、ヴィゴツキー、
コンピューター仲介コミュニケーション

Key words: sociocultural theory, CALL, second language acquisition, Vygotsky,
computer-mediated communication

Introduction

In their edited volume, *Theoretical Foundations of Learning Environments*, Jonassen and Land (2000) claim that the previous decade “ha[d] witnessed the most substantive and revolutionary changes in learning theory in history” (p. iv). The theoretical revolution they refer to is toward learning theories that focus on the social aspects of learning and meaning construction and those that embrace a dualistic notion of mind and behavior. The same type of shift has been noted in second language acquisition (SLA) research overall (Block, 2003) and computer-assisted language learning (CALL), in specific (Chun, 2007). While there are a variety of theories that have emerged from this shift, in the past decade, sociocultural theory (SCT) has become an especially popular theoretical frame of reference, especially in the area of CALL research.

While still perhaps considered an alternative theory of second language acquisition (Atkinson, 2011), SCT nonetheless has garnered attention among SLA researchers for its broad consideration of social context and key concepts such as mediation, the Zone of Proximal Development, and the genetic method. As will be seen in this paper, SCT-framed research within the subfield of CALL became immediately relevant with the field’s rapid expansion in the late 1980s and early 1990s, gradually growing into one of the dominant theoretical approaches in CALL research in more recent years.

The overall purpose of this paper is to understand how sociocultural theory has guided recent CALL research. As sociocultural theory is a broad theory with key constructs that have been emphasized and understood differently by different researchers (Warschauer, 2005), this paper begins by giving a brief summary of SCT and then focuses on SCT’s origins and theoretical evolution in CALL research. Following this, the paper looks at how recent SCT-framed CALL studies, from 2005 to 2010, have operationalized SCT, and critiques of this research are detailed. Finally, there is a discussion of how SCT might fit into future CALL research. Through this discussion, it is hoped the reader will gain a fairly complete understanding of the current status of SCT within CALL research.

What is sociocultural theory?

SCT is a theory of mental development conceived of by Leo Vygotsky, a Russian psychologist who lived in the first half of the 20th century. SCT has been applied to solving problems and answering questions in many areas of learning, but with both language and artifacts, or tools (both conceptual and material), as central important constructs of SCT, it should perhaps come as no surprise that CALL has become a particularly fertile locus of SCT-informed inquiry, as both language and concrete tools (e.g., computers and related devices) are the central foci of CALL

research.

In general, sociocultural learning theory posits that learning cannot be separated from the social and cultural environment in which it takes place. For learning to take place, sociocultural theory sees language as a critical “tool” that can actually lead learning (this distinguishes it from some cognitive theories that claim development takes place in stages, i. e., that development happens first and then learning becomes possible). As with many other theories that emphasize the critical importance of social factors in learning, SCT rejects a dualistic notion of mind and body (or behavior), instead claiming that they are integrated, and thus activity and thought mutually influence each other in inextricable ways. SCT claims that knowledge is culturally and socially constructed, thus favoring learning environments that promote collaboration, expert-novice relationships, and other interaction among peers. However, social interaction is not the only critical element of SCT. A central concept of SCT is mediation. Lantolf and Thorne (2006, p. 19) summarize mediation as “the observation that humans do not act directly on the world – rather their activities are mediated by symbolic artifacts (for example, language, literacy, numeracy, concepts, and institutions) and material artifacts and technologies.” The most important of these symbolic artifacts for SCT is language, as language is the most complex and most common tool humans use to mediate activities in the world around them. However, other tools, such as technology tools (since that is especially important to this discussion) also mediate behavior. Another key concept of SCT-framed research is the Zone of Proximal Development (ZPD). Vygotsky (1978, p. 86) wrote that “The [ZPD] defines those functions that have not yet matured but are in the process of maturation, functions that will mature tomorrow but are currently in an embryonic state.” At the risk of oversimplification, this means that the ZPD helps identify learners’ ability level in a given activity and identify what a learner may soon be able to do with and/or without assistance. This concept has been particularly popular within educational fields, as “assistance” often is meant to be the teacher, and the ZPD is envisioned as the students’ learning level. The ZPD concept offers the simple metaphor of teachers helping to guide students to the next level of development (often referred to as scaffolding). Again, this is an oversimplification of the concept, yet its attractiveness as an idea has gained many SCT followers. A final concept that is fundamental, and, in fact encompassing of all other concepts in SCT mentioned above, is the genetic method. As the term “genetic” might imply, sociocultural theory takes a temporal approach to development through which learning can be studied through its evolutionary trajectory (Thorne & Payne, 2005). The genetic method has four levels of analysis that Vygotsky identified concerning cultural (and biological) development; these are the phylogenetic level, sociocultural history level, the ontogenetic level, and the microgenetic level. Each ensuing level takes a more magnified look at time and development (i. e., the phylogenetic level looks at organism development over thousands of years, the microgenetic over minutes or seconds). The two levels of analysis most often used in second language acquisition research have been the ontogenetic and the

