Research Article

Language Learning *Sans Frontiers*: A Translanguaging View

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ABSTRACT

In this article, we present an analytical approach that focuses on how transnational and translingual learners mobilize their multilingual, multimodal, and multisemiotic repertoires, as well as their learning and work experiences, as resources in language learning. The approach is that of *translanguaging*, which seeks to push the boundaries not only between different named languages but also between different modalities and across language scripts and writing systems. We base our arguments on a study of self-directed learning of Chinese via online platforms in the context of mobility and aim to demonstrate the transformative capacity of translanguaging. In doing so, we highlight the need for a transdisciplinary approach to language learning that transcends the boundaries between linguistics, psychology, and education, and in particular, the need to go beyond the artificial divides of the different modalities of language learning to strengthen the connections between research on bilingualism and multilingualism and research on language teaching and learning.

Keywords: mobility, Chinese, translanguaging, multimodality, online learning

MOBILITIES AND LANGUAGE LEARNING

Globalization, together with the advancement of technology, has fundamentally changed the way people learn and use languages. People no longer have to sit in a classroom with a teacher giving instructions in order to learn a new language. Instead, they do it on their own, in small groups, with the help of online platforms and mobile devices, at times of their own choosing. The language they learn may seem piecemeal, given that they need it for a variety of reasons such as travel, personal relationships, and entertainment. Even in the classroom context, language learning is most often supported by technologies of various kinds, and the learners and the teachers may come from very diverse linguistic and cultural backgrounds, with diverse learning motivations and objectives.

In this article, we are concerned with self-directed learning of Chinese by multilingual adults on the move through online language-learning platforms. In

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self-directed learning, the learner takes the initiative and makes decisions in terms of learning goals, strategies, material resources, time arrangements, and physical location. Consequently, there is a blurring between their everyday life and language learning, in that language learning becomes an integral part of their daily activities that can happen in their living room, bedroom, or kitchen, or while they are on the move, at any time of the day for different periods and with changing objectives. The learners are multilingual and mobile, they are not residing in their birth country, and they have a variety of different jobs. Their linguistic and cultural backgrounds are different, as are their language-learning experiences and motivations.

This kind of mobile learning and mobile learners clearly raises issues of learner autonomy, strategy, motivation, and technological affordances, among others. Most of these have been addressed in the existing literature (e.g., Kukulska-Hulme, 2007, 2009, 2012; Kukulska-Hulme & Shield, 2008; Pachler, Bachmair, & Cook, 2010; Pegrum, 2014). In particular, there are several studies that deal with mobile-assisted language learning (MALL) where learners use smartphones and tablets for language learning (Kan, Owen, & Bax, 2018; Kukulska-Hulme, 2009, 2012; Kukulska-Hulme & Shield, 2008). Kukulska-Hulme (2007, 2012), for example, looked at how the affordances of technologies allow the learner to be mobile. In this article, we focus on an underexplored issue, namely, how mobile learners mobilize their multilingual, multimodal, and multisemiotic repertoires as resources in the process of learning, specifically the learning of Chinese characters through on-line learning platforms on their own. The mobile learners have transnational and translingual learning and work experiences. And the multilingual, multimodal, and multisemiotic repertoires are records of their life experiences and mobility. In studying these learners' learning process, we are advocating a translanguaging approach, which explicitly intends to push the boundaries between different named languages; between speakers' so-called verbal and nonverbal behaviors; and between language and other cognitive, modal, and semiotic resources (see Li, 2018). We are particularly interested in the transformative capacity of translanguaging in language learning and in showing how the learners use their multilingual and multimodal resources to transform their learning experience.

The article is structured as follows: We begin by introducing the translanguaging perspective and discussing its relevance to additional language learning, especially in the context of the mobility of learners, technologies, and knowledge. We highlight the disconnection that seems to exist in the current research and practice between bilingualism and multilingualism and language teaching and learning. We then discuss translanguaging and multimodality, emphasizing the importance of what have traditionally been viewed as the nonlinguistic or nonverbal dimensions in language learning. The main body of the article presents an analysis of two cases of multilingual learners learning Chinese written characters using an online platform. We show the translanguaging process of their learning and discuss what are transformed as a result of the process. We conclude by stressing the conceptual and methodological contributions of the translanguaging perspective on language learning in the era of heightened, complex, and dynamic mobilities.

TRANSLANGUAGING AND THE BILINGUAL KNOWLEDGE

There has been an explosion of the use of the term *translanguaging* in the applied linguistics, sociolinguistics, and bilingual education literature in the last 10 years. As a theoretical concept, it is still being developed. But its origin lies in Cen Williams's (1994) work in Welsh revitalization programs, where he observed the teacher trying to teach Welsh but the pupils responding in English. The teaching material was in Welsh, whereas the language of discussion in the classroom was often English. Rather than seeing such practices entirely negatively, Williams argued that switching between different languages and modalities could help to maximize the learner's and the teacher's bilingual capacity in learning. Baker (2001) used the word *translanguaging* to translate Williams's Welsh term "trawsieithu." As Li (2018) pointed out, Williams made it clear from the beginning that unlike code-switching, translanguaging is not simply a set of linguistic structures. It is a dynamic practice that involves different named languages and language varieties but more importantly, a process of knowledge construction that makes use of, but goes beyond, individual languages. It concerns effective communication, function rather than form, cognitive activity, and language production.

