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REVITALISING KANYEN'KÉHA ON THE GRAND RIVER: A CASE STUDY OF INDIGENOUS LANGUAGE REVITALISATION AND ITS THEORETICAL IMPLICATIONS

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Revitalising Kanyen'kéha on the Grand River: A Case Study of Indigenous Language Revitalisation and its Theoretical Implications

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Abstract. In this work, I investigate a case study of language revitalisation involving the adult immersion school Onkwawén:na Kentyóhkwa (OK), which is located in Ohswé:ken along the Grand River (Ontario), and where the Northern Iroquoian language Kanyen'kéha (Mohawk) has been taught as a second language since 1999. I focus on three major aspects. First, I look at the different arguments that have been proposed in favour of and against language revitalisation, and how they relate to the motivations underlying the OK project. Second, I analyse the challenges involved in teaching a polysynthetic Iroquoian language to native English speakers, especially in terms of morphological complexity and discourse patterns. Third, I present the main strategy that has been implemented by the school to engage with these challenges, a morpheme–based teaching technique called the 'Root Word Method' (RWM), before considering its theoretical implications. I tentatively argue that the paradox between the pedagogical usefulness of the morpheme, as suggested by the success of the RWM, and the fact that L1 speakers probably process some morphological structures in terms of the abstractive approach is illusory, because the pedagogical efficiency of the constructive approach in L2 acquisition is logically independent from the issue of its psychological adequacy in accounting for L1 competence. I conclude by suggesting that these interesting implications of a case study of language revitalisation for significant issues in modern linguistic theory, such as the constructive–abstractive debate in morphology, provide a good example of the value of applied linguistics projects to theoretical linguistics.

Plain English Abstract. Many languages today are under threat of disappearing due to pressure from 'big' languages like English, especially in countries that were historically colonised by Europeans. For example, the Indigenous North American language Kanyen'kéha (or Mohawk) is severely endangered, with less than 4,000 speakers remaining in Ontario, Quebec, and New York State. This has led community-members to create several projects to try and revitalise the language, such as the Onkwawén:na Kentyóhkwa language school on the Six Nations Reserve along the Grand River (Ontario), where the language has been taught since 1999 in order to create new second-language speakers. My task in this work is to analyse this case study of language revitalisation along three dimensions, namely its motivations (i.e., why do they want to revitalise their language?), the challenges it encounters (i.e., what makes teaching Kanyen'kéha to English speakers difficult?), and the teaching strategies they employ (i.e., how can we overcome these challenges?). I will show that the biggest difficulty in teaching Kanyen'kéha is that it is 'polysynthetic', meaning that speakers package most of the information in single verbs, which can therefore be very long and composed of many individual parts called 'morphemes'. In order to deal with this challenge, the teachers do not teach the language using words, but rather morphemes, in order to allow learners to construct their own words by combining morphemes, and hence learn the language more quickly. I end the article by exploring the significant implications of the success of this teaching method for linguistic theories.

Keywords: language revitalisation; Kanyen'kéha (Mohawk); morphology; language acquisition; language teaching; applied linguistics

1 Introduction

Approximately 50% of the world's 7,000 languages may disappear by the end of this century (Krauss, 1992, p. 6). This situation is particularly pronounced in areas historically colonised by Europeans. For instance, Krauss (1992, p. 5) estimates that 80% of the Indigenous languages still spoken in North America are moribund, meaning that they retain a small number of old native speakers, but are no longer acquired as L1s, and are therefore doomed to disappear when the last speakers pass away.

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The Iroquoian family epitomises this situation (Mithun, 1999, pp. 418–425). The only language of the Southern branch, Cherokee, has maintained a significant degree of vitality, but of the fourteen Northern Iroquoian languages, eight are extinct (Susquehannock, Huron-Wyandot, Petun, Wenro, Neutral, Erie, Laurentian, Nottoway) and five are moribund (Seneca, Cayuga, Onondaga, Oneida, Tuscarora). Only Kanyen'kéha still retains a substantial speech community, although the residential school system has accelerated its endangerment throughout the 20th Century (Gomashie, 2019, p. 154).

A discussion of terminology is necessary before going further. 'Mohawk' ("Bear People") is an exonym originally given to this nation by their Mohican neighbours and enemies, and later spread by Dutch settlers (Bonvillain, 2005, p. 9). Despite the greater popularity of this term, the endonyms 'Kanyen'kéha' ("Way of the Flint Place") and 'Kanyen'kehá:ka' ("People of the Flint Place") will be used throughout to refer to the Mohawk language and people respectively, both for the sake of terminological accuracy, and out of respect for the many Kanyen'kéha speakers who tend to prefer these endonyms.

Significant 'grey areas' composed of highly varied degrees of proficiency typically make it very difficult to obtain precise and reliable language endangerment statistics. Nevertheless, it is estimated that Kanyen'kéha is spoken by around 4,000 people in six communities: Kahnawà:ke and Kanehsatà:ke in Quebec; Kenhtè:ke, Wáhta, and Ohswé:ken in Ontario; and Akwesáhsne straddling the borders between these two provinces and New York State (Mithun, 1999, p. 424). Kanyen'kéha is a 'declining language' (i.e., there is a significant number of old speakers, but few young ones) according to Bauman's (1980) scale of language vitality.

Kanyen'kéha has three dialects: a Western dialect in Ontario, a Central dialect in Akwesáhsne, and an Eastern dialect in Quebec (Bonvillain, 1984). The differences between them are minor and only affect relatively superficial levels of linguistic structure, such as single phonemes (e.g., Western /ʤ/ corresponds to Eastern /ʣ/) and isolated lexical items (e.g., "eagle" is 'atonnyon'kó:wa' in the West but 'ákweks' in the East) (ibid.), and can therefore be ignored for our purposes.

Kanyen'kéha orthography was standardised in 1993 and is largely phonemic (Grenoble & Whaley, 2005, pp. 91–92). Most symbols have the same value as in the International Phonetic Alphabet (IPA), except <'> which marks glottal stops, and <en> and <on> which represent the nasal vowels /ʌ̃/ and /ũ/ respectively. Only one major spelling difference exists between communities: /j/ is represented as <y> in Ohswé:ken, but as <i> in other communities (e.g., "doll" is <kaya'tón:ni> in Ohswé:ken but <kaia'tón:ni> in Kahnawà:ke).

This work is essentially a case study of Indigenous language revitalisation that has never been systematically examined before, namely the revitalisation of Kanyen'kéha at Onkwawén:na Kentyóhkwa ("Our Language Society", henceforth OK), one of several revitalisation schools combating the endangerment of the language. OK was founded in 1999 by Owennatékha Brian Maracle in Ohswé:ken, also known as the Six Nations Reserve, a large Kanyen'kehá:ka community located in Southern Ontario along the Grand River. OK offers a two-year adult immersion programme aimed at creating new L2 speakers (Gomashie, 2019, p. 159), and specifically targets the Western Kanyen'kéha dialect as spoken in Ohswé:ken. I will therefore follow the orthographic conventions of this community throughout (except when a word is inherently associated with a different community).

The paper proceeds as follows. Sections 2, 3, and 4 each focus on one of the three main questions that emerge when investigating any revitalisation project. First, *why* was the project founded? I will attempt to answer this question in Section 2 by determining the *motivations* underlying this programme, based on interviews conducted with four OK teachers in July 2019. This will provide an opportunity to review the arguments for and against revitalisation, and how they apply to our particular case. Second, *what* must teachers and students do in order to satisfy these motivations? To address this issue in Section 3, I will try to identify the *challenges* that teachers and students at OK encounter, especially in terms of the difficulties involved in teaching a polysynthetic language to monolingual English speakers. This

will allow me to analyse central aspects of Kanyen'kéha morphology and discourse. Third, *how* do teachers and students overcome these challenges? I will approach this last aspect in Section 4 by reviewing the *strategies* that they implement to engage with the complexity of their language. I will particularly focus on the morpheme–based teaching technique used at OK, called the 'Root Word Method', and investigate its theoretical implications. Finally, Section 5 concludes, and will notably underscore the idea that this case study forms an example of the mutually beneficial relationship that can exist between theoretical and applied linguistics: just as applied linguistics projects can gain crucial insights from theoretical linguistics, so does theoretical linguistics have much to learn from applied linguistics, as suggested by the implications of this case study of Indigenous language revitalisation for important issues in modern linguistic theory, such as the constructive-abstractive debate in morphology.

2 Motivations

In this section, I investigate the motivations underlying the OK project in the context of the debate about the necessity of language revitalisation. I will begin by reviewing the different arguments for and against revitalisation, before looking at how they relate to our case study.

2.1 Language Revitalisation

The last three decades have seen a surge of publications presenting arguments both for and against revitalisation (Kruijt & Turin, 2017, p. 257). I will look at both of these in turn.

2.1.1 Arguments for Revitalisation

Drawing on Pike's (1967, p. 37) etic-emic dichotomy, we can distinguish between two types of arguments for revitalisation.

First, some arguments view endangered languages from an etic perspective (i.e., the objective and external point of view of an observer) as scientific resources to preserve. These are usually associated with linguists, who consider revitalisation necessary to stop the ongoing loss of linguistic diversity caused by the socio-political pressures exerted by majority societies on minority groups, a phenomenon which manifests a larger trend of diversity reduction in all areas (e.g., intellectual, cultural, linguistic, biological) (Hale, 1992, p. 1). In the linguistic realm, this is more concretely visible in the unequal distribution of the world's languages, as exemplified by the so-called '6/94 split' (Dalrymple, 2019): 6% of the world's languages are the L1 of 94% of the world's population, while 94% of the world's languages are the L1 of 6% of the world's population. Trying to prevent this situation from worsening is seen by most linguists as both ethically and scientifically motivated. Ethically, every community should be given the chance to speak their ancestral language. Scientifically, linguists cannot afford to lose half of the empirical base of their field (Krauss, 1992, p. 8), especially as the loss of a language also implies the loss of the crucial cultural and environmental knowledge it encodes (Evans, 2010). According to these linguists, endangered languages should therefore be revitalised so that our theories can be built on an empirical foundation that is representative of linguistic diversity. An obvious counter-argument is that documentation could achieve the same objective, making revitalisation scientifically superfluous (Newman, 2003, p. 6). We will see below that this does not necessarily hold.