microgenetic levels of analysis (Lantolf & Thorne, 2006).

SCT is a complex theory which goes well beyond the short treatment offered here (see Lantolf & Thorne, 2006, for a thorough description). However, for the purposes of the ensuing discussion about the birth of SCT-framed studies in the field of CALL, the above description of key concepts in SCT will be of use to those who were previously unaware of them.

The birth of sociocultural theory in CALL

Before asking when SCT first began to influence CALL research, it is first important to note the newness of the CALL field itself. If the field of Computer Assisted Language Learning can today be considered to be robust with four major international scholarly journals dedicated to research in the field and numerous associations and academic research groups around the world dedicated to such inquiry, it is important to note that this was not always the case. CALL grew with technology, and was truly revolutionized with the rapid development of more powerful personal computing and the internet in the late 1980s and early 90s. As CALL is specifically focused on language learning through technology, it is interesting to note that theoretical approaches to CALL that encompass both the second language acquisition aspect and the technology aspect took time to coalesce. In 2005, Chapelle (2005) noted that “whereas 10 years ago some imagination was required to find links between research on CALL and theoretical or empirical approaches to SLA, CALL researchers today more frequently frame discussion of both pedagogy and research from the perspective of SLA” (p. 56). Chapelle’s quote, looking back at the 1990s, was indicative of a field that suddenly had rapidly advancing technological possibilities at its fingertips and was experimenting with applying them toward second language acquisition goals. In prominent CALL publications of that time (e.g., Chapelle, 1997; Salaberry, 1996) it was clear that there was a struggle between the power of the computer to change how languages could be learned and the need to frame the use of computers for second language acquisition in a theoretical paradigm. What came out of this scholarly discussion leading into the new century was an emphasis on two major theories of SLA thought to be appropriate for CALL investigation: interactionist theory (Chapelle, 1997) and sociocultural theory (first introduced by Warschauer, 1997, later emphasized by Salaberry, 1999).

In ensuing years, CALL research framed in SCT gradually increased, and the best overview of that research has been given by Warschauer (2005). Warschauer (2005) identifies three key SCT concepts that are relevant to CALL research, while also offering a succinct review of the scope of SCT CALL research. The three areas identified by Warschauer (2005) are mediation (p. 41), social learning (p. 42), and genetic analysis (p. 43). In relation to mediation, Warschauer (2005, p. 42) writes that “this principle helps us understand how new technologies can transform prior forms of human activity”, offering the example of writing and how computers have allowed for completely new ways of writing that require new strategies of teaching. Regarding social learning,

Warschauer points to SCT as a framework that helps understand the ways in which computer-mediated communication or writing for authentic audiences via computer might lead to language acquisition through learners' use and adaptations to others' use of the target language. Finally, discussing genetic analysis, Warschauer notes how this aspect of SCT gives importance to the larger cultural, historical, and social contexts of which CALL is a part, encouraging a broad, complex focus on environmental factors beyond only the computer and the learner.