Over the years, translanguaging has come to refer to purposeful alternation of language mode of input and output in a variety of bilingual classrooms. It is the maximization of the learner's, and the teacher's, linguistic resources in the process of problem solving that attracts bilingual educators and bilingual education researchers to the concept of translanguaging. It has also been taken up by researchers and practitioners working in content and language integrated learning (CLIL) and even English as a medium of instruction (EMI), especially by those who are critical of the traditional, monolingual approaches to CLIL and EMI (e.g., Dafouz & Smit, 2014; Lin & Lo, 2017; Mazak & Carroll, 2016; Nikula, Dafouz, Moore, & Smit, 2016). As discussed in Garcia and Li (2014), translanguaging is a process of sense making and meaning making that involves use of the learner's linguistic repertoire in a dynamic and integrated manner without regard to the named languages individually and separately—that is, transcending the boundaries of named languages. This does not mean that the learner is not aware of the political connotations or the structural constraints of specific named languages; quite the contrary, they are fully aware of such facts but are also able to mobilize this knowledge for strategic gains.

To us, the relevance of translanguaging to modern foreign language teaching and learning is that it challenges our conventional thinking about the dichotomies between first language (L1) versus second language (L2) (or L*x*) or native versus nonnative language and speaker, and connects language-learning research with the extensive research that exists on bilingualism and multilingualism. It is useful to remind ourselves that the purpose of learning an additional language is to achieve some degree of bilingualism or multilingualism rather than losing the language or languages we know or replacing one language with another. Yet real bilingual and multilingual language users and how they use languages in real-life social situations are rarely used as a model in L2 and additional language teaching and

learning. Instead, it is often an idealized, monolingual, so-called L1 native speaker that is used as the norm and the target of learning. There is a real disconnect between our knowledge of bilingual and multilingual language users and their linguistic practices, on the one hand, and L2 and additional language teaching and learning, on the other.

So, what do we know about bilingual and multilingual language users and their linguistic practices? Research over the decades has shown that perfect, balanced bilinguals with full proficiencies in both or all their languages are a myth, even if they were the so-called simultaneous bilinguals who were exposed to two or more languages simultaneously from birth, because the exposure is rarely equal or balanced (De Houwer, 2009). Indeed, no one can learn and know an entire language system, whether we call it first, second, native, or foreign (Cook & Li, 2016). Language learning, in this sense, is a perpetual, lifelong process. The different languages in the bilingual's and multilingual's brain play different roles and interact with one another in complex and dynamic ways for different purposes and under different conditions. Crucially, bilinguals and multilinguals rarely use all their languages equally in all contexts or to equal level. Knowing which language to use to whom and when—the famous Fishman question (Fishman, 1965)—is a central part of being bilingual or multilingual. Bilinguals and multilinguals therefore move between what Grosjean (2001) called "language modes" (see also Green & Li, 2014). Switching and mixing between and across languages is a defining behavior of *being* bilingual.

Yet, there is much misunderstanding and fear of language switching and mixing, despite the fact that it is a very common phenomenon among bilinguals and multilinguals. At the root of these fears, in our view, is the ideology of monolingualism and linguistics purism, which often manifests in the language classroom in the form of one-language-only or one-language-at-a-time practical policies, and thus classroom rules and teachers' policing of behavior. These ideologies and policies not only dominate our social practices with regard to bilingual and multilingual language users, including pedagogical practices in various language-learning contexts but also dominate the research questions we ask. There is a tendency to hold bilinguals' ability to separate and differentiate their languages either in laboratory conditions or in real-life interaction as the benchmark of linguistic competence; if you can't or don't keep the languages separate, as in the case of code-switching and mixing, then you are assumed to have some kind of linguistic deficit, at least in one of the languages. Language learners, who are developing bilinguals and multilinguals, are still often being compared to the idealized monolingual in performance measures. In modern foreign language classrooms, it is still often assumed that the use of L1 should be minimized as it interferes with and slows down the process of learning and producing the target L2.

The translanguaging perspective represents a paradigm shift from the traditional focus on structural constraints and separate roles of different languages in learning to what some linguists call "integrational" approaches (Harris, 1996, 1997) and, more importantly, beyond the narrow focus on linguistic structures and the narrow concept of language. Such a shift also echoes the shifts in other

disciplines to connectivity, fluidity, and mobility. While the point of departure in most code-switching research is the identification of different named languages such as Spanish, Chinese, Arabic, Russian, or English, the translanguaging approach challenges the idea that different named languages, which exist as historical, political, and ideological entities, exist as cognitive entities in the human mind. As Thierry (2016) pointed out, it is inconceivable from the available research evidence that the human mind can be divided into different languages. Some earlier experimental data did show that processing later acquired language(s) might involve certain neural networks that are not central to L1 processing. But that tells us more about the process of language learning than about the representation of different languages in the human mind. Likewise, the findings that certain brain areas may be involved in processing the lexical tones and logographic writing systems that some of the world's languages have point to the closer connections between language and other cognitive systems as much as to the differences between languages. Earlier work that aimed to find the neural "switch" in the brain responsible for code-switching has also been discredited.

As explained in Li (2011), our current conceptualization of translanguaging was informed by earlier and ongoing work on "languaging" by sociocultural learning theorists such as Swain (2006) and the so-called ecological psychologists working on distributed cognition, where languaging refers to "an assemblage of diverse material, biological, semiotic and cognitive properties and capacities which languaging agents orchestrate in real-time and across a diversity of timescales" (Thibault, 2017, p. 9). Language is seen from this perspective as a second-order construct, the product of first-order activity, that is, languaging (Cowley, 2017; Thibault, 2011, 2017; Steffensen, 2011), and the "human languaging activity is radically heterogeneous and involves the interaction of processes on many different time-scales, including neural, bodily, situational, social, and cultural processes and events" (Thibault, 2017, p. 76). The traditional divides between the linguistic, the paralinguistic, and the extralinguistic dimensions of human communication are nonsensical. The orchestration of the neural-bodily-worldly skills of languaging highlights the importance of feeling, experience, history, memory, subjectivity, and culture, as well as ideology and power (for further details, see Li, 2018).