Second, other arguments see endangered languages from an emic perspective (i.e., the subjective and internal point of view of a community member) as markers of ethnic identities and vehicles of traditional cultures to maintain. They often emanate from community members who stress the crucial link between language, identity, and culture. If an entire group abandons its language and shifts to the

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majority variety, its identity and culture are often harder to maintain, and it is more likely to assimilate into the wider society, or even stop existing as a distinct ethnic group (Krauss, 1992, pp. 8–9). Language is often pivotal in the maintenance of identity and culture, because of what it symbolically represents (e.g., speaking Kanyen'kéha is a way to show one's identity as Kanyen'kehá:ka), and what it culturally enables (e.g., speaking Kanyen'kéha facilitates the understanding of and participation in traditional Kanyen'kehá:ka culture, such as ceremonies). Community members often articulate these arguments eloquently, as they feel more directly emotionally concerned with the relationship between their language, identity, and culture. For example, Karihwakátste Cara Deer, co-director of the language programme Yakwahwatsiratátie in Kahnawà:ke, believes that Kanyen'kéha is 'at the core of what defines us' and that 'our language is deeply rooted within our culture, our ceremonies, and our way of life' (Walz, 2014). This does not mean that ethnic identity cannot be achieved without knowledge of the ancestral language, because language is only one way to experience culture (Nicholas, 2009, p. 321). Nevertheless, language remains a core element of social identity construction, which has led Joseph (2004) to consider the possibility that it may actually constitute one of the major functions of language. Costa (2017) goes even further by claiming that language revitalisation is not about language per se, but should rather be seen as the struggle of minorities to redefine their identity in opposition to mainstream society through the 'totem' of language.

2.1.2 Arguments against Revitalisation

Several types of arguments have been levelled against the systematic necessity or worth of language revitalisation.

A first argument is based on the idea that such endeavours are pointless because language death is a natural and unavoidable process with which we should not interfere. Thus, Mitchell (2010) claims that language death parallels natural selection in the biological world: if a language disappears, it is because humans no longer need it to communicate, like a species dying out and being replaced by another one with greater evolutionary advantages. Similarly, Heller-Roazen (2008, pp. 53–75) believes that language death is a necessary stage of the natural life cycle of any language, which is born, thrives, declines, and eventually dies, as it turns into distinct daughter languages, creating a continuum in which language birth and death cannot be distinguished. These ideas are problematic because they ignore that the worldwide process of linguistic extinction is entirely artificial (Mętrak, 2018, pp. 4–6). Most languages today are not dying because they are no longer used for communication, or because they painlessly give birth to daughter languages, but rather because of man-made discriminatory pressures exerted on their speakers by politically dominant groups (Piller, 2016). The parallels between language death and natural selection or language change are thus unfounded, because there is nothing natural in the processes by which minority language speakers shift to majority languages.

Another argument is provided by Malik (2000), who reduces language to a mere communicative tool. In this brutally utilitarian view, minority language speakers *can* shift to majority languages without losing any aspect of their culture or identity, because these are all faithfully expressible in the majority language, which is qualitatively equal to the community's ancestral language, as it is simply 'another way of saying the same things'. In fact, they *should* shift to the majority language, as it provides a greater communicative value (i.e., it is spoken by more people). This argument ignores the multidimensionality of languages, which cannot be reduced to communicative tools because they often encode culture-specific concepts that are difficult to translate and cannot be properly appreciated outside their natural sociocultural context (Mętrak, 2018, p. 7).

Furthermore, Newman (2003, p. 6) believes that revitalisation projects should be abandoned because they drain human and financial resources from the more important task of documentation. His idea is that documentation should be the primary goal of linguists, as it yields the same scientific

benefits as revitalisation (i.e., primary data about minority languages, making the empirical base of our theories more representative of linguistic diversity), without requiring them to become social workers when they should remain scientists. The validity of this argument ultimately depends on one's subjective conception of our mission as linguists, making it difficult to assess objectively. Should we confine ourselves to the realm of objective scientific analysis, or also apply our knowledge in the intersubjective social world to promote causes we value as worthwhile, such as revitalisation? That goes beyond the scope of this work, but in any case, it is not clear that revitalisation should be systematically jettisoned. First, although revitalisation may be less important than documentation to some linguists, it remains crucial for many community members. Second, the quick documentation of a language before it disappears may not systematically provide the quantity and quality of data necessary to analyse it thoroughly. Even from a purely objective and scientific viewpoint, then, keeping languages alive whenever possible seems preferable, as it creates potentially infinite data sources.

Finally, Ladefoged (1992, p. 810) claims that it is paternalistic of linguists to assume that revitalisation is always the best course of action for a community. Language endangerment situations cannot be simplistically reduced to a manichean conflict between a minority language to preserve and a majority language to reject, as a myriad of additional social, political, and cultural considerations come into play. If speakers wish to abandon their minority ancestral language and shift to the majority language, for instance for economic (e.g., to gain access to better employment opportunities), social (e.g., to reach a higher social status and become more integrated in modernity and globalisation), and/or political (e.g., to achieve national unity) reasons, linguists should respect this choice and not try to impose their scientifically-motivated desire for revitalisation. In other words, when the community's emic objective competes with linguists' etic intentions, the former should ethically always prevail. This argument seems sensible, as it urges us to steer clear of political considerations and remain as neutral and objective as possible (Mętrak, 2018, p. 8). The problem is that there seems to be no truly apolitical position when it comes to language endangerment, as linguists become variables in the political equation as soon as they start working on an endangered language. In fact, even the choice to respect the community's decisions concerning their own language is strictly speaking a political position (Dorian, 1993, p. 575). Still, Ladefoged (1992, p. 810) seems to provide the only viable argument against systematic revitalisation. However, his position also implies that, if a community indeed wants to maintain its language, then implementing revitalisation efforts becomes well-motivated and justified. This is generally the case in Ohswé:ken, which led to the foundation of OK, as we will see below.

2.2 Onkwawén:na Kentyóhkwa

OK is run by activists who are obviously deeply committed to the revitalisation of Kanyen'kéha. However, not everyone in Ohswé:ken sees the language as equally valuable. To assess this situation, I conducted a few interviews, revealing two main themes through which it can be explored: the relevance of Kanyen'kéha in a modern context, and its relationship with Kanyen'kehá:ka culture and identity.

Before looking at these, however, a methodological note is necessary. I personally conducted these interviews on my own with four OK teachers (hereafter referred to as [Interviewee 1–4] for the sake of anonymity) in July 2019 at the language school in Ohswé:ken, Ontario. These 4 interviews were semi-structured (i.e., I had a list of general questions, but interviewees were free to discuss any topic) and individual (i.e., not group interviews). Each interview lasted approximately 20 minutes and was recorded (audio only). I chose to carry out a smaller number of in-depth interviews rather than a larger number of written surveys, as I felt that the issues addressed (e.g., personal motivations for contributing to the revitalisation of Kanyen'kéha) potentially involved an emotional weight that required a research method with more depth than breadth.

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The biggest challenge was to avoid biased and leading questions, which would have almost certainly made all interviewees converge on similar responses. Thus, as far as possible, I attempted to steer clear of overly specific formulations (e.g., 'Do you believe that the connection between the Kanyen'kéha language and Kanyen'kehá:ka identity motivates revitalisation?'), and tried to restrict myself to more general and open-ended ones (e.g., 'What motivates the revitalisation of Kanyen'kéha, in your opinion?'). Another limitation, similarly to most qualitative data collection projects, was the famous Observer's Paradox (e.g., Dörnyei, 2007): it proved very difficult to determine if and to what extent interviewees' responses were unwittingly influenced by my presence, and thus not entirely honest. However, acknowledging this problem and keeping it mind while considering the data presented below hopefully constitutes the first step towards solving it.

2.2.1 Relevance in a Modern Context

An observation that was corroborated by all my interviewees is that no community member is actively opposed to the revitalisation of Kanyen'kéha ('No one is actively opposed to the language.' [Interviewee 3]). The difference lies between those who value it to the point that they actively work towards its revitalisation, and those who are passive in this regard ('Everybody thinks it's important, but not everybody chooses to do something about it.' [Interviewee 1]). These two attitudes are not specific to our case, but are relatively common in other endangerment contexts as well, such as Guernsey Norman French (Sallabank, 2013, p. 109). Of course, they should ideally be studied as two different points along a continuum of language ideologies, but for our purposes it suffices to distinguish them as discrete categories.

Those working towards the revitalisation of Kanyen'kéha are motivated by a straightforward fact: most native speakers across all communities are old and likely to pass away in the next few decades. It is thus necessary to create new fluent speakers to prevent an abrupt decline in the number of speakers and an acceleration of language endangerment ('We have over 1,000 first language speakers that are going to pass away in the next 30 or 40 years, and if we don't create a stable number of second language speakers, then Kanyen'kéha is going to die.' [Interviewee 3]). Other Kanyen'kehá:ka communities like Kahnawà:ke are faring slightly better, with a significant number of children acquiring Kanyen'kéha as an L1 (Gomashie, 2019, p. 156). However, the situation of the Ohswé:ken dialect is more problematic, in that there are virtually no L1 speakers left, nor are there any children currently acquiring the language as an L1 ('Today, there are only one or two first language speakers left.' [Interviewee 2]). Teaching the language as an L2 is thus seen as the only solution to recreate speakers and prevent total language shift ('We can't teach people to be first language speakers, we can only teach them to be second language speakers.' [Interviewee 2]), and this is the main motivation driving the OK project.

However, other community members feel that spending two full years learning Kanyen'kéha at OK is pointless, because it will not help them gain access to better employment and higher socio-economic status ('They don't really see the value of Kanyen'kéha, because they want to see their kids and grandkids get real jobs.' [Interviewee 3]). In other words, a part of the community views Kanyen'kéha as irrelevant in a modern context outside the community, especially when it is in competition with international languages like English. Such attitudes typically lead to an incomprehension of the motives other community members may have for wanting to learn the language ('My brothers and sisters were like 'Why are you doing it? What good is learning Mohawk?'.' [Interviewee 4]). Nevertheless, these community members do not oppose revitalisation efforts by others, making these two attitudes mutually compatible. Different community members simply pursue different non-competing priorities.

2.2.2 Culture and Identity

We saw that OK was founded to maintain Kanyen'kéha. But why does the OK staff see preserving their ancestral language as so important? My interviews revealed two areas where answers could be found: culture and identity.

First, all interviewees agreed that acquiring Kanyen'kéha is not simply a matter of learning new lexical items and grammatical rules, but also requires learning a new cultural system which provides speakers with novel ways of thinking and viewing the world ('Kanyen'kéha is a mindset and a worldview, it's not just words.' [Interviewee 3]). These speakers tend to view culture and language as almost co-substantial: it is impossible to learn one without the other, because they rely on and feed into each other, in that culture is encoded in language, and language is the primary form of cultural expression. OK was thus founded to preserve and promote a better understanding of Kanyen'kehá:ka culture, even if the achieved linguistic and cultural knowledge is imperfect (in the sense of different from native speakers'), as these speakers view imperfect L2 knowledge as preferable to no knowledge at all. More generally, the puristic attitudes of older L1 speakers who reject the imperfect speech of younger L2 speakers may hinder the revitalisation of minority languages (Dorian, 1994, pp. 480–481). This issue does not emerge in Ohswé:ken, as all remaining speakers learnt the language as an L2, and therefore are more willing to tolerate imperfections in the speech of others, as their own performance also diverges from that of native speakers.