Since Warschauer (2005), quite a number of CALL-related studies framed in SCT have appeared in the literature. The next section of this paper will focus on very briefly summarizing such studies published from 2005 to 2010 in journals searchable on the CSA Illumina database. The purpose of this will be to understand what aspects of CALL the papers focus on, and what aspect of SCT the authors relate to their investigations. The results of this analysis will be used to reflect on Warschauer's (2005) findings and suggestions about the use of SCT as a CALL research framework, while also addressing recent critiques of SCT.

SCT – framed research in CALL from 2005-2010

The following table gives an overview of the SCT-framed CALL studies that have been conducted in the five years after Warschauer (2005).

Table 1: An overview of SCT-framed studies in CALL from 2005-2010

Study	Type of technology investigated	SCT construct
Bradley, L., Lindstrom, B., & Rystedt, H. (2010)	wiki	collaborative, situated learning
Sasaki, A. & Takeuchi, O. (2010)	email	imitation
Van Nguyen, L. (2010)	computer-mediated collaborative learning	collaboration in a social and cultural context
Cheng, R. (2010)	asynchronous computer-mediated participation in CMS forums	scaffolding
Basharina, O. (2009)	asynchronous computer-mediated participation in online forums	Many facets of SCT
Oskoz, A. (2009)	synchronous computer-mediated text chat	collaborative dialogue
Chang, W. & Sun, Y. (2009)	web concordancer	scaffolding (ZPD)
Ganem-Gutierrez, G. A. (2009)	computer-mediated collaborative tasks	collaborative dialogue, mediation
Peterson, M. (2009)	synchronous, virtual world computer-mediated text chat	dialogic interaction, social interaction strategies
Darhower, M. (2008)	telecollaboration	collaboration (dialogic interaction)

Goulah, J. (2007)	digital video	mediation, collaboration
Darhower, M. (2007)	telecollaboration	co-construction of meaning (dialogic interaction)
Karlstrom, P., Ceratto-Pargman, T., Lingstrom, H., & Knuttson, O. (2007)	Grim (computer writing tool)	(tool) mediation
Ganem-Gutierrez, G. A. (2006)	computer-mediated collaborative tasks	microgenetic analysis, mediation
Hampel, R. (2006)	tasks in multimodal synchronous online environment	Collaboration and interaction
Chung, Y-G., Graves, B., Wesche, M., & Barfurth, M. (2005)	computer-mediated text chat	scaffolding, mediation
Oskoz, A. (2005)	Online chat	dynamic assessment

In Table 1, an overview of seventeen articles in recent SCT-framed CALL literature shows that theoretically speaking, SCT's perspective on collaboration, or what Warschauer (2005, p. 42) refers to as "social learning", is the most common way in which SCT has guided researchers' investigations. Mediation, also noted by Warschauer (2005), is also a focus in some of the studies, most notably Karlstrom et al. (2007). Finally, the genetic method, a third area noted by Warschauer (2005), was a focus in just one article in the form of a microgenetic analytical approach (Ganam-Gutierrez, 2006). There were a number of studies that, while collaborative in nature, specifically investigated other facets of SCT, including imitation (Sasaki & Takeuchi, 2010), scaffolding (Cheng, 2010; Chung et al., 2005), and dynamic assessment (Oskoz, 2005). Finally, given the tendency toward studies that involve person-person interaction, it is interesting to find two studies (Chang & Sun, 2009; Karlstrom et al., 2007) that involved the analysis of learners' interaction with computer applications rather than with other people.

The strong focus on analyzing collaborative dialogue through the scope of SCT should not be surprising given that many of the studies are focused on learner interaction through computer-mediated communication (CMC) of various modes. In Warschauer's (2005) own review of literature, CMC research was also a focus of much previous research, and Chapelle (2009) even reasons that CMC was one reason SCT-framed research grew within CALL in the first place. A closer look at some of the CMC-focused articles in Table 1, however, shows that SCT perspectives, as Warschauer (2005) also noted, are interpreted differently by different researchers. Peterson (2009), for example, discusses "interactionalist researchers who advocate sociocultural views of SLA", presumably including himself as one of these researchers. Given the earlier (and even continuing) history of debate between those advocating interactionalist research versus sociocultural research, such a combination of terms is both bold and at the same time encouraging. Darhower (2007) talks much about communities of practice (Lave & Wenger, 1991), a social

constructivist notion, along with affordances (van Lier, 2000) from an ecological perspective, along with SCT. The combination of notions from different theories may lead to more insightful analyses, but it is also arguable that comparison between studies may become more difficult. In any case, we will return to the idea of combining theories at the end of this paper.