TRANSLANGUAGING AND MULTIMODALITY

One particular aspect of the existing work on bilingualism and multilingualism that remains underexplored is switching across different language scripts and writing systems and across modalities—the latter is not necessarily unique to bilinguals, but heightened by bilinguality, mobility, and globalization. In the 21st century, much of human social interaction is mediated through multimedia technology. Even the so-called monolingual speaker, that is, someone who knows only one of the culturally and politically named languages in the world, can hardly survive without employing multimodal resources. Emoji seems to be the fastest growing

language. There is increasing recognition that human communication has always been multilingual, multimodal, and multisensory. Language learning is also a multilingual, multisensory, and multimodal experience. What's more, the multilingual, multimodal, and multisensory processes are dimensions of the same process and experience, not separated processes that can happen on their own. Conventional sounds and symbols that constitute human languages are but one of a vast range of semiotic modes that human beings can use as resources to create messages and meanings in different situations for different purposes. Every mode has a different modal resource, which is historically and culturally situated and which can be broken down into parts, which in turn can further have their own histories and meaning potentials. Translanguaging aims to challenge what Block (2014, p. 56) called the "lingual bias" in applied linguistics, in bilingualism and multilingualism, and in language teaching and learning research, and it embraces the social semiotic view of multimodality (Kress, 2010).

Multimodal social semiotics views linguistic signs as part of a wider repertoire of modal resources that sign makers have at their disposal and that carry particular sociohistorical and political associations. Translanguaging foregrounds the different ways language users employ, create, and interpret different kinds of signs to communicate across contexts and participants and how they perform their different subjectivities. In particular, it highlights the ways in which multilinguals make use of the tensions and conflicts among different signs, because of the sociohistorical associations the signs carry with them, in a cycle of *resemiotization*. As Scollon and Scollon (2004) pointed out, certain actions transform a whole cycle of actions during which each action is also transformed. This transformation cycle is often referred to as resemiotization (Iedema, 2003), where actions are resemiotized, that is, they are redesigned, from one semiotic mode to another, with new meanings emerging all the time. Translanguaging is therefore a transformative resemiotization process whereby multilingual language users display the best of their creativity and criticality (Li, 2018).

It is particularly important to emphasize the *transformative* nature of translanguaging: It can transform the form, function, and meaning of the sign, linguistic or otherwise; it can also create a space for the multilingual language learners and language users by bringing together different dimensions of their personal history, experience, and environment; their attitudes, beliefs, and ideology; and their cognitive and physical capacity into one coordinated and meaningful performance, transforming language learning and language use into a lived experience. We discuss the transformative process of translanguaging in the examples in the next section.

TRANSLANGUAGING LEARNING IN ACTION

Let us now look at two examples of how translanguaging transforms language learning. They come out of a larger study by Ho (2018) on self-directed learning of Chinese via online platforms. It followed 11 learners of Chinese from different

linguistic and cultural backgrounds in different parts of the world but all using a specific online platform, Memrise, to learn to read and write Chinese characters on their own.

All the learners were volunteers who were recruited through online channels. They agreed to be observed via screen recording using a software called Camtasia over a 4-week period and subsequently participated in Skype interviews. The data reported in this article came from these two sources. The online screen recording captured their use of the keyboard and mouse, their facial expressions, what they were saying to themselves, and what they saw on the screen. They installed the free screen-recording software on their computers and did the recording in their own time. They then uploaded their recordings to a designated password-protected Dropbox account every week (Ho, 2018). The students uploaded a total of 18 hours of recordings, averaging 1.6 hours per learner.

The online language-learning platform that these learners used was Memrise. It is a London-based company offering online courses not only in languages but also ranging from astronomy to history. Language courses form a large part of Memrise; it offers lessons for more 100 different languages and is a multilingual platform where one can learn different languages through different languages. We had permission from the company to study their platform and the Chinese courses in particular, and we contacted the learners through the company's website and blog. Memrise operates on a "freemium" business model, in which it provides some services for free, while charging users for more advanced functions. Like many other language-learning platforms on the internet, Memrise focuses on building vocabulary. Learners are given a "garden of memory," and they are expected to "plant seeds" (learn new words) and "water" them regularly (revise the new words regularly by doing exercises). A lot of the exercises included matching the vocabulary shown in the target language to their corresponding meanings or forms. These kinds of matching exercises are designed so that learners have the impression of playing a game, which could possibly increase their motivation to learn (Gee, 2013; Reinders, 2012). The name of the platform in itself is a pun—it sounds like memorize. Indeed, Memrise prides itself on the use of memory techniques to help people learn, most notably the use of mnemonics to create memes (memes are called "mems" in Memrise), images, and stories. Memrise also uses crowdsourced materials from members of the site so that it is able to offer a wide variety of courses and learning materials that serve learners' practical needs, for instance, ordering food at a restaurant in the target language. Nonetheless, based on the way it is designed, Memrise offers a fairly structured curriculum for language learning.

With regard to Chinese, Memrise aims to facilitate learning through the use of five modes: writing, speech, image, moving image, and page/screen layout, providing different resources. For instance, writing is used to present the target word and show its translation in another language. Speech is used in the recording of the pronunciation of the word, so that upon activation, learners can listen to how the word is pronounced. Images, both moving and static, are particularly helpful in Chinese learning; they are mainly used in the memes to provide visual resources to

help learners understand the composition of a character, which oftentimes is made up of several different parts called radicals. Page layout or the spatial arrangement of the screen gives salience to important information. These five modes are said to perform "pedagogical work" (after Kress's semiotic work: Kress, 2010, 2015); in other words, the modes are deliberately used to achieve a pedagogical purpose for language learning.