Let us look at an example of this language-culture connection. Interviewee 3 pointed to a significant difference between English, in which nouns form the basic referential tool ('The English language is obsessed with naming things.'), and Kanyen'kéha, which usually refers to non-basic concepts via verbal descriptions ('In Kanyen'kéha, if it's not a very basic cultural or natural concept, it is just described.'). This creates a cultural hierarchy in which culturally central concepts are referred to by nouns (e.g., 'onhwéntsya' "land"), while secondary or borrowed concepts are described with verbs (e.g., 'yontkonhsohare'táhkwa' "bathroom sink", lit. "one uses it to wash one's face"). The point is that speakers often believe that one can only become aware of this cultural hierarchy by learning the language; that is, they view this cultural hierarchy as formally encoded in the language. Although such claims might justifiably seem doubtful from the viewpoint of modern linguistics' canon of scientific rigour, and especially to those who are sceptical of linguistic relativity and the controversial Sapir-Whorf Hypothesis (Whorf & Carroll, 1964), it is crucial to remember that 'for many members of endangered language communities, links between language, culture, and identity are subjectively real' (Sallabank, 2013, p. 79).

Second, most interviewees agreed that speaking Kanyen'kéha is an essential aspect of one's identity as Kanyen'kehá:ka ('What's at stake in revitalising Kanyen'kéha is our identity.' [Interviewee 4]). Fluent speakers can easily identify as such by simply conversing in the language. Others can symbolically use a few phrases to show their ethnic affiliation, even if they do not speak the language ('I was working with the Chief, and I teach her some words here and there, and she was trying to get everyone to say 'shé:kon' ["hello"], 'nyá:wen' ["thanks"], and 'ó:nen' ["bye"]. They do all this for show. It helps her identify that she's 'Onkwehón:we' ["Native American"].' [Interviewee 4]). However, they all stressed that language is only one way among many to mark one's identity as Kanyen'kehá:ka or Onkwehón:we, because social identities are inherently multi-faceted constructs ('There's a whole big issue of who is 'Onkwehón:we': Do you have to live in the community? Do you need to have a particular blood quantum? These are very divisive concepts.' [Interviewee 3]). Religion seems to be a particularly important factor, as it does not necessarily align with language ('There's people going to church who are first language speakers, just as there's people going to traditional Longhouse ceremonies who don't speak the language.' [Interviewee 3]). Despite these nuances, there remains a

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strong sense among the speakers I have interviewed in which, in order to be 'fully' Kanyen'kehá:ka, one should still try and learn the language, and the OK project is partly fuelled by this sentiment.

2.3 Conclusion

In this section, I argued in favour of language revitalisation in general, and tried to show that OK provides a good specific example of the emic arguments for revitalisation: preserving Kanyen'kéha as an L2 is considered crucial for understanding Kanyen'kehá:ka culture and maintaining Kanyen'kehá:ka identity, even though language is only one aspect of this multi-faceted social construct. The attitudes of some community members who assign little value to Kanyen'kéha in a modern context also remind us of the need to prioritise the community's will over academic objectives, although they are not in direct conflict in this particular case.

I have only attempted to show broad tendencies. Ultimately, one's attitude towards one's ancestral language is entirely subjective, and there are many different reasons why one might want (or refuse) to contribute to the revitalisation of Kanyen'kéha by learning it, as articulated by Interviewee 2: 'I think it's highly subjective what people feel about language revitalisation. There's a variety of reasons for people to want to learn the language.' Such diverging motivations may justify attempts at pre-emptive 'language-ideological clarification' (Kroskrity, 2009; see also Fishman, 1991, e.g., p. 394, and Dauenhauer & Dauenhauer, 1998), that is discussions among all the actors involved in a revitalisation project aimed at making their different language ideologies explicit, and thus solve potential conflicts between them before they become obstacles to the project's success (although the usefulness of this concept has sometimes been contested, for instance by Roche, 2019).

3 Challenges

Let us now turn to the challenges that OK faces in satisfying the motivations identified in Section 2. Any revitalisation project encounters various difficulties (e.g., different initial proficiency levels, lack of financial or institutional support, lack of pedagogical material, dialectal variation), and OK is no exception. However, I have chosen to focus exclusively on the specific linguistic challenges encountered at OK, namely in terms of morphological complexity and discourse patterns, as this will pave the way for our discussion of the Root Word Method in Section 4 below.

3.1 Morphology

Kanyen'kéha is polysynthetic, which entails a very complex morphological system. The idea that polysynthetic languages are *objectively* more complex than morphologically poorer languages is controversial, because of the lack of consensus about the definition and measure of objective linguistic complexity (Dahl, 2017).

However, Kanyen'kéha seems *subjectively* more complex to learn than less morphology-heavy languages from the standpoint of English-speaking L2 learners. Indeed, according to Eckman's (1977) Markedness Differential Hypothesis, areas of the target language which are different from and more marked than in the L1 are more difficult to acquire.

Thus, it will typically take more effort for an English speaker to learn Kanyen'kéha morphology (which is the key to acquiring any polysynthetic language) than French morphology, due to the greater typological distance between English and Kanyen'kéha than between English and French, and because Kanyen'kéha polysynthetic structures are arguably more marked than English analytic ones.

I will explore Kanyen'kéha morphology in terms of the two dimensions of syntagmatic and paradigmatic complexity, derived from Saussure's (1916) famous syntagm-paradigm dichotomy. We will leave aside the issue of the validity of the morpheme for now, and this term will be used throughout this section in a theory-neutral sense of sub-word morphological unit.

3.1.1 Syntagmatic Complexity

Syntagmatic complexity can be defined as the internal morphological complexity of words, and may be considered along formal (i.e., relating to form) or functional (i.e., relating to meaning) dimensions. More precisely, formal syntagmatic complexity can be (at least for our purposes) straightforwardly viewed as the number of morphemes per word. In this regard, Kanyen'kéha is clearly more complex than English, as its polysynthetic nature means that most words are composed of many more morphemes than analytic lexical items in an isolating language like English, with an average ratio of only 1.68 morphemes per word (Katamba, 1994, p. 35).

Kanyen'kéha features only three morphological categories, namely particles, nouns, and verbs. These are not to be mistaken with syntactic categories, which do not straightforwardly map onto morphological ones (e.g., morphological verbs can function syntactically as nominals, as we will see in Section 3.2.1). Unless otherwise indicated, we focus on morphological categories here. Particles are defined as being completely indecomposable and lacking any sort of internal morphological structure. They carry out a wide range of different syntactic and discursive functions, as they can have, inter alia, a temporal (e.g., 'ó:nen' "at this time"), spatial (e.g., 'é'tho' "over there"), or numeral (e.g., 'áhsen' "three") meaning, and can also function as pronominals (e.g., 'í:se' "you"), demonstratives (e.g., 'thí:ken' "that"), quantifiers (e.g., 'é:so' "many, very"), conjunctions (e.g., 'táhnon'' "and"), grammatical markers (e.g., 'ken' marks a polar question), interjections (e.g., 'hánio' "come on!"), and several other things (Mithun, 2008, p. 564–565). There is also a small set of morphological particles that behave syntactically as nouns, including onomatopoeic animal names (e.g., 'kwéskwes' "pig") and foreign loanwords (e.g., 'rakérens' "barn", from French 'la grange'), which cannot enter in the full range of morphosyntactic operations available to nouns because of their atomic morphophonological make–up (e.g., noun incorporation requires extraction of a nominal root, which is obviously absent here).

From the perspective of Kanyen'kéha morphology as a whole, however, particles form the exception rather than the norm, as most words are not atomic but highly morphologically complex. Morphological nouns, for instance, minimally contain three morphemes, namely a gender prefix, the nominal root, and a nominal suffix, as in (1); and may be further modified by a possessive prefix, as in (2), or by a locative suffix, as in (3) (Maracle, 2016, p. 257). In all the examples below, we ignore irrelevant morphophonological processes.

(1) *kanónhsa*
ka-nonhs-a
N-house-NOM
'house'

(2) *akenónhsa*
ake-nonhs-a
1.SG.POSS.AL-house-NOM
'my house'

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(3) *kanónhskon*
ka-nonhs-kon
N-house-inside
'inside the house'

Nouns may also be derived from a verbal root using a nominaliser, as in (4), and can be pluralised using a distributive suffix (usually accompanied by a diminutive suffix), as in (5) (Mithun, 2008, p. 566).

(4) *kahyatónhshera*
ka-hyaton-hsher-a
N-write-NMS-NOM
'book'

(5) *orihwa'shòn:'a*
o-rihw-shon'-a
N-idea-DIS-DIM
'ideas'

Indicating a specific number of entities also involves a complex synthetic pattern, as can be seen below (Maracle, 2016, p. 100).

(6) *sewenhní:sera*
se-w-enhniser-a
REP-N-day-NOM
'one day'

(7) *tewenhniserá:ke*
te-w-enhniser-ake
DUP-N-day-NSG
'two days'

(8) *x niwenhniserá:ke*
x ni-w-enhniser-ake
x PART-N-day-NSG
'*x* days' (with $x > 2$)

Of course, these various morphological operations can often be cumulated in a same item, as in (9), which features both a complex deverbal stem and a locative marker, and (10), in which possession and pluralisation co-occur (ibid., p. 211).

(9) *kahyatonhsherà:ke*
ka-hyaton-hsher-ake
N-write-NMS-in
'in the book'

(10) *akerihwa'shòn:'a*
ake-rihw-shon'-a
1.SG.POSS.AL-idea-DIS-SIM

'my ideas'

Nominal morphology, however, does not go much farther than that, and it is rather in verbal structures that true morphological complexity is to be found. Verbs also minimally contain three morphemes, namely a pronominal prefix, the verbal root, and an aspectual suffix, as in (11), with the exception of some imperatives which lack an aspectual suffix, as in (12) (Mithun, 2008, p. 567).

(11) *keríhtha*
ke-riht-ha
1.SG.AGT-cook-HAB
'I cook it'

(12) *sériht*
se-riht
2.SG.AGT-cook
'cook it!'

Verbal forms are routinely much more complex, however, as they can contain a high number of additional prefixes and suffixes, and may exhibit noun incorporation, a phenomenon which is very frequent in such heavily polysynthetic languages. The temporal-aspectual system is also fairly intricate, and is expressed using a range of prefixes and suffixes displaying complex patterns of allomorphy. All of this means that the range of possible verbal structures is far greater than what could be exhaustively covered within the scope of this work. Nevertheless, in order to give a flavour of the morphological complexity of polysynthetic Kanyen'kéha verbs, a fairly exhaustive verbal template is given below.

Table 1: *Morphological template of Kanyen'kéha verbs* (adapted from Julian, 2010, pp. 130–131)

(Modifier)	(Tense)	Pronoun	(Modifier)	(Noun)	(NMS)	Verb	(Modifier)	Aspect
Coincidental Duplicative Negative Partitive Repetitive Cislocative Translocative	Definite Indefinite Future	Agentive Patientive Transitive	Middle Reflexive Reciprocal		*–a–* *–* *hsher–* *–hkw–* *–'t–*		Ambulative Benefactive Causative Distributive Purposive Reversive	Habitual Punctual Perfective Progressive Stative

A few concrete examples are provided in (13) below (DeCaire, 2013).