Before moving on, it is relevant to mention that while Table 1 gives an overview of studies with explicit SCT foci, the influence of SCT in recent CALL research is far broader. In a search of the prominent CALICO Journal for the term “sociocultural”, of 90 hits, 73 were in articles or reviews published since 2005 (with 8 and 9 being published in the years 2000–2004, and before the year 2000, respectively). Though many of these appearances of the key term are in reference to other papers, it is certain evidence that the overall importance of SCT in the subfield of CALL has grown. Notwithstanding such influence, SCT-informed investigation in CALL is not without critique, as will be looked at in the follow section.

Critical Analyses of an SCT perspective on CALL

Despite its relative popularity as a theoretical approach to CALL research, there have been various cautions or critiques about an SCT approach to CALL both from SCT adherents as well as those who ascribe to other theoretical perspectives. Warschauer (2005, p. 48) notes how SCT considers such a wide context that it can be difficult to “draw the borders of inquiry” between language learning and the use of technology. He offers the example of ESL students searching the web, and inquires whether this would be considered language learning or technology learning. From another perspective, after an examination of numerous second language acquisition (SLA) theories applied to CALL research, Chapelle (2009, p. 747) writes that “each theory focuses on a set of phenomena, whereas CALL activities can span a broad range of learning opportunities” thus stating the insufficiency, at least currently, of any one theoretical approach to CALL research. In previous research, of course, Chapelle has always promoted an interactionist approach to CALL (e.g., see Chapelle, 1997, 2005, 2007) over a sociocultural approach, and it is notable especially in CMC studies that these two perspectives have different views about how language can and should be analyzed. As O’Rourke (2008, p. 231) writes, “in contrast to dialogic approaches, the conviction that technology directly affects user behaviour is central to interactionist SCMC [synchronous computer-mediated communication] research.” Here, dialogic approaches refers largely to sociocultural theorists, and O’Rourke (2008) is taking exception to sociocultural theorists’ notion that CMC or SCMC does not necessarily directly affect behavior. O’Rourke criticizes the sociocultural idea of CMC (or other tools) *affording* behavior rather than *determining* behavior by users, as O’Rourke, and probably most researchers taking an interactionist perspective, believes more in the determinative effect. A second O’Rourke (2008) critique of SCT-powered analysis is the SCT notion that all higher level mental functions must be cultural, which is a central tenet of SCT (i.e., that higher level mental functions develop through interaction with culture, history, and

the agency and intention of the learner). O'Rourke (2008) claims that the "decoding of written language" (p. 231) is a clear counter example, asserting that "it is all but impossible for a literate person not to read words presented to them in their native language" (p. 231).

Certainly, with such a popular theory like SCT in a subfield like CALL, which is a combination of theory-rich SLA and theory-rich educational technology, there are bound to be disagreements with the approaches of other theorists, though this should not necessarily be viewed as a bad thing. Kern (2006, p. 188) notes that "given the complexity and diversity of goals, contexts, and problems in CALL research, a one size fits all approach will not work." Certainly this seems to be the case at present, where SCT encompasses but one way of looking at the overall inquiry into how technology and language learning occur together. Nevertheless, as seen in the brief overview of recent SCT-framed research, SCT continues to be one of the prominent and popular perspectives in CALL research, and SCT's broad consideration of context and activity continues to make a valuable contribution to CALL.