The 11 learners whom we followed had different life and work experiences and migration patterns, as well as a variety of language-learning experiences. They therefore used Memrise in different ways and for different purposes. Here, we first present a partial transcript of a screen recording of George, an Australian in his early 30s, during a "learning to read characters by creating memes" session where he tries to learn a specific Chinese written character. We say partial because it is impossible to represent everything that is going on, even in such a short episode. The transcription only includes what seemed to us to be significant for the purpose of the present study. George had been teaching English in China for about 8 months at the time of the recording, and he was on his way to finishing his education degree in Australia. In addition to English and Chinese, he had learned some German at school and some basic Japanese using self-instructional materials (with a book and CD-ROM) before he traveled in Japan. He had been to China on holiday a year before he decided to teach English in China and reported that he decided to learn Chinese when he was on holiday. His intention to work in China and his interest in the language were closely linked. He chose not to attend formal classes but to take one-to-one tutoring, even though private tuition was more expensive. For him, taking ownership of his learning was important. As he told us in the interview, the one-to-one lessons he took were mainly for speaking, and he used Memrise and other apps and websites with the explicit goal of learning the written characters, as shown in the following extract from his interview.

> I met a few people when I went to China, the first time. They have given me their QQ [an instant messaging platform popular in China] number. So I downloaded QQ once I was back in Australia, and they were sending me messages in Chinese, in characters. And a lot of the time I was just translating through Google Translate, but also that kind of spur me on to start learning the characters as well…. I didn't really stick with one thing … over here in China…. I started having my tutoring and I found Memrise.… At the moment I've got a tutor, but I just use Memrise for characters, because that's kind of my own study. I told her [my tutor] I don't really want her to take into characters just, just spoken Chinese.… I was also using a programme … which is just like a flashcard programme … there's a set of basic Mandarin flashcards, and I was using that 'cause I can use it on the phone as well, there's a programme for that, so I was trying to use it for a little bit, but, yeah, a lot of different things. (George, Interview 1)

His experience of teaching primary school children learning English in China had made him realize the importance of remembering useful vocabulary. Being a language teacher (of English) and a language learner (of Chinese) at the same time seemed to have had an effect on his own learning strategies. In the interview he

expressed how he wished he could combine the use of technology like Memrise and his lessons with his students, as shown in the following extract.

> if there was some sort of system they [students] could do on their computer just for remembering the vocabulary or something that I teach them at school, even just like words like "cat," "dog," "mouse," "turtle," words like that, they can go and learn that, you know, a tool like that would be really good to just remember what the words are, and then you can focus more in school about sentences and pronunciation, and other skills that make the language worthwhile. (George, Interview 2)

Working in China had immersed him in a Chinese-speaking environment. He had lots of exposure to Chinese, especially in the form of speaking and listening. He also had a personal tutor helping him in those two areas. His level of spoken Chinese was good enough for him to use it as a leverage to learn new vocabulary. He told us in the interview that one strategy that he used to remember pronunciation of a new Chinese word was to find another word that he already knew that shared the same or similar pronunciation. He claimed that he would not have been able to do it without a considerable number of Chinese words already existing in his repertoire. As we have mentioned before, Memrise is a platform that focuses on vocabulary. But the way the vocabulary exercises are designed may be seen as teaching vocabulary in a decontextualized way. George agreed with this in the interview, and he explained that for him, it was important to learn vocabulary in context. One way to create contexts for himself was by creating memes that contained the meaning, the pronunciation, and the form of the character that he could remember like a story.

In the recorded session, he was learning characters from the "First 500 characters in Mandarin Chinese" list. We were told that he had already gone through 410 of them previously, but felt that he needed to review them regularly. The session he recorded here is what he called a review session, reviewing a Chinese written character he had learned before, but felt that he had not quite grasped or memorized. The character that he was reviewing was 或. A standard translation would be "or," as in "either … or." But the definition Memrise gives is "perhaps." To try to remember the character, George needed to script a narrative that in some way described the composition of the character but also created a story about the character that linked to its meaning and pronunciation. Also, in this online learning space, George could access similar scripts created by other learners, and if he chose to, he could make use of other learners' scripts rather than writing his own entirely from scratch. In fact, in the recording, it is evident that he was engaged in the practice of "digital remixing," that is, adding personal touches to existing texts and adding new meanings to them (Adami, 2015; Zourou, 2012).

We designed a transcript with four columns representing four different modes (see below). From left to right, the first column shows speech: what George was saying during the recording. It also shows cursor movement in relation to the words that were spoken when the cursor movement occurred. The second column shows the screen that George was looking at, together with an image of his face