(13) (a) *sana'khwén:'on*
sa-na'khwen'-on
2.SG.PAT-become.angry-PERF
'you are angry'

(b) *shiwakatehyaróntye*
shi-wak-ate-hyaron-tye-Ø
COINC-1.SG.PAT-MID-grow.up-AMB-STAT
'when I was growing up'

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(c) *akenenstayéntho'*
a-ke-nenst-yentho-'
INDEF-1.SG.AGT-corn-plant-PUNC
'I would plant corn'

(d) *wa'ke'nákerate'*
wa'-ke-'nakerat-e'
DEF-1.SG.AGT-be.born-PUNC
'I was born'

(e) *nisahsennò:ten*
ni-sa-hsenn-oten-Ø
PART-2.SG.AGT-name-be.a.kind.of-STAT
'it is your name'

(f) *tewakhwihshenhé:yon*
te-wak-hwihs-enhey-on
DUP-1SG.PAT-energy-die-PERF
'I am tired'

(g) *tenskená:tahkwe'*
t-en-s-ke-natahkw-e'
CLOC-FUT-REP-1.SG.AGT-move-PUNC
'I will move back (to my former place of residence)'

(h) *asahyatonhsherayén:ta'ne'*
a-sa-hyaton-hshera-yen-ta'-ne'
INDEF-2.SG.AGT-write-NMS-have-CAUS-PUNC
'you should get a book'

As the examples above hopefully make clear, it is common for Kanyen'kéha verbs to contain many more than three morphemes, with sometimes up to seven (and sometimes even more) morphemes. The logical conclusion from our discussion of Kanyen'kéha nouns and verbs is therefore that this language exhibits a higher degree of formal syntagmatic complexity than English.

Functional syntagmatic complexity, on the other hand, corresponds to the degree of opacity of the form-meaning mapping within a word, understood as the predictive value that elements on one level (i.e., meaning or form) provide about elements on the other level. For an L2 acquirer, words whose meaning cannot be compositionally predicted from the sum of those of their parts are harder to learn, because they require the additional effort of memorising the meaning of the whole word. Non-compositionality usually implies idiomaticity, because opaque semantic structures can only be maintained if they are frequently used as idiomatic collocations by native speakers (Mithun, 2008, p. 579). Thus, Kanyen'kéha noun incorporation creates a continuum from perfectly transparent constructions, as in (13c) ('akenenstayéntho'' "I would corn-plant"), to semantically opaque ones, as in (14) below (Mithun, 2008, p. 578).

(14) *enskontatewenní:yohne'*
en-s-kon-tate-wenn-iyo-hne-'
FUT-REP-3.PL.N.AGT-REFL-word-be.good-PURP-PUNC

'they were going to be free' (lit. 'they were going to be word–good')

The example in (13f) ('tewakhwihshenhé:yon' "I am tired", lit. "I am energy-dead") is probably somewhere in-between these two extremes along this continuum, as its overall meaning is still somewhat retrievable from those of its parts, although not as straightforwardly as in (13c).

Idiomaticity, that is cases in which a combination of morphemes does not yield the expected meaning, is difficult to acquire in any target L2. However, this is exacerbated in Kanyen'kéha by the fact that idiomatic expressions are even more obscure for learners who are not aware of the different cultural background which motivates them, and also because idiomaticity in Kanyen'kéha is mainly manifested in noun incorporation constructions, a pattern which is in itself probably difficult to acquire for monolingual English speakers due to its 'markedness differential' (Eckman, 1977). Idiomatic noun incorporation constructions are actually very frequent in Kanyen'kéha, which poses a serious challenge for L2 learners who are not merely satisfied with speaking grammatically and communicating effectively, but also want to get as close as possible to native-like proficiency (DeCaire, p.c.). Noun incorporation constructions are discussed further in Section 4.2.2, but a few additional examples of idiomatic ones are provided in (15) below, to give an idea of the obstacle learners face (Brant, 2017).

(15) (a) *yahatsí:renhte'*
y-a-ra-tsir-enht-e'
TLOC-DEF-3.SG.M.AGT-fire-drop-PUNC
'he made matters worse' (lit. 'he dropped fire')

(b) *thotyá:ro'kte*
t-ro-t-yar-o'kt-e
CLOC-3.SG.M.PAT-MID-bag-miss-HAB
'he is dumb' (lit. 'he is missing a bag')

(c) *tehothsinétston*
te-ro-t-hsin-e-tst-on
DUP-3.SG.M.PAT-MID-leg-be.long-CAUS-PERF
'he is bossy' (lit. 'his legs have become long')

(d) *tehononhwarawénrye*
te-ro-nonhwar-wenrye-Ø
DUP-3.SG.M.PAT-brain-stir-STAT
'he is crazy' (lit. 'his brain is stirred')

(e) *tewakathahahkwahnónhne*
te-wak-at-hah-hkwa-hnon-hne-Ø
DUP-1.SG.PAT-MID-road-pick.up-PURP-PST-STAT
'I went for a walk' (lit. 'I went to pick up the road')

(f) *wesattsikhè:tya'khse'*
we-s-at-tsikhe't-ya'k-hse-'
DEF-2.SG.AGT-MID-sugar-break-BEN-PUNC
'you were cut out of something valuable you expected' (lit. 'you broke the sugar')

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The reverse situation, where a given meaning is not expressed by the expected combination of morphemes, is just as difficult, as learners cannot regularly generate the word using the morphemes and rules they have learned so far, but must memorise an idiosyncratic structure. Kinship terms provide a good example. They are generally constructed by combining a transitive pronominal prefix (i.e., a prefix which expresses both the agent and patient) and a verbal root expressing the kinship relation, with the senior member of the relation acting as the agent and the junior member as the patient (Mithun, 2012, p. 9), as in (16a). Thus, following the general pattern, we would expect a word like "my older brothers" to begin with the prefix 'yonk-' (3.PL.M>1.SG), as in (16b). However, this structure is illicit, and speakers rather attach a pluralising distributive suffix to the singular form, as in (16c) (ibid., pp 9–10).

(16) (a) *rakhsótha*
rak-hsot-ha
3.SG.M>1.SG-be.grandparent-HAB
'my grandfather' (lit. 'he is grandparent to me')

(b) **yonkhtsì:'a*
yonk-htsi'-a
3.PL.M>1.SG-be.older.sibling-DIM
Intended: 'my older brothers' (lit. 'they (M) are older siblings to me')

(c) *rakhtsi'shòn:'a*
rak-htsi'-shon'-a
3.SG.M>1.SG-be.older.sibling-DIS-DIM
'my older brothers' (lit. 'he is older brother to me (PL)')

The point is that this phenomenon contributes to the opacity of the form-meaning mapping in many Kanyen'kéha lexical items, which is already substantially obscured by widespread idiomaticity. We can therefore conclude that Kanyen'kéha displays a relatively high level of functional syntagmatic complexity from the viewpoint of English speakers. More generally, the overall conclusion is that Kanyen'kéha is syntagmatically complex to learn for English speakers, to the extent that many words contain a high number of morphemes, and feature an opaque form-meaning mapping.

3.1.2 Paradigmatic Complexity

Paradigmatic complexity can be viewed as the internal morphological complexity of paradigms. Formally, it corresponds to the number of cells in paradigms. Kanyen'kéha seems more complex than English in this respect as well, as its paradigms usually contain many more elements than English ones. Pronominal prefixes are a good example (Maracle, 2016). Kanyen'kéha is a head-marking language, with the agent and/or patient always marked on the verb via a prefix. There are three sets of pronominal prefixes. First, we have fifteen subjective prefixes, which mark the relationship between a human agent and a non–human patient, or are used when there is only a human agent. We also have eleven objective prefixes, denoting the relationship between a non-human agent and a human patient, or used when there is only a human patient. Finally, we have thirty-five transitive prefixes, expressing the relationship between a human agent and a human patient. There is also a set of eleven possessive prefixes used on nouns to mark possession (as in example (2) 'akenónhsa' "my house"), but these are historically derived from the set of objective prefixes through a few phonological processes (e.g., initial glide deletion from 'wake-' to 'ake-'), and therefore do not strictly speaking count as an additional paradigm.

The higher number of pronominal markers compared to English is due to the presence of additional inflectional features, such as clusivity on non-singular first person prefixes, and dual number. There is no space to present all of these sixty-one pronominal prefixes exhaustively, but a representative sample is provided in Table 2.

Table 2: *Examples of Kanyen'kéha pronominal prefixes* (adapted from Maracle, 2016, pp. 9–14)

Subjective prefixes (AGT)		**Objective prefixes (PAT)**		**Transitive prefixes (AGT>PAT)**	
1.SG.AGT	*ke-*	1.SG.PAT	*wake-*	1.SG>2.SG	*kon-*
1.DU.INC.AGT	*teni-*	1.DU.PAT	*yonkeni-*	1.PL>2.SG	*kwa-*
1.DU.EXC.AGT	*yakeni-*	1.PL.PAT	*yonkwa-*	1.DU.INC>3.SG.M	*etshiteni-*
1.PL.INC.AGT	*tewa-*	2.SG.PAT	*sa-*	1.NSG.EXC>3.SG.F	*yakhi-*
1.PL.EXC.AGT	*yakwa-*	2.DU.PAT	*seni-*	2.SG>1.SG	*take-*
2.SG.AGT	*se-*	2.PL.PAT	*sewa-*	2.DU>3.SG.M	*etshiseni-*
2.DU.AGT	*seni-*	3.SG.N.PAT	*yo-*	2.PL>3.SG.M	*etshisewa-*
2.PL.AGT	*sewa-*	3.SG.M.PAT	*ro-*	3.SG.M>1.SG	*rake-*
3.SG.F.AGT	*ye-*	3.NSG.M.PAT	*roti-*	3.SG.M>1.DU	*shonkeni-*
3.DU.F.AGT	*keni-*	3.SG.F.PAT	*yako-*	3.SG.F>1.SG	*yonke-*
3.PL.F.AGT	*konti-*	3.NSG.F.PAT	*yoti-*	3.SG.F>2.NSG	*yetshi-*

Furthermore, each prefix has multiple allomorphs depending on the initial segment of the following morpheme. The combined allomorphy patterns of all prefixes requires positing five different inflectional classes, defined by the phoneme that follows them (C(onsonant), A, I, E, and O class), although individual prefixes rarely have more than three allomorphs. Examples are given in Table 3.