Beyond SCT in CALL

This paper looked at one theory, SCT, and its status within the subfield of CALL. Revelations from such an overview include the fact that SCT is a popular theory and has allowed many researchers to frame their work in a way that considers a broad set of factors important to learning, including historical, cultural, and social influences. Still it is perhaps important to keep in mind, at least in the area of CALL, that theory itself serves not only to help understand the learning process, but also to influence real practice in classrooms and out-of-school contexts everywhere. Theory is the foundation for the efforts of teachers, instructional designers, and other professionals in CALL, second language acquisition, and many other educational fields. In this vein, specifically relating to CALL, Kern (2006) observes:

There is consensus in CALL research that it is not technology per se that affects the learning of language and culture but the particular uses of technology. This emphasis on use highlights the central importance of pedagogy and the teacher. (p. 200)

With this in mind, the discussion of sociocultural theory returns to the practical perspective of being a theory of human mental development, essentially of learning, and its influence will carry over into how teachers teach, and how learners are afforded opportunities to learn. Nevertheless, an SCT perspective, as critiques imply, is but one way of looking at the way technology is applied to or affects second and foreign language learning. Thus, while taking into account SCT's usefulness, in the next decade, perhaps it is most reasonable to expect CALL to develop a "metatheory" like complex systems theory (Chapelle, 2009, p. 747), or for researchers from different perspectives to work together or to explain different SLA perspectives on the same problems such as could be seen

at the 2009 CALICO Conference (see Thorne and Smith, 2011). Though the effort of this paper has been to bring together findings of SCT, one of the most popular theoretical frameworks used in current CALL research, the discussion of what is beyond SCT or any other theoretical paradigm must be about gathering insights from the diversity of theories and approaches in order to understand more about the invariably complex process of language acquisition and development through interaction and engagement with technology. To this end, it will continue to be important to track the trends of such research, especially from a theoretical perspective. The unpredictable, prodigious changes in educational technology seem bound to continue, thus it will be imperative for CALL researchers to maintain clarity and purpose in choosing their theoretical approach to SLA in such a milieu.

REFERENCES

- Block, D. (2003). *The social turn in second language acquisition*. Edinburgh: Edinburgh University Press.
- Blyth, C., & Davis, J. (2007). Using formative evaluation in the development of learner-centered materials. *CALICO Journal*, 25(1), 48-68.
- Bradley, L., Lindstroem, B., & Rystedt, H. (2010). Rationalities of collaboration for language learning in a wiki. *ReCALL*, 22(2), 247-265. doi:10.1017/S0958344010000108
- Chang, W-L., & Sun, Y-C. (2009). Scaffolding and web concordancers as support for language learning. *Computer Assisted Language Learning*, 22(4), 283-302. doi:10.1080/09588220903184518
- Chapelle, C. A. (1997). CALL in the year 2000: Still in search of research paradigms? *Language Learning & Technology*, 1(1), 19-43. Retrieved from <http://llt.msu.edu/vol1num1/chapelle/default.html>
- Chapelle, C. A. (2005). Interactionist SLA theory in CALL research. In J. L. Egbert and G. M. Petrie (Eds.), *CALL Research Perspectives* (pp. 53-64). Mahwah, NJ: Lawrence Erlbaum Associates.
- Chapelle, C. A. (2007). Technology and second language acquisition. *Annual Review of Applied Linguistics*, 27, 98-114. doi:10.1017/S0267190508070050
- Chapelle, C. A. (2009). The relationship between second language acquisition theory and computer-assisted language learning. *The Modern Language Journal*, 93(focus issue), 741-753.
- Chun, D. (2007). Come ride the wave: But where is it taking us? *CALICO Journal*, 24(2), 239-252.
- Chung, Y-G., Graves, B., Wesche, M., & Barfurth, M. (2005). Computer-mediated communication in Korean-English chat rooms: Tandem learning in an international languages program. *The Canadian Modern Language Review*, 62(1), 49-86.
- Darhower, M. (2007). A tale of two communities: Group dynamics and community building in a Spanish-English telecollaboration. *CALICO Journal*, 24(3), 561-589.
- Darhower, M. (2008). The role of linguistics affordances in telecollaborative chat. *CALICO Journal*, 26(1), 48-69.
- Gánem Gutiérrez, G. A. (2006). Sociocultural theory and its application to CALL: A study of the computer and its relevance as a mediational tool in the process of collaborative activity. *ReCALL*, 18(2), 230-251. doi:10.1017/S0958344006000620
- Gánem-Gutiérrez, G. A. (2009). Repetition, use of L1 and reading aloud as mediational mechanism during collaborative activity at the computer. *Computer Assisted Language Learning*, 22(4), 323-348. doi:10.1080/09588220903184757
- Goulah, J. (2007). Village voices, global visions: Digital video as a transformative foreign language learning