looking at his own screen. The third column shows the typing that George did. The last column shows his facial expression and other relevant happenings during the recording. The following is the key to the transcript:
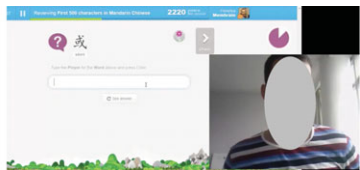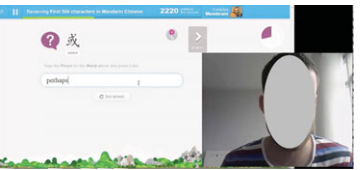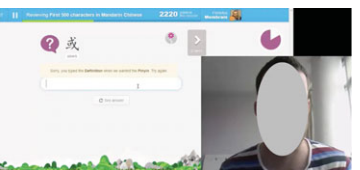
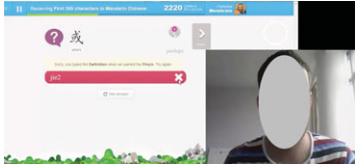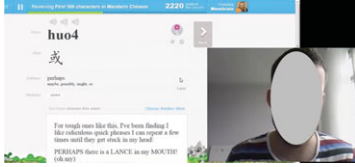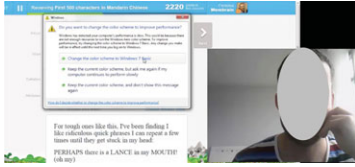|	
(.)	A brief pause
(2)	A pause of approximately 2 seconds
[huo4]	Pinyin symbol* and tone of the Chinese character being spoken
(inaudible)	What was said is unclear to the researcher
(cursor hovering above it)	Cursor movement captured on screen
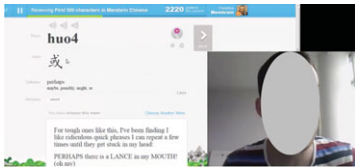
*Note that the pinyin symbol used in this transcript is a nonstandardized convention with tones marked in numerical used by Memrise as well as the participant. The same convention is used throughout this article to avoid confusion. The standard pinyin transcription should be huò.
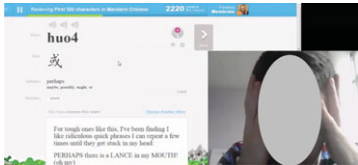
In analyzing examples such as these, we face a methodological challenge, not only regarding how to unpack everything that is going on simultaneously but how to represent all the layers, the dimensions, and the details. The practical considerations and challenges associated with creating multimodal transcriptions are widely discussed in the literature (e.g., Bezemer, 2014; Dooly & Helm, 2017; Meredith, 2016). The transcription we present here can only illustrate certain aspects of the dynamic process of learning. As Flewitt, Hampel, Hauck, and Lancaster (2014) noted, all transcriptions are reduced versions of observed reality.

In the recording, George was deconstructing the Chinese character 或. To him, this character was made up of two main radicals: 戈 (ge1) and 口 (kou3). At the very beginning, he associated 戈 (ge1) with the side of another character, 我 (wo3), which share the same 戈 (ge1) radical. This radical means "lance." He also identified the 口 (kou3) radical and established its meaning as "mouth." From this, George started creating his narrative of the meaning of the character, "perhaps."
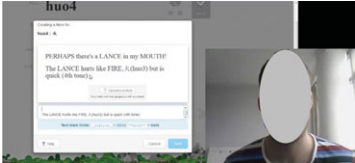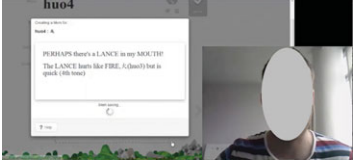
What seems to be clear to us, though, is that George had scripted himself an interesting story, a new sign, a sign that he has ownership and full understanding of. He was not simply retrieving information from the platform and processing what he received, but actively making meaning. And this meaning-making process involves a carefully orchestrated use of multiple semiotic and modal resources: He was constantly talking to himself, thinking aloud; he was looking, reading, and moving the mouse; he was typing; he was reading the picture/image/sign and imagining other pictures/images/signs in order to create his own sign; and he was trying out the pronunciation or trying to memorize the pronunciation and linking the pronunciation with the image/sign and making connections across meaning, sound, and image; in Thibault's terms, he was engaging in whole-body sense making or "pico-scale bodily events—synchronized interindividual bodily dynamics on very short, rapid timescales" (Thibault, 2011, p. 214). And he was doing this across two languages, creating the story in English about a Chinese character, with bits of information about Chinese radicals that make up the character embedded in the story. When he was trying out the pronunciation of the character in search of another word with a similar pronunciation, he kept repeating the word in a slightly exaggerated way, as if he was vocalizing the word to get a feeling of what it sounds

Speech and cursor movement	Screenshot	Typing	Facial expressions and other relevant happenings
			Staring at the screen intently. Body leaning close to the screen.
Now, the only reason I'm writing (2) "perhaps" is because it says adverb underneath, and		perhaps	Uncertain whether it is "perhaps" or not. The pause before uttering the word "perhaps," the uncertain gaze of his eyes, and the rising tone.
Silent for 4 seconds			
Oh, it is, it is "perhaps." I wanted the pinyin (.) oh, they want the pinyin. So I know that the "perhaps" one, but that's because it's literally saying adverb (*circling around the word*) to me, and I wouldn't have guessed it otherwise. I just know this, I've done the adverb "perhaps," I don't know what the def—the pinyin is. It could be jie2 (*G presses enter, but the platform responds with "Sorry, you typed the definition when we wanted the pinyin. Try again"*).			

Speech and cursor movement	Screenshot	Typing	Facial expressions and other relevant happenings
(The computer pronounces 或 [huo4].) 或 [huo4] (.) 或 [huo4] (.) 或 [huo4] (.) And you can see I've chosen the mem "PERHAPS there is a LANCE in my MOUTH! (oh my)" (*hovering above it*). It doesn't really help me at all, oh my (*G types "jie2" but it is wrong*).		jie2	
Perhaps there's a lance in my mouth (.) 或 [huo4] (.) perhaps (.) perhaps.			
			Technical issues.
或 [huo4] 或 [huo4] 或 [huo4].			Pronouncing the character in a slightly exaggerated way.
Yeah to me, that looks like the side of 我 [wo3] (*hovering above the 戈 radical*), I'm not sure if it is, but it looks like the side of 我 [wo3], and then that dash (*hovering above it*), the 点 dash, and then the 口 [kou3]			

Speech and cursor movement	Screenshot	Typing	Facial expressions and other relevant happenings
(*hovering above it*) (2). I don't know what that look like. But obviously that's the mouth. "Perhaps" (*hovering above the character and the definition*). Obviously that's the lance that is on the side of 我 [wo3] (*hovering above the 戈 radical*). I, I don't know how to remember this, as "perhaps."			Looking a bit distressed. Hands holding the top of the head, rubbing his face.
Because there's just no logical connection for me. "Perhaps there is a lance in my mouth." I knew that was lance, I'll probably get that bit (*hover above it*), but how to make it 或 [huo4](.) 或 [huo4](.) I know fire is 火 [huo3], so maybe I can think of (.) a lance in the mouth would be very painful like fire? (4) And quick like the fourth tone?			Thinking aloud the ideas in his mind. Rising intonation indicates uncertainty.