Table 3: *Examples of Kanyen'kéha inflectional classes* (adapted from Maracle, 2016, p. 10)

	C class	**A class**	**E class**
Subjective: **3.PL.M.AGT**	*rati-rákwas* 'they (M) choose it'	*ron-(ę)tò:rats* 'they (M) hunt it'	*ronn-entórha* 'they (M) are lazy'
Objective: **3.SG.F.PAT**	*yako-nòn:we's* 'it likes her'	*yako-(ę)ta'karí:te* 'she is healthy'	*yakaw-é:kahs* 'she likes the taste of it'
Transitive: **2.DU>1.SG**	*takeni-kwényes* 'you two defeat me'	*taky-aterò:roks* 'you two watch me'	*taken-ehyà:ra's* 'you two remember me'

Kanyen'kéha thus clearly seems to exhibit a higher level of formal paradigmatic complexity (at least in the area of verbal inflections) than English, with its massive syncretisms and reduced paradigms.

Functional paradigmatic complexity, on the other hand, can be defined as the degree of opacity of the cell-function mapping within a paradigm. That is, functional paradigmatic complexity increases when the mapping of paradigmatic cells to specific grammatical functions is not systematically predictable from regular patterns. The Kanyen'kéha temporal-aspectual system nicely exemplifies this phenomenon. All verbs in the same category basically follow the same pattern. Exclusively stative verbs have five possible forms, namely present (e.g., 'wakatshennón:ni' "I am happy"), past (e.g., 'wakatshennoníhne' "I was happy"), future (e.g., 'enwakatshennonníhake' "I will be happy"), conditional (e.g., 'aonkwatshennonníhake' "I would be happy"), and imperative ('satshennonníhak' "be happy!") (Maracle, 2016, p. 126). Active verbs, however, have a more complex temporal-aspectual structure (DeCaire, n.d.). They are organised around three basic aspectual endings, namely habitual

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(e.g., 'wakenà:khwens' "I become angry habitually"), perfective (e.g., 'wakena'khwén:'on' "I have become angry"), and punctual, alongside an isolated imperative form (e.g., 'sanà:khwen' "become angry"). Verbal expressions in the habitual aspect can occur in the five forms described for the stative series above, while those in the perfective aspect can occur in all but the imperative, and have an additional 'ambulative' form instead (i.e., meaning "to go along doing something"; e.g., 'wakena'khwen'onhátye'' "I am going along becoming angry"). Within the punctual series, forms instead surface as what is traditionally termed definite (i.e., single event in the past; e.g., 'onkenà:khwen'' "I became angry"), indefinite (i.e., a kind of irrealis; e.g., 'aonkenà:khwen'' "I would become angry"), or future (i.e., single event in the future; e.g., 'enwakenà:khwen'' "I will become angry"). This is represented diagrammatically in Figure 1 below (ibid.).

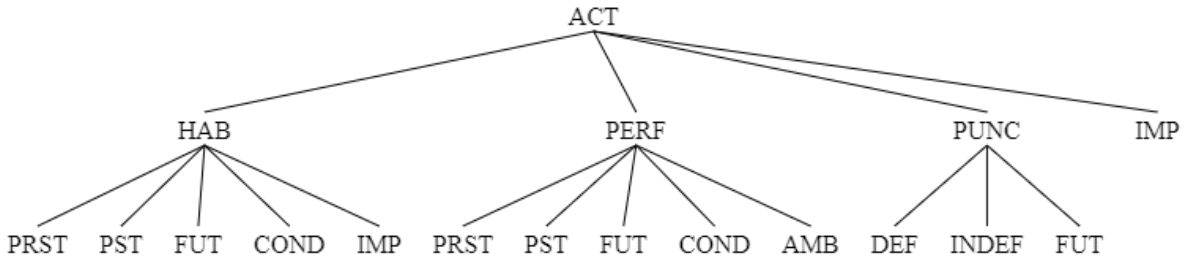

Figure 1: *The Kanyen'kéha temporal-aspectual system.*

There also exists a fourth aspectual series traditionally termed 'progressive', which refers to actions occurring 'right now/then' at the time of reference, and can also take the five usual temporal forms described above. What is crucial for our purposes is that the base stem of this aspectual series is variable (ibid.). That is, the verbal form which is selected as the basic present progressive form upon which the rest of the progressive paradigm is constructed varies from verb to verb in a relatively unpredictable way, and must therefore be learned idiosyncratically for each verb (some patterns exist, but can only be revealed by an in-depth morphological analysis of a large number of stems, and are probably not directly accessible to L2 learners). In some verbs, the habitual present form is selected, so that the progressive paradigm is formally identical to the habitual one (e.g., 'kateweyénhstha' "I study habitually" or "I am studying right now"; 'kateweyénhsthahkwe' "I used to study habitually" or "I was studying right then"; etc.). In others, the perfective present form is selected (e.g., 'wakhnekì:ren' "I have drunk" or "I am drinking right now"; 'wakhnekihrèn:ne' "I had drunk" or "I was drinking right then"; etc.). In yet others, the form with the ambulative suffix is selected (e.g., 'wakatorihátye' "I am driving along the road" or "I am driving right now"; 'wakatorihátyehkwe' "I was driving along the road" or "I was driving right then"; etc.). Finally, some verbs have a separate unique form for the progressive (e.g., 'wakyó'te' "I am working right now"; 'wakyó'tehkwe' "I was working right then"; etc). The point is that the progressive grammatical function is not systematically tied to one constant paradigmatic cell, but varies idiosyncratically from verb to verb, opacifying the mapping of cells to functions, exacerbating functional paradigmatic complexity, and creating an additional challenge for English-speaking learners.

A more specific example of increased functional paradigmatic complexity can be identified: if the relative distribution of two morphemes belonging to a same paradigm (i.e., competing for a same syntagmatic slot) is not motivated by any predictable pattern, then it is less transparent, thereby increasing functional paradigmatic complexity. Several such cases exist in Kanyen'kéha. For example, we saw that subjective prefixes are used with human agents, and objective prefixes with human patients. However, this pattern has exceptions, as some verbs which take agentive subjects are rather used with objective prefixes, such as 'wak–yó'te' "I work" (Mithun, 2012, p. 5). The reverse situation also exists,

as in ‘k–atonhkárya’ks’ “I am hungry”, a verb which takes a patientive subject and yet is used with a subjective prefix. The historical reasons explaining these irregularities (e.g., the verb ‘to work’ used to mean ‘to be busy’, which takes patientive subjects) are irrelevant to L2 learners, who cannot access diachronic information (ibid.). As far as they are concerned, these are simply exceptions that have to be memorised to avoid overgeneralisations, which further complexifies L2 acquisition.

All in all, then, Kanyen’kéha also seems paradigmatically difficult to acquire for English speakers. Section 3.1 is summarised in Table 4 below.

Table 4: *Summary of Section 3.1*

Complexity	**Formal**	**Functional**
Syntagmatic	Words typically contain many morphemes.	The form-meaning mapping within words can be unpredictable.
Paradigmatic	Paradigms typically contain many cells.	The cell-function mapping within paradigms can be unpredictable.

3.2 Discourse

I now turn to acquisition difficulties on the discourse level. As is to be expected by virtue of their different sociocultural setting and genetic unrelatedness, Kanyen’kéha and English discourse patterns differ widely. This is particularly noticeable in the high frequency of verbs and particles.

3.2.1 Verbal Constructions

One salient feature of Kanyen’kéha discourse is the high frequency of verbs. When Wallace Chafe investigated this issue based on comparable corpora, he found that the verb-noun ratio was 1:1 in English, but 17:1 in Kanyen’kéha (Mithun, 2015, pp. 15–16). Kanyen’kéha verbs are used for a much wider range of functions than English ones, and appear where a language like English would have nouns, as in (17), adjectives, as in (18), or adverbs, as in (19) (Maracle, 2016).

(17) *kaksóhares*
ka-ks-ohare-s
3.SG.N.AGT-dish-wash-HAB
‘dishwasher’ (lit. ‘it washes dishes’)

(18) *ro’nikonhrowá:nen*
ro-’nikonhr-owanen
3.SG.M.PAT-mind-be.big
‘he is intelligent’ (lit. ‘he is big-minded’)

(19) *sewatyé:ren’s*
se-w-at-yeren-’s
REP-3.SG.N.AGT-MID-happen-DIS
‘sometimes’ (lit. ‘it happens here and there’)

As a consequence, Kanyen’kéha predicates, arguments, and adjuncts can all frequently be realised as verbs, leading to speech patterns which substantially differ from English. For example, the utterance in

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(20) contains no nouns, six verbs, and seven particles. The English translation, however, has only four verbs, and relies heavily on the presence of adjectives and nouns. Another important discourse difference is that half of the English verbs are non-finite. Kanyen'kéha verbs are always finite, and English infinitives generally correspond to finite verbs in the indefinite aspect, marked by the 'a-' prefix (e.g., 'akherihónnyen'' "I would teach them") (Maracle, 2016). This is examplified in (20) below (DeCaire, 2013).

(20) *Í:kehre tsi kwáh iorihowá:nen akherihónnyen' ne ratiksa'okòn:'a'*
V P P V V P V
I-think that quite it-is-a-big-matter I-would-teach-them the they-are-children

'tsi ní:yoht tsi ahatiyéntho' ne nya'té:kon.
P P P V P V
how they-would-plant the it-amounts-variously

'I think it is important to teach children how to plant all sorts of things.'

Arguably, these significant discourse differences derived from the verb-based nature of Kanyen'kéha create additional challenges for English-speaking L2 learners. First, verbs are so omnipresent in Kanyen'kéha speech that mastering their complex morphology becomes even more crucial. For instance, L2 learners must entirely acquire the complex sets of pronominal prefixes to reach even basic proficiency. Second, Kanyen'kéha discourse patterns differ from English ones to such an extent that an English-speaking L2 Kanyen'kéha learner will rarely (if ever) be successful when transferring English morphosyntactic structures and filling them out with Kanyen'kéha lexical items, as is often done in the early stages of L2 acquisition, according to approaches assuming significant transfer from the L1 grammar (e.g., Schwartz & Sprouse, 1996). Most tellingly, some textbooks (e.g., Deering & Harries-Delisle, 1976, p. 1) explicitly discourage L2 learners from attempting to innovate new morphosyntactic structures based on previous knowledge, especially in the early stages of acquisition, because they are likely to produce ungrammatical structures based on English patterns.

3.2.2 Discourse Particles

Another essential aspect of Kanyen'kéha speech is the high frequency of discourse particles. As we saw in Section 3.1.1, these are defined as lacking internal morphological structure (Mithun, 2008, p. 564). They include adverbials (e.g., 'á:re' "again"), pronouns (e.g., 'í:se' "you"), grammatical markers (e.g., 'ken' marking yes-no questions), conjunctions (e.g., 'táhnon' "and"), and various other types of expressions (ibid., p. 565). Some have easily translatable and hence learnable meanings (e.g., 'wísk' "five"), but others have a more abstract discourse function, being used to structure speech or monitor information flow (Mithun, 2015, p. 36). These functions are crucial in a language like Kanyen'kéha, where word-order is not fixed but pragmatically determined, with more important or novel elements being fronted (Maracle, 2016, p., 19). This makes particles particularly difficult for L2 learners to acquire, as knowing their English translation(s) does not suffice to capture the full range of their pragmatic functions. One must already be proficient in Kanyen'kéha and familiar with its discourse patterns to be able to appreciate how these particles are used.