- tool. *Foreign Language Annals*, 40(1), 62-78.
- Hampel, R. (2006). Rethinking task design for the digital age: A framework for language teaching and learning in a synchronous online environment. *ReCALL*, 18(1), 105-121.
- Jonassen, D. H., & Land, S. (Eds.). (2000). Preface. In D. H. Jonassen and S. M. Land (Eds.), *Theoretical Foundations of Learning Environments* (pp. iii-ix). Mahwah, NJ: Lawrence Erlbaum Associates.
- Karlstroem, P., Cerratto-Pargman, T., Lindstroem, H., & Knutsson, O. (2007). Tool mediation in focus on form activities: Case studies in a grammar-exploring environment. *ReCALL*, 19(1), 39-56.
- Kern, R. (2006). Perspectives on technology in learning and teaching languages. *TESOL Quarterly*, 40(1), 183-210.
- Lantolf, J. P., & Thorne, S. L. (2006). *Sociocultural theory and the genesis of second language development*. Oxford: Oxford University Press.
- Lave, J., & Wenger, E. (1991). *Situated learning: Legitimate peripheral participation*. Cambridge: Cambridge University Press.
- O'Rourke, B. (2008). The other C in CMC: What alternative data sources can tell us about text-based synchronous computer mediated communication and language learning. *Computer Assisted Language Learning*, 21(3), 227-251.
- Oskoz, A. (2005). Students' dynamic assessment via online chat. *CALICO Journal*, 22(3), 513-536.
- Oskoz, A. (2009). Learners' feedback in online chats: What does it reveal about students' learning? *CALICO Journal*, 27(1), 48-68.
- Peterson, M. (2009). Learner interaction in synchronous CMC: A sociocultural perspective. *Computer Assisted Language Learning*, 22(4), 303-321.
- Salaberry, M. R. (1996). A theoretical foundation for the development of pedagogical tasks in computer mediated communication. *CALICO Journal*, 14(1), 5-34.
- Salaberry, M. R. (1999). CALL in the year 2000: Still developing the research agenda. A commentary on Carol Chapelle's CALL in the year 2000: Still in search of research paradigms. *Language Learning & Technology*, 3(1), 104-107. Retrieved from <http://lt.msu.edu/vol3num1/comment/>
- Sasaki, A., & Takeuchi, O. (2009). EFL students' vocabulary learning in NS-NNS e-mail interactions: Do they learn new words by imitation? *ReCALL*, 22(1), 70-82. doi:10.1017/S0958344009990206
- Thorne, S., & Payne, J. S. (2005). Evolutionary trajectories, internet-mediated expression, and language education. *CALICO Journal*, 22(3), 371-397.
- Thorne, S. L. & Smith, B. (2011) Second language development theories and technology-mediated language learning. *CALICO Journal*, 28(2), 268-277.
- Van Lier, L. (2000). From input to affordance: Socio-interactive learning from an ecological perspective. In J. P. Lantolf (Ed.), *Sociocultural theory and second language learning* (pp. 245-259). Oxford: Oxford University Press.
- Van Nguyen, L. (2010). Computer Mediated Collaborative Learning within a Communicative Language Teaching Approach: A Sociocultural Perspective. *Asian EFL Journal*, 12(1), 202-233.
- Warschauer, M. (1997). Computer-mediated collaborative learning: Theory and practice. *Modern Language Journal*, 81, 470-481.
- Warschauer, M. (2005). Sociocultural perspectives on CALL. In J. L. Egbert and G. M. Petrie (Eds.), *CALL Research Perspectives* (pp. 41-51). Mahwah, NJ: Lawrence Erlbaum Associates.

(Received February 28, 2012)