Speech and cursor movement	Screenshot	Typing	Facial expressions and other relevant happenings
Silent for 10 seconds			*Thinking while drinking from his mug*
Yeah it makes some sort of logical sense. I'm gonna, I'm gonna, so what I'm going to do, "perhaps there's a lance in my mouth" (*highlighting the sentence*), I'm gonna, this is how I make the mem, so I'm actually gonna make that. "Perhaps there's a lance in my mouth." I'll make the mem. "Choose another mem" (*voice getting softer; whispering to himself*).			
So I'm gonna steal the "perhaps there's a lance in my mouth."			
Perhaps there's a lance in my mouth.		PERHAPS there's a LANCE in my MOUTH!	
Because I might be able to remember that (.) And then.			
For the (.) for the pronunciation (3), so (.) the lance (6) hurts (2) like (2) fire (2), which is (2) 火 [huo3]. I am getting 火 [huo3] right, it's fire (*inaudible*).		The LANCE hurts like FIRE 火(huo3)	

Speech and cursor movement	Screenshot	Typing	Facial expressions and other relevant happenings
The lance hurts like fire, 火 [huo3] but is quick (8) 4th tone (2) 或 [huo4].		but is quick (4th tone)	
Perhaps there's a lance in my mouth (.) I stole that (.) The lance hurts like FIRE, 火 [huo3] (7) but is quick.			
Silent for 6 seconds			
Perhaps there's a lance in my mouth. See I might remember fire now when I look at this character, which is (*inaudible*).			
Let's just make that (*G presses "Save"*).			

like. In the meme, "FIRE" is the meaning of 火 (huo3), a word which shares a similar pronunciation to 或 (huo4), the only difference being the tone—火 (huo3) is third tone and 或 (huo4) is fourth tone. George used "quick" to describe this tonal difference because a fourth tone "sounds quicker" than a third tone, and as he told us in the postrecording interview, "being hurt by a lance is a faster process than being hurt by fire" (George, Interview 2). In addition, the use of resources other than language, such as the use of uppercase letters as in PERHAPS, LANCE, MOUTH, FIRE, was a motivated attempt by George to highlight the keywords in the sentence, in this case, to give salience to words that would have been overlooked had there been no semiotic tools to highlight them. In scripting a story about the character, he was simultaneously drawing on his multilingual, multimodal, and multisemiotic repertoires, as well as his experiences of the world. This is translanguaging in action.

The way George moved across named languages (English and Chinese), across orthographic systems (alphabets, characters, pinyin), and across modalities (speaking, writing, reading), provides evidence of learner agency and learner autonomy, specifically how George made use of the funds of knowledge (Moll, 1992; Moll, Amanti, Neff, & Gonzalez, 1992; Moll & Gonzalez, 1994) he had himself and what was provided by other learners. George seemed to be using two of the learning strategies by distance learners of Chinese identified by Kan et al. (2018), as well as Shen (2005), namely, "[finding] a connection between the new character and previously learned characters," and "[saying] the character when writing it and [listening] to the sound and [trying] to associate its sound with meaning and shape" (Kan et al., 2018, p. 10). The narrative he scripted shows the complex interplay between the aspects of the target language (meaning, form, pronunciation) and his existing knowledge. It is a motivated selection of the resources available to him. "Perhaps," which is originally related to the meaning of the target character, was being turned into an adverb in the new sign; what appears to be related in terms of form (e.g., ge1(戈) and *lance*) was turned into a noun in a sentence, becoming an object that could act on another object. We can summarize some of the transformations that happened in the process (see Table 1).
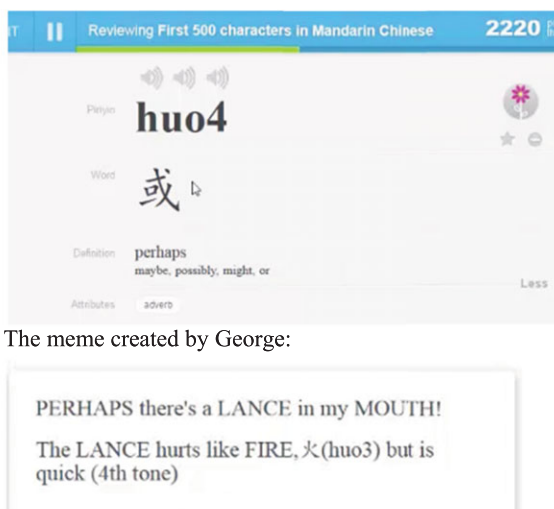
From this kind of analysis, we can identify some general principles of how this learner transformed the original pedagogic material when creating the new sign.

- Meaning: meaning of word *x* in Chinese (或) "is like" meaning of word *y* in English ("perhaps")
- Written form: character (或) "is like" shape of objects named in English (lance, mouth)
- Spoken form: pronunciation of word x (或) "is like" pronunciation of word y in Chinese (火)
- Capitalizing words that are related to the target character (perhaps, lance, mouth, fire)
- Including meaning, the written form, and the spoken form (pronunciation) in the meme

It should be noted that these general principles of transformation apply to other cases that we have in the larger project (see more examples in Ho, 2018). Learners draw on their own, sometimes very different, resources and funds of knowledge in making meaning. They show a high level of agency and creativity. The online learning platform provides a space for the orchestration of resources in self-directed, multilingual, and multimodal learning, a space for translanguaging that goes beyond boundaries of languages, and boundaries between languages and other semiotic and cognitive systems.