A good example of such an elusive word is the particle 'tsi'. It can be used in a very wide range of functions, including subordinating conjunction, as in (21a), locative particle, as in (21b), temporal particle, as in (21c), and a particle roughly meaning "the way that", as in (21d) (DeCaire, 2013).

(21) (a) *Ó:nen sateryèn:tare tsi Wáhta nitewaké:non.*
already you-know that Wáhta I-come-from-there
'You already know that I come from Wáhta.'

(b) *Tsi tkahéhtayen enwakyó'ten'.*
where garden-lies I-will-work
'I will work on a farm.'

(c) *Táhnon kéntho wa'tkená:tahkwe' teyohserá:ke tsi náhe.*
and here I-moved-from-there two-years P ago
'I moved here two years ago.'

(d) *Akeweyentéhta'ne' ne onkwawén:na táhnon tsi niyonkwarihò:ten.*
I-would-learn the our-language and the-way-that our-kind-of-business
'I would learn our language and our traditions.'

Given such a wide range of functions, L2 learners cannot master particles like 'tsi' by simply learning an English translation, as may be done with most content words (e.g., students only have to know that 'è:rhar' means "dog" to use it properly). Instead, statistical learning over many utterances in which the particles are used in different contexts seems necessary, which further complexifies L2 acquisition.

3.3 Conclusion

The syntagmatic and paradigmatic complexity of Kanyen'kéha morphology, as well as the relatively marked discourse patterns characterised by the high frequency of verbs and particles, are significant obstacles to the L2 acquisition of Kanyen'kéha by L1 English speakers within revitalisation programmes like OK. I only looked at the most salient and widespread linguistic challenges, and each learner undoubtedly has a unique acquisition experience with its own set of specific difficulties. However, these are beyond the scope of this study.

I want to emphasise again that I have not attempted to show that Kanyen'kéha is objectively more complex than English, because the notion of objective linguistic complexity is controversial, so that there is as of yet no meaningful sense in which this could be correct. Rather, I argued that, for L1 English speakers, Kanyen'kéha is subjectively more complex to acquire as an L2 than typologically closer languages.

4 Strategies

This section will examine the specific teaching strategies implemented within the OK programme in order to cope with the learning challenges reviewed in Section 3. Several such methods can be identified, including language immersion, reliance on new technologies, and an innovative teaching technique called the Root Word Method (RWM).

I have chosen to focus solely on the latter, however, because it is the main basis for OK's pedagogical success, and a more direct response to the acquisition difficulties identified in Section 3, as we will see below. I will begin by presenting the RWM in detail, and then consider some of its theoretical implications.

4.1 The Root Word Method

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The RWM was created by Kanatawákhon David Maracle in Kenhtè:ke, and was then expanded to a wider range of morphological structures and pedagogical contexts by Owennatékha Brian Maracle to found OK in 1999 (Maracle, p.c.). It has been the basis for the school's success ever since (Gomashie, 2019, p. 159). I will first examine its basic principles, and then look at a specific example of how it is implemented in practice.

4.1.1 Basic Principles

The linguistic challenges identified in Section 3 all seem to more or less directly derive from the polysynthetic nature of Kanyen'kéha. Morphological complexity indeed straightforwardly correlates with polysynthesis. The connection between discourse patterns and polysynthetic structures is less obvious, but no less significant. On the one hand, there is a clear correlation between the morphological richness of polysynthetic verbs and their high frequency in speech, as it makes sense for the most frequent morphological category to be the most expressively powerful as well. On the other hand, the abundance of small, complex, and abstract discourse particles can be seen as a necessary compensatory measure, functioning as a crucial speech-structuring mechanism in a language which tends (when compared with English) to pack great amounts of information within few long words. I do not wish to imply any direct diachronic or cognitive link between these linguistic challenges and polysynthesis, except perhaps when it comes to morphological complexity. I am merely arguing that they are connected in such a way as to make polysynthesis the central obstacle to the L2 acquisition of Kanyen'kéha by L1 English speakers from which all other difficulties derive. Thus, by dealing with this core challenge, L2 acquisition is facilitated on all levels. The RWM, as a morpheme-based teaching technique designed to facilitate the L2 acquisition of Kanyen'kéha agglutinative polysynthetic structures, was developed as a direct response to this observation.

Indeed, the core principle of the RWM is that Kanyen'kéha should not be taught based on words, which are too long, numerous, and complex. Morphemes should be used instead, because they operate on the most acquisitionally profitable level of generalisation, in that they enable learners to generate a large number of words based on a small set of units. More formally, the RWM maximises the output-input ratio in the L2 acquisition of Kanyen'kéha, where 'output' refers to the licit structures one can construct, and 'input' to the atomic units one has to rote-learn. If 'there are as many possible words in Kanyen'kéha as possible sentences in English' ([Interviewee 3]), then it makes as little sense to teach Kanyen'kéha through words as to teach English through sentences. The most efficient way to acquire Kanyen'kéha as an L2 is thus to directly learn morphemes and combinatorial rules specifying in which orders morphemes can co-occur ('We develop the foundation to learn vast amounts of vocabulary at once by teaching students morphemes and how to combine them into words.' [Interviewee 3]).

The purpose of the RWM is not psychological adequacy (i.e., constructing a theory that faithfully reflects the mental representations and processing procedures of L1 speakers), but pedagogical efficiency (i.e., designing a teaching technique that maximally facilitates L2 acquisition). In practice, this means that morphemes and rules in the OK programme are designed to minimise allomorphy and maximise productivity, rather than to be psychologically real (i.e., correspond to actual entities in L1 speakers' competence). Students can successfully innovate new vocabulary as new communicative needs emerge based on the morphemes and rules they already know, thanks to the productivity and systematicity of Kanyen'kéha morphology ('Our method allows speakers to create their own vocabulary based on the morphemes they know.' [Interviewee 3]). However, this may occasionally result in overgeneralisations, in cases where L1 speakers use a suppletive form instead of a regular but illicit form which may be expected by virtue of general patterns. OK teachers are aware of this flaw, but stress that it is not problematic, because it rarely results in misunderstandings, as L1 speakers can usually

comprehend what was meant by analogy with frequent patterns. In fact, L1 speakers sometimes make similar mistakes themselves, although they are usually more reluctant to extrapolate beyond the forms which they have previously encountered by creating altogether new structures (Mithun, p.c.). Moreover, such mistakes can be easily corrected through exposure to and memorisation of irregular forms in the speech of L1 speakers ('L1 speakers sometimes disagree with how things are said, but whether 100% of the words students can theoretically build is correct is irrelevant, as long as they can communicate. These errors become less and less frequent as they interact with native speakers.' [Interviewee 3]).

4.1.2 Implementation

Let us now consider how the RWM is implemented in the immersion programme. OK textbooks never use the term 'morpheme', but only 'root' for verbal and nominal roots, seen as the central element of any word (hence the name 'Root Word Method') around which 'prefixes' and 'suffixes' revolve. A good example is the lesson in the OK textbook on noun incorporation, partially represented in Table 5.

Table 5: *Application of the RWM to noun incorporation* (adapted from Maracle, 2016, p. 85)

Pronoun	Nominal root	Verbal root	Tense
wake- 'I'	*-ksa't-* 'child'	*-yen-* 'to have'	*-Ø* PRESENT
ye- 'she'	*-ya'tase'-* 'young woman'	*-iyo-* 'to be good'	*-hne/hkwe* PAST

In this system, by learning a morphological rule defined by a four-slot template and a couple of morphemes for each slot, students can construct a great number of words. For example, by knowing two objective pronominal prefixes, two nominal roots, two verbal roots, two tense suffixes, and the template in Table 5, an OK student can generate $2^4 = 16$ morphologically correct words, a sample of which is given in (22) (Maracle, 2016, p. 85). Moreover, by the time students learn this morphological rule, they know all objective prefixes, and several additional verbal and nominal roots, which exponentially increases the number of well–formed words that they can generate.

(22) (a) *wakeksà:tayen*
'I have a child.'

(b) *yeya'tase'tsheriyóhne*
'She used to be a good young woman.'

(c) *wakya'tase'tsherayèn:tahkwe*
'I used to have a young woman.'

Despite its general reliability, the RWM cannot always be applied entirely blindly. Students often have to deal with morphophonemic irregularities that must be memorised, as can be seen in all three examples in (22). For instance, the combination of the nominal root '-ya'tase'-' with a verbal root triggers the insertion of the connector morpheme '-tsher-', as can be seen in (22b) and (22c). Fortunately, such inconsistencies do not jeopardise the overall efficiency of the RWM, because it is supplemented in the immersion programme by auxiliary resources allowing learners to check doubtful forms, such as descriptive root dictionaries (e.g., Maracle, 2005), and pedagogical software like the computer application 'Kawennón:nis' ("It Makes Words"), which yields the correct verbal form based on the user's specification of a number of parameters (e.g., verbal root, agent, patient, tense, aspect)

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(Kazantseva et al., 2018). In any case, the Kanyen'kéha morphological is globally regularly agglutinative, and irregularities of the type found in (22) are not highly common.

4.2 Theoretical Implications

Being founded on the controversial concept of the morpheme, the RWM has interesting implications for the debate between the constructive and abstractive approaches to morphology. After presenting both frameworks, I will consider what lessons can be learnt from a thorough investigation of the RWM.

4.2.1 Two Approaches to Morphology

Although the reality is more complex, with several third-party approaches and competing sub-theories, it suffices for our purposes to view morphology as polarised into two frameworks known as the constructive and abstractive approaches (Blevins, 2006, p. 533). They can be distinguished by their conflicting positions with respect to various criteria, as shown in Table 6.