Different learners use different funds of knowledge from their previous life and work experiences in achieving their learning goals. Let us look briefly at another learner whom we call Neil. Neil was originally from Belgium. He grew up speaking French with his family, as well as Dutch, as he grew up in the Dutch-speaking area

TABLE 1. *A Comparison of the Original Pedagogic Material and the New Meme*

	Original pedagogic material	Function in original pedagogic material	Representation in meme	Function in meme	Language in meme
Original pedagogic material: *Reviewing First 500 characters in Mandarin Chinese* — huo4 — 或 — perhaps maybe, possibly, might, or — The meme created by George: PERHAPS there's a LANCE in my MOUTH! The LANCE hurts like FIRE, 火(huo3) but is quick (4th tone)	perhaps	Meaning	PERHAPS	Adverb	English
	或	Written form	LANCE	Noun	English
			MOUTH		English
	huo4	Spoken form (pronunciation)	FIRE	Noun	English
			火	Written form of FIRE	Chinese
	(and pronunciation on activation)		huo3	Spoken form of FIRE	Chinese

of Belgium. In addition to this, he had learned English mostly at school, and he had also learned Spanish from a platform called Duolingo while he worked in Spain. At the time of the research, he was working as a researcher in South Korea, in the field of computational physics, and he had learned Korean using Memrise. When he was a teenager, he took a gap year in China, and from there he had learned some spoken Chinese and attended some Chinese lessons. He had also made good friends there. It was from that gap year that he had developed a strong interest in Chinese language and culture.

In the following recorded session, he was learning new words from a lesson called "HSK Level 5." HSK, also known as 汉语水平考试 Hanyu Shuiping Kaoshi, is a standardized test for Chinese as a foreign language. It has six levels, with Level 1 for beginners and Level 6 for the advanced. Similar to George, Neil had also created memes. The following is a partial transcript (see below).

Like George, Neil created a story based on the phrase 下载, meaning "to download." Before he started creating the meme, he also read the memes created by other learners. The meme that he was creating was based on one created by another learner. Similar to George, Neil also attempted to break down the character into its constituents. There are two characters, 下 meaning "down" or "below" and 载 meaning "load." The second character, 载, meaning "load," is made up of three radicals: 土 (earth), 车 (vehicle), and 戈 (dagger). From another learner's meme, Neil got the idea of using "to LOAD a CAR with EARTH" as a way to link EARTH and CAR together. However, in his narration, he remarked that the meme did not link the "dagger" or "halberd" radical, so he wanted to make one that included all of the components that make up the character. To do this, he did extensive research from various websites and added "DAGGER" to make the story complete. This example shows that although he did not create the meme from scratch, he actually did a lot of work in the selection of resources. His experience as a researcher seems to have played an important and useful role in the process.
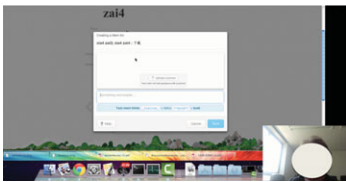
Compare the two cases: George's meme seems to be creative and imaginary, while Neil's meme is a result of a lot of information search from various Chinese dictionaries and Google Translate. George created his meme by using his own knowledge of the language, whereas Neil created his meme by searching for information from the internet. The difference in the kind of words that they were learning also played a role. While George was learning an adverb, which mostly serves grammatical functions, Neil was learning a commonly used verb that is made up of two separate characters. In the interview, Neil told us that as he was learning multicharacter phrases it was important for him to know what the individual characters meant, not just their combined meaning. He knew that because of his insistence to find out the meaning of each character, it would take him a long time to finish one lesson. Nevertheless, he still thought that it was worthwhile to know the building blocks of the phrase. His research background in science had led him to strive for the precise definitions, as shown in the following excerpt.

Speech and cursor movement	Screenshot	Typing	Facial expressions and other relevant happenings
下载 (.) And I suppose this is the word that with people once they've lived in China know. It's "to download." So, to remember the meaning is not going to be complicated, now just to remember the character. 下, ok that's, just getting something down, below, whatever, and 载, so that's combination of halberd, which is a kind of weapon, combined that with (*cursor pointing at* 车) car, and it's color the earth it's going to be, first I have to know what is, what actually means 载. (*Clicks "Help me remember this." Looks through two other mems.*)			
			N looking through other memes
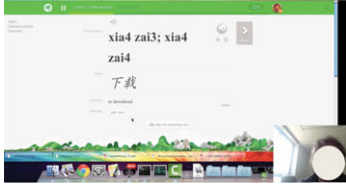
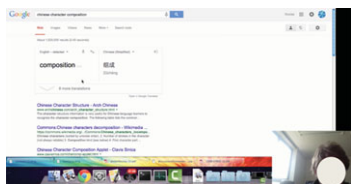| Speech and cursor movement	Screenshot	Typing	Facial expressions and other relevant happenings
OK. Good friend Wobby *[pseudonym for another Memrise user]* has done the work again, so "to load," so when you load a car … ok it doesn't really link … the second part halberd but, ok, loading a car … (5) to load a car you could use some tool, this weapon could be a tool … you've loading the car with earth with ground, maybe I should add here ... this character.			
Let's do that (*Clicks "Add a mem"*)			
So usually for the learning sessions (*inaudible*) (*Copies* 载)			
I think I have it ... where is it?		Chinese character deconstruction	Checking to see if the website that he needs is in the bookmark section
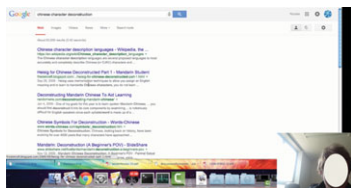
Speech and cursor movement	Screenshot	Typing	Facial expressions and other relevant happenings
(*inaudible*)			Looking at the search results, whispering to himself
		Chinese char-acter com-posi-tion	
			Looking at the search results
		Chinese char-acter com-posi-tion online tool	
(*inaudible*)			Looking at the search results, whispering to himself
(*Clicks on <<Mouse>> Chinese Input Method—Write Chinese Characters*)			
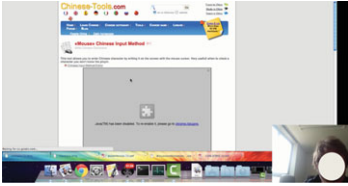
Speech and cursor movement	Screenshot	Typing	Facial expressions and other relevant happenings
(inaudible)			Looking at the page, thinks it is not useful
(Clicks on Chinese Character Composition Applet—Clavis Sinica)			
(inaudible)			Looking at the page, thinks it is not useful
			Looking at other search results with the same keyword
		Chinese character online tool.	
			Looking at the search results
(Clicks on Character Decomposition— Chinese Tools)			

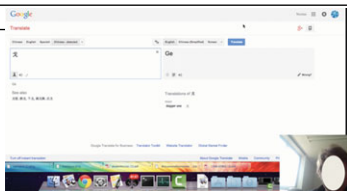| Speech and cursor movement	Screenshot	Typing	Facial expressions and other relevant happenings
So we just (*inaudible*) this one. (*Pastes* 载 *in the box and clicks ok*)			
We just have to make sure that there's (*inaudible*).			
(*Copies* 戈)			
Translate ... dagger axe. Oh yeah, so it was dagger (*inaudible*) a bit similar to halberd. (*Pastes* 戈 *to Google Translate*)			
So… let's now make			
(*Pastes* 载 *to the box*)		载: to LOAD. You LOAD the CAR with EARTH. The DAG-GER is there to remind you [that] you have to use some tool to do that.	
I usually capitalize all the words that are appearing in the character, so "tool" I cannot capitalize it because it's not in there. I mean the rest people will combine with the part of …Wobby…			
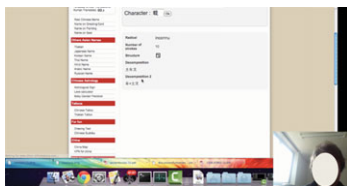
Speech and cursor movement	Screenshot	Typing	Facial expressions and other relevant happenings
OK I made my mem. 下 (*inaudible*) pronunciation, 载(.) 下载			

The "mems" [memes] that I really don't like are when someone has taken the meaning of a character, look for a picture that represents this thing, and just uses that as a background but without actually trying to explain why the character means that specific meaning or a picture, then those "mems" are really not useful for me. The ones that are useful for me are really the ones that can build and explain why, so I think now, more recently, I don't even include any pictures anymore, I really just tell a little story based on the different building parts of the character.

It appears that some of the general transformative principles that we identified in George's case can also apply to Neil's case.

- Meaning: meaning of word *x* in Chinese (载) "is like" meaning of word *y* in English ("load")
- Written form: character (载) "is like" shape of objects named in English (earth, car, dagger)
- Capitalizing words that are related to the target character (load, car, earth, dagger)

SUMMARY AND CONCLUSION

In an era of heightened mobility, of both populations and information, there is a growing interest in informal, mobile learning that we "undertake individually or collectively, on our own without externally imposed criteria or the presence of an institutionally authorised instructor" (Livingstone, 2000, p. 493). The increasing popularity of digital technology allows individuals to learn "on the go," making learning flexible and giving individual learners the ability to control their own learning (Selwyn, 2011). The internet has also opened up access to language learning to an unprecedentedly wide group of participants, with different funds of knowledge at their disposal. The affordances of technology have created new sign-making practices. Not only are learners able to consume knowledge created by others, they are now also able to produce and distribute knowledge through forwarding, sharing, and editing existing texts. As a result, they can be learners in one setting and teachers in another, engaging in the act of knowledge exchange with almost

the same amount of resources equally accessible to them. Making a new sign, in the examples that we have discussed in this article, requires the sign makers to select apt resources from their multilingual and multisemiotic repertoires to make new meanings by resemiotization. Such practices raise new research questions for applied linguists.

The learning of Chinese as a major international language is growing significantly, in recognition of the increasing politico-economic power of China. Nevertheless, research on informal, mobile learning, and on the learning of Chinese, has remained relatively traditional, focusing on issues of learner autonomy, motivation, and technological challenges. We have presented in this article an analytical approach that focuses instead on how transnational and translingual learners mobilize their multilingual, multimodal, and multisemiotic repertoires, as well as their learning and work experiences (as a language teacher in George's case and as a science researcher in Neil's) as resources in the process of learning. These learners have not only crossed national and geographical borders but also linguistic and cultural boundaries. We believe that the translanguaging perspective enables us to reveal the complexities and dynamics in the way learners, such as George and Neil, leverage and orchestrate their diverse resources for learning. It also highlights the need for a transdisciplinary approach to language learning that transcends the boundaries between linguistics, psychology, and education, and in particular, the need to go beyond the artificial divides between the linguistic, paralinguistic, and nonlinguistic dimensions of language learning and language use. It also helps us to better connect the research on language learning and bi/multilingualism, which in turn allows us to reconceptualize the language learner as a developing bilingual and multilingual language user rather than several monolinguals in one.

Acknowledgments

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