Table 6: *Main principles of the constructive and abstractive theories* (adapted from Blevins, 2006)

Criterion	Constructive approach	Abstractive approach
(a) Descriptive focus	Focus on syntagmatic structure, that is the combination of morphemes into words	Focus on paradigmatic structure, that is the organisation of words into paradigms
(b) Descriptive methods	Morphological systems can be fully described based on morphemes and combinatorial rules	Morphological systems can be fully described based on words and paradigms
(c) Basic units	Morphemes are the basic units which combine to form words	Words are the basic units which combine to form paradigms
(d) Status of units	Morphemes are persistent units and words are ephemeral constructions	Words are persistent units and morpheme-like units are ephemeral abstractions
(e) Function of units	Morphemes denote specific semantic or morphosyntactic properties in isolation	Recurrent sub-word units discriminate different word-forms within a system
(f) Part–whole relations	Morphemes are combined to construct words	Recurrent sub-word units are abstracted from words
(g) Systemic organisation	Genealogical system, where words are related through shared morphemes	Implicational system, where variation encodes predictive information about other forms
(h) Lexicon	Atomistic lexicon composed of isolated morphemes	Holistic lexicon composed of whole word-forms
(i) Mental representations	Words are generated based on or decomposed into morphemes online	Words are stored, retrieved, and accessed as whole forms in the lexicon
(j) New word formation	Generative formation of a new word by combining existing morphemes in a new way	Analogical formation of a new word by extending patterns from one word to another
(k) Typology	All languages are underlyingly agglutinative, and superficial differences are due to different morphological rules, which may map the underlying structure onto the surface one in an opaque way	Typologically distinct languages are superficially and underlyingly different, and their lexicon constitute a network of forms linked through patterns of analogy and discrimination

The Indian grammarians, such as Pāṇini who described Sanskrit morphology based on roots and affixes, are generally considered to be the first constructivists and the precursors of the concept of morpheme (Blevins, 2016, p. 14). More recently, the constructive approach has been associated with the American Structuralists, including for instance Bloomfield (1933) and Harris (1942), who viewed language as a succession of discrete levels on which units combine to form the basic units of the next level. Morphemes were seen as the central units on the morphological level, entirely composed of phonemes on the phonological level, and combining to form words on the syntactic level. Later, different authors writing within the generative framework carried on the constructive tradition by proposing different

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Item-and-Arrangement treatments of morphology (i.e., analyses of morphological systems based on an inventory of morphemes and rules to combine them into words), such as Halle and Marantz's (1993) Distributed Morphology, which views morphology as an application of generative syntactic operations on the lexical level, and assigns a hierarchical structure to words whereby morphemes are inserted into terminal nodes.

The abstractive approach has its roots in the Greco-Roman tradition, with grammarians like Priscian who described Latin morphology in terms of words and paradigms (Blevins, 2016, p. 14). This remained the basic framework of morphological description in Europe until the late 19th Century, when the notion of morpheme first appeared in the West (Law, 2003, p. 68). It can also be found later in the works of the European Structuralist Saussure (1916), who stressed that linguistic signs never have a meaning in isolation, but only by virtue of their differences from other elements within a system. The abstractive approach, and morphology as an independent discipline in general, was then temporarily eclipsed by the rise of generativism in the 1950s–1970s, which moved allomorphy into phonology and morphotactics into syntax, leaving nothing for morphology to explain (Anderson, 2018). However, the abstractive approach has been undergoing a revival since the 1970s, notably with the writings of Matthews (e.g., 1972) and more recently Blevins (e.g., 2016), who advocate a Word-and-Paradigm approach to morphology, whereby morphological systems are best analysed in terms of the organisation of words into paradigms.

4.2.2 Pedagogical Efficiency and Psychological Adequacy

The RWM, as a teaching technique based on morphemes and co-occurrence rules, is essentially a pedagogical application of the constructive theory. This influence is indirect, in the sense that the RWM was not intentionally designed as such, but simply happens to rest on a similar view of morphological structure. Furthermore, OK is very successful, with most students achieving at least an intermediate-mid level by the end of the first year and an advanced-mid level by the end of the second year on the ACTFL (American Council on the Teaching of Foreign Languages) proficiency scale (Maracle, 2016, p. 5), and many students scoring even higher. That the use of the RWM is most likely the main cause of this pedagogical success is supported by the lower success rate of other programmes which do not rely on this method, such as the Kawenní:yo Immersion School in Ohswé:ken ('At Kawenní:yo, they taught Mohawk word by word, and kids were having a hard time making sentences. Only a handful came out with a good grasp of the language.' [Interviewee 4]). In fact, OK has been so successful that it has inspired the creation of similar RWM-based curriculums to teach related Northern Iroquoian languages, such as Cayuga (Maracle, p.c.).

The success of this morpheme-based teaching method suggests that, although its psychological reality remains controversial as it constitutes the crux of the constructive-abstractive debate, the morpheme is a pedagogically useful unit. Indeed, it allows us to capture the surface properties of a morphological system in a way that intuitively makes sense to language learners with no linguistic training, especially in regular polysynthetic and agglutinative languages like Kanyen'kéha. Therefore, while abstractive linguists abandon morphemes as *psychologically unrealistic* units (e.g., Anderson, 1992; Blevins, 2016), OK teachers still use them as *pedagogically useful* units, because they are motivated by a different and more practical objective. The former strive to accurately represent the morphological competence of native speakers, and believe that morphemes are inadequate for that purpose, whereas the latter simply want to efficiently teach their ancestral language as an L2, and find that morphemes are most useful to that end. In other words, the ongoing debate about the psychological reality of the constructive approach does not stop it from having pedagogically useful applications, because the psychological adequacy of a theoretical model of L1 competence and the pedagogical efficiency of an L2 teaching method are logically distinct objectives.

Due to the agglutinative and polysynthetic nature of Kanyen'kéha morphology, as well as its relatively high degree of productivity and regularity, we might expect L1 speakers to process their language constructively (i.e., in terms of morphemes). However, empirical evidence suggests that native speakers process at least some areas of Kanyen'kéha morphology abstractively. First, consider the example in (14), repeated in (23) below for the sake of convenience (Mithun, 2008, p. 578).

(23) *enskontatewenní:yohne'*
en-s-kon-tate-wenn-iyo-hne-'
FUT-REP-3.PL.N.AGT.REFL-word-be.good-PURP-PUNC
'they were going to be free' (lit. 'they were going to be word-good')

As we saw earlier, this word is an example of semantic non-compositionality, and hence idiomaticity (if we define idiomaticity basically as semantic non–compositionality). Despite their straightforward formal segmentability into agglutinative morphemes, such constructions are probably stored as whole forms in native speakers' mental lexicons, because there is no way that compositionally combining the meaning of the nominal root '-wenn-' ("word") with that of the verbal root '-iyo-' ("to be good") could possibly yield the surface expression '-wenn–iyo-' with the meaning "to be free". Such non-compositional structures likely arose via chunking into whole word-forms through frequent collocation (Beckner & Bybee, 2009, p. 30), and later metaphorical extension to new meanings based on culture-specific ways of conceptualising events (Mithun, 2008, p. 579), like "being free" as "being word-good".

Following the Bloomfieldian (1933) view whereby the mental lexicon is simply a repository of idiosyncratic information, one may argue that that these non-compositional constructions are indeed stored as wholes, but that compositional Kanyen'kéha morphological structures are processed constructively. However, this does not seem to apply to all Kanyen'kéha words, as even some compositional structures show signs of being stored as whole forms. Kinship terms like "my mother" are a good example. According to the general pattern presented in Section 3.1.1, we would expect the word for "my mother" to literally mean "she is mother to me", as in (24), but the actual form uses a possessive instead of a transitive prefix, as in (25) (Maracle, 2016, p. 50).

(24) **yonke'nihsténha*
**yonke-'nihstenha*
3.SG.F>1.SG-be.mother
Intended: 'my mother' (lit. 'she is mother to me')

(25) *ake'nihsténha*
ake-'nihstenha
1.SG.POSS.AL-be.mother
'my mother'

This form is thus irregular in the sense that it does not follow the regular pattern applying to the overwhelming majority of kinship terms, but rather an irregular pattern applying only to the small subset of older female relatives. (Defining irregularity in terms of low type frequency in this way raises several important questions, especially concerning the generally higher token frequency of these 'irregular items' which is necessary to maintain their 'irregular' pattern in the first place (Wu et al., 2019); but this is beyond the scope of this work.) Moreover, the word for 'my mother' is often reduced to the atomic vocative form 'ihstá:' ("mum"). Finally, although statistical data is necessary to confirm this, we can safely hypothesise that 'ake'nihsténha', as the word for "my mother", is relatively frequent, and therefore has a greater memory strength (Haspelmath & Sims, 2010, p. 73).

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All of these factors conspire to suggest that this lexical item is likelier to be accessed via the whole–word route than the decompositional route. This also probably applies by extension to other kinship terms referring to older female relatives (e.g., 'akhsótha' "my grandmother"; 'akhtsí:'a' "my older sister"), as these follow the same irregular pattern, can be reduced to an atomic vocative form too (i.e., 'tóta' "grandma"; 'akhtsi'ó:' "older sister"), and likely have an above-average occurrence frequency as well. It is in fact likely the case that most (if not all) kinship terms in Kanyen'kéha are stored as whole words rather than generated online, because they are probably very frequent (although this requires empirical confirmation), and there seems to be a tendency for highly frequent items to be accessed via the whole-word route (ibid.). The same reasoning could therefore be extended to any highly frequent morphologically complex and compositional item, although that would require an in-depth statistical analysis of lexical occurrence frequencies over a large corpus, which we cannot do here.

There is, however, another kind of compositional morphological structure whose instances are probably acquired and processed abstractively as unitary indecomposable forms by L1 speakers as well, and for which the evidence is more directly accessible, namely noun incorporation constructions. We have already touched upon this topic briefly in Section 3.1.1, but below are a couple of representative examples (incorporated elements are indicated with square brackets) (Maracle, 2016).

(26) (a) *wa'kón:ni'* *ne kanà:taron*
wa'-k-onni-' *ne ka-[na'tar]-on*
DEF-1.SG.AGT-make-PUNC P N-[bread]-NOM
'I made bread'

(b) *wa'kena'tarón:ni'*
wa'-k-[na'tar]-onni-'
DEF-1.SG.AGT-[bread]-make-PUNC
'I made bread'

(27) (a) *asé'tsi* *ne atyà:tawi*
Ø-ase-Ø-'tsi *ne [atya'tawi]*
3.SG.N.AGT-be.new-STAT-INTS P [shirt]
'the shirt is new'

(b) *watya'tawihsherasé'tsi*
w-[atya'tawi-hsher]-ase-Ø-'tsi
3.SG.N.AGT-[shirt-NMS]-be.new-STAT-INTS
'the shirt is new'

As these examples show, Kanyen'kéha noun incorporation canonically incorporates a nominal root immediately to the left of the verbal root, with the possible insertion of a nominaliser suffix if the targeted noun historically derives from a verbal structure. The incorporated noun typically acts as the direct object of the verb, but this is by no means the only possibility, as it can carry out several other different types of thematic roles (e.g., means, source, location, instrument, etc.), blurring the noun-verb relationship in such cases (Mithun 2008, pp. 574–577).

What matters for our purposes is that the empirical evidence suggests that Kanyen'kéha noun incorporation constructions are not formed directly by syntactic movement and hence processed compositionally by L1 speakers (Baker, 1988; Barrie & Mathieu, 2016), but rather constitute unitary and indecomposable structures in native speakers' competence, which are created through morphological compounding inside the lexicon, and are usually completely lexicalised (Mithun, 1984).

Kanyen'kéha noun incorporation constructions are not just formally more compact ways of expressing the same meaning as their periphrastic equivalents, but rather the atomic products of a word-formation process that is by definition only invoked to express 'name-worthy' concepts, that is concepts which culturally deserve to be referred to using a single compound word because of their importance to speakers (Mithun, 2008, p. 581). Thus, in (26) and (27) above, "bread-making" and "new shirts" are clearly culturally important concepts that deserve to be referred to using single noun incorporation constructions, while things like "bread-throwing" and "buried shirts" are not, and can therefore not be expressed using an incorporation construction (doing so might be interpretable by speakers, but would be highly pragmatically anomalous). In fact, (26a) and (27a) often sound pragmatically odd to speakers, because these concepts are so commonplace that they are usually expressed using the incorporation structure, unless some special emphasis is placed upon the noun which warrants its 'excorporation', implying that the incorporation structure is in some sense the default in this case (DeCaire et al., 2017). According to Mithun (1984, p. 872), it follows that 'speakers are keenly aware of the lexical status of all such [noun–verb] combinations', because '[t]hey know not only which constructions are possible, but also which of these actually exist; i.e., which are lexicalised' and 'immediately recognise those that are not'. To sum up, '[a] Mohawk speaker's lexicon can be enormous, because of the high productivity of word formation process like noun incorporation; but it is well-defined' (ibid.). That noun incorporation constructions are lexicalised is further supported by the existence of idiomatic noun incorporation constructions, like that in (14) and (23) ('enskontatewenní:yohne'' "they were going to be free", lit. "they were going to be word-good") and those in (15): only if a noun-verb compound has become 'fused' as a unitary stem in speakers' competence can it undergo semantic shift as a single unit and hence become idiomatic. This process is quite frequent in Kanyen'kéha noun incorporation (Mithun 2008, p. 578). The crucial point for our argument, however, is that the lexicalised status of noun incorporation constructions clearly indicates that they are treated abstractively as atomic units by native speakers. Again, then, the tentative conclusion is that even some compositional Kanyen'kéha morphological structures are probably processed as whole forms by L1 speakers as well.

This hypothesis is further supported by two findings. First, Zipf (1949) proposed the existence of a general human propensity to maximally reduce cognitive effort (i.e., the 'Principle of Least Effort'): why should speakers waste precious processing resources by generating online a highly frequent word that can easily be remembered as a whole? Second, psycholinguistic evidence suggests that the mental lexicon is not maximally economical, as assumed by Bloomfield (1933), but contains redundancies, in that frequent words can be stored as wholes despite their straightforward segmentability (Baayen et al., 2002). Therefore, even an easily segmentable word like 'ake'nihsténha' may be stored as a whole rather than generated online. This tentative suggestion requires experimental confirmation, especially as there exists some psycholinguistic evidence in favour of morphemic decomposition (e.g., Bacovcin et al., 2017), but it can probably be maintained as a working hypothesis for our purposes. The overall conclusion is therefore that L1 Kanyen'kéha speakers most likely acquire, store, access, and process at least some areas of Kanyen'kéha morphology in their mental lexicon and linguistic competence abstractively, that is not by combining morphemes online, but rather by accessing them as whole words within a network of forms connected through patterns of analogy and discrimination, as per Table 6.

This brings us to an apparent paradox: how can a constructive L2 teaching method be so efficient if L1 speakers process (at least some) morphological structures abstractively? Part of the solution may lie in Bley-Vroman's (1989) Fundamental Difference Hypothesis (FDH), whereby L1 and L2 acquisition are 'fundamentally different', because the former is controlled by an innate generative language acquisition device, while the latter resembles general adult learning. One of the 'fundamental differences' between them is crucial for our purposes: L1 acquisition is subconscious, while L2 acquisition is conscious. Thus, learning Kanyen'kéha as an L2 at OK is a mostly conscious process, and it is thus unsurprising that teaching methods based on units which are easily consciously accessible,

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such as morphemes in a highly regular agglutinative and polysynthetic language like Kanyen'kéha, are so successful. The L1 acquisition of Kanyen'kéha, on the other hand, is a subconscious process, as children are not explicitly taught morphemes and rules to generate words. It is therefore equally unsurprising that L1 speakers do not systematically process Kanyen'kéha morphology in terms of morphemes. A potential issue for this hypothesis is that no consensus has been reached yet concerning the actual nature of L1 and L2 acquisition and competence, and of the differences between them (in particular, some (e.g., Tomasello, 2003) reject the idea of a universal, innate, generative, and domain-specific 'language acquisition device' à la Chomsky (e.g., Chomsky, 1975), which means that the FDH on which our conclusion is based remains unconfirmed. Nevertheless, the specific point on which our hypothesis hinges is that L1 acquisition is mostly subconscious while L2 acquisition is mostly conscious, which is generally well-established and well-accepted. Our conclusion can therefore probably be maintained as a working hypothesis (at least for our purposes), although further empirical confirmation is of course necessary. Importantly, however, this conclusion should not be construed as evidence in favour of the FDH, but rather as being merely based on it (otherwise our reasoning would be circular).

This apparent paradox between the pedagogical efficiency of the morpheme in L2 teaching and its inadequacy for capturing (at least some of parts of) L1 competence therefore seems illusory: why should we expect L2 teaching techniques and theoretical models of L1 competence to follow the same principles, if (a) L1 and L2 acquisition are 'fundamentally different' (at least concerning the level of conscious awareness); and (b) these two systems are respectively motivated by the very different objectives of pedagogical efficiency as opposed to psychological adequacy? In other words, the RWM achieves pedagogical efficiency by using morphemes, as these units happen to be particularly well adapted to the conscious nature of L2 acquisition and the polysynthetic and agglutinative structure of Kanyen'kéha morphology, but this is independent from the question of the psychological reality of morphemes in L1 competence, because pedagogical efficiency and psychological adequacy are logically distinct, and L1 and L2 acquisition are fundamentally different. The disparity that we observe between L1 and L2 Kanyen'kéha speakers is therefore unproblematic, and even unsurprising because expected. As a final note, it is important to mention that unentangling this paradox was not an attempt to support either morphological theory. That the constructive approach is pedagogically more efficient for L2 Kanyen'kéha acquisition was not meant to suggest that it is generally superior, just as the fact that L1 Kanyen'kéha speakers probably process some morphological structures abstractively does not entail that the abstractive approach is universally more psychologically adequate. We have only tried to show that the RWM is an interesting application of the constructive approach to a revitalisation project and provides useful insights into this debate and the nature of the morpheme, and remain agnostic as to which of these two theories, if any, fares better than the other in a more universal sense (insofar as that question even makes sense).

4.3 Conclusion

This section focused on the morpheme-based teaching technique used at OK, known as the Root Word Method. I first presented its basic principles and implementation, before investigating its theoretical implications. Our discussion revealed a number of interesting findings. First, the success of the RWM suggests that morphemes, and hence the constructive approach, can have pedagogically useful applications. Second, native Kanyen'kéha speakers seem to process some morphological structures abstractively. Third, the apparent paradox between these two observations is illusory, because the pedagogical efficiency of the constructive approach in L2 acquisition, which is a conscious process, has

nothing to do with the issue of its psychological adequacy in accounting for L1 competence, which is the result of a subconscious process.

This hypothesis is only speculative, and requires empirical confirmation through psycholinguistic experiments aimed at confirming whether (a) L1 Kanyen'kéha speakers process some morphological structures abstractively; (b) L2 OK-trained Kanyen'kéha speakers process most morphological structures constructively; and (c) constructive L2 Kanyen'kéha teaching methods (e.g., the RWM) are more pedagogically efficient than abstractive ones (e.g., teaching whole words and expecting statistical learning). I also wish to underline again that I have not attempted to prove the superiority of one theory over the other. The constructive-abstractive debate is still going on and will not be settled here, as we have only examined how the contrast between these two frameworks applies to our specific case study.

5 Overall Conclusions

In this work, I presented a case study of language revitalisation involving the L2 acquisition of the endangered Iroquoian language Kanyen'kéha at the Onkwawén:na Kentyóhkwa language school in Ohswé:ken. I focused on three main aspects. I first explored the motivations underlying revitalisation projects in general and this immersion programme in particular (i.e., the 'why'), especially in terms of the relevance of the language in a modern context and its relationship to culture and identity. I then examined the challenges that teachers and students face in realising these motivations (i.e., the 'what'), particularly in the domains of morphology and discourse. Finally, I investigated the main strategy that they implement in order to overcome these challenges (i.e., the 'how'), namely the so-called Root Word Method (RWM), as well as its theoretical implications.

The findings highlighted in our discussion of the theoretical implications of the RWM show that, as suggested in the introduction, theoretical linguistics (understood broadly as the scientific study of language in an academic context) and applied linguistics (defined by Grabe (2010) as the discipline which engages with real-world language-based problems) can enter in a mutually beneficial relationship. That is, just as applied linguistics projects have much to learn from insights gained through theoretical linguistic research (e.g., theoretical insights concerning language acquisition can help design more efficient revitalisation programmes and hence help combat language endangerment), theoretical linguistics can hugely benefit from a thorough investigation of applied linguistics projects. Thus, I tried to show that exploring the OK revitalisation project can shed light on the nature of the morpheme, as well as on the constructive-abstractive debate, and their interactions with considerations of pedagogical efficiency and psychological adequacy. The RWM therefore epitomises this mutually beneficial relationship which holds between theoretical and applied linguistics: on the one hand, it constitutes a concrete application of the constructive theory; on the other hand, investigating it provides valuable insights into the nature of this framework.

Our discussion reveals another intriguing phenomenon. Because OK students learn Kanyen'kéha through morphemes, we can hypothesise that their competence is largely constructive, and thus probably differs in some areas from the partly abstractive competence of native Kanyen'kéha speakers. Many differences between the performance of L1 and L2 OK-trained Kanyen'kéha speakers can thus be predicted (e.g., L2 OK-trained speakers are likely to overgeneralise where L1 speakers use an irregular form, as we saw in Section 4.1.1). Testing these predicted differences empirically in the context of the constructive-abstractive debate thus seems worthy of further research, as it could shed light on properties of L1 and L2 acquisition in morphologically complex languages like Kanyen'kéha.

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7 Appendix: Morphological Abbreviations

>	transitive prefix	INDEF	indefinite

1	first person
2	second person
3	third person
ACT	active
AGT	agent
AL	alienable
AMB	ambulative
BEN	benefactive
CAUS	causative
CLOC	cislocative
COINC	coincidental
COND	conditional
DEF	definite
DIM	diminutive
DIS	distributive
DU	dual
DUP	duplicative
EXC	exclusive
F	feminine
FUT	future
HAB	habitual
IMP	imperative
INC	inclusive
INTS	intensive
M	masculine
MID	middle / semi-reflexive
N	neuter
NMS	nominaliser
NOM	nominal
NSG	non-singular
P	particle
PART	partitive
PAT	patient
PERF	perfective
PL	plural
POSS	possessive
PRST	present
PST	past
PUNC	punctual
PURP	purposive
REFL	reflexive
REP	repetitive
SG	singular
STAT	stative
TLOC	translocative
V	verb

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