Using Human Language Technology to Contribute to the Sustainable Development of Rural Ethnic Tourism

Paul Switz

Supervisor: Karina Madsen Smed

Characters: 140.589

TABLE OF CONTENTS

INTRODUCTION

Languages are fascinating. I first realized that languages are more than a tool to communicate twenty years ago on a trip to Aalborg, Denmark of all places. This led me to pursue academic programs focused on language and culture, finally culminating in a Master's in Linguistics. My background shows my fascination with languages, and led me to move to Southwest China to explore opportunities to connect this interest with tourism. During that time I often visited the rural countryside and was captivated by the stunning scenery, but also learned about the rich linguistic and cultural diversity in that part of the world. I came to realize that, just like natural resources, these languages had unique value and were worth protecting. This is because they are reflections of the diverse cultures to which they are connected. This special connection means that languages have unique value as cultural treasure chests, which has begun to be recognized by more than just the communities who speak them and the linguists who study them.

Languages are also fading away. An overlooked, yet overlapping, issue related to tourism is that of linguistic vitality. Languages all over the world are dying, due in large part to globalization and urbanization. Recognizing the value of these languages as carriers and reflections of their diverse cultures, UNESCO held an international conference in China in 2018 to promote linguistic diversity, where the host government pledged to work collaboratively towards safeguarding these valuable resources (UNESCO, 2018b). The proceedings from this conference were formalized as the *YueLu Proclamation*, which highlighted that: protecting linguistic diversity is a part of sustainability, collaborating across organizations worldwide was vital to doing so, and technology should play a key role in those efforts (UNESCO, 2019). This conference and its proceedings paved the way for the UN's launch of 2019 as the 'International Year of Indigenous Languages', which was designed to call attention to these threatened resources and their importance to global sustainability. To further stress the importance of protecting these languages, the UN General Assembly recently launched the 'International Decade of Indigenous Languages', running from 2022 until 2032, as it continues to rally stakeholders worldwide to this pressing issue (UNESCO, 2022a).

The connection to tourism is that these languages, as components of Intangible Cultural Heritage, are often used as the basis for developing tourism products and experiences within ethnic minority communities across the globe (McKercher & du Cros, 2002). This is especially true in my former home of Southwest China, which will be the focus of this project. This part of the world is unique in that it has a high degree of linguistic diversity (Gavin et al., 2013) and is home to the country's largest concentrations of ethnic minorities. Tourism has been developed extensively in this region, but the loss of linguistic diversity negatively impacts sustainability and means that an important aspect of the 'product' is being threatened. What makes this situation especially problematic is that tourism is part of the national strategy to develop rural areas and improve the lives of the many ethnic minority communities who live there (Yang & Wall, 2014). With diminishing linguistic and cultural resources (Bodomo, 2010), there may be fewer ways for communities to benefit from the tourism on which they have come to depend.

At the same time, positive opportunities have been identified in rural tourism because of a growing interest in consumers to have "authentic and immersive experiences", and to protect the cultural resources they are based upon (Wang, 2021). While many studies have looked at the challenges of using intangible cultural heritage in tourism development, few have looked specifically at minority or indigenous languages as a part of that culture and how they are connected to sustainability (Whitney-Squire, 2016; Whitney-Squire, Wright & Alsop, 2018). Lonardi, Martini and Hull (2020), while acknowledging the negative impacts that come along with tourism development, argued that tourism can have positive impacts on the preservation of minority languages and their sustainability. Lonardi (2022), however, called for more research that considers the use of minority languages in tourism outside of Europe. There is indeed more room to explore the connections and challenges between protecting linguistic diversity and promoting tourism development in other contexts like that of Southwest China.

One potential way to address these issues is by using contributions from the growing field of human language technology. This can include a number of different applications, but the overall goal is "to get computers to perform useful tasks involving human language" (Jurafsky & Martin, 2009, p. 1). Outside of tourism, there are a number of initiatives worldwide that are contributing to the promotion and protection of threatened languages, like the Woolaroo app created by

Google (Google Arts & Culture, 2021). Another application is to use this technology for translation, which makes important information more accessible to minority communities for whom language can be a barrier in the digital world (Ansari & Petras, 2018; Nurminen & Koponen, 2020). In China, human language technology was recently used by the voice recognition company iFLYTEK at the 2022 Winter Olympics to provide translation services (Zhou, 2022), but is also documenting and protecting dialects that belong to the Chinese language family (iFLYTEK, 2020, p. 15). It is also being used to remove language barriers among the country's minority languages (iFLYTEK, 2020, p. 10). TalkMate, a Chinese tech company focused on language learning, partnered with UNESCO and has helped develop the upcoming World Atlas of Languages, which will be released in 2022 in connection with the 'International Decade of Indigenous Languages', as way to protect and promote linguistic diversity across the globe (UNESCO, 2018a).

Considering the current development and applications of this technology outside of tourism, this project will explore potential uses within rural ethnic tourism. Despite the prevalence of minority languages and cultures being used in, and impacted by, tourism development, there has been little discussion of how human language technology could help protect and promote these valuable resources that are being recognized as playing an important role in the larger goals of sustainability. This paper aims to fill this gap in the academic literature, and will do so through a qualitative study focused on rural tourism development among the ethnic minority communities within the Guangxi Zhuang Autonomous Region (hereafter referred to as Guangxi). This province, which is connected to the part of Southwest China where I once lived and frequently explored, was chosen because of its high degree of linguistic diversity and significant development of rural ethnic tourism. The main destination of Guilin was even mentioned in the most recent national policy priorities (Murphy, 2021), showing the significance of this region to larger goals focused on tourism and its sustainable development. Interviews with key informants involved in both tourism and linguistics will be used in this exploratory study to consider ways that human language technology could be used to contribute to sustainable development that protects and promotes these valuable linguistic resources within rural ethnic tourism.

Problem Formulation

This project will be guided by the following research question:

How can human language technology contribute to the sustainable development
of rural ethnic tourism in Guangxi, China?

Specifically, the project's problem formulation will be answered through the following sub-questions:

1. What constraining factors exist that could hinder the use of human language technology in rural ethnic tourism?

2. What enabling factors exist that could help the use of human language technology in rural ethnic tourism?

LITERATURE REVIEW

This part of the project reviews relevant literature as it relates to the research question being explored. Before considering how human language technology can be used in rural ethnic tourism, however, it is first important to consider more generally the phenomenon of minority languages in the context of rural ethnic tourism. This begins with explaining the larger context of rural tourism in China as a "guiding structure", and showing how rural ethnic tourism has been developed in, and is delimited by, it. This structure has implications for how the technology could be used with minority languages, and will help frame the potential constraints and enablers that exist. The concept of sustainability will be overlaid at each level to consider how it is understood within each specific context. Starting at the highest level and then narrowing down to the knowledge gap that exists, this review of literature will begin with an understanding of rural tourism in China, then rural ethnic tourism as a unique context within it, followed by the specific phenomenon of minority languages in rural ethnic tourism (see Diagram 1 below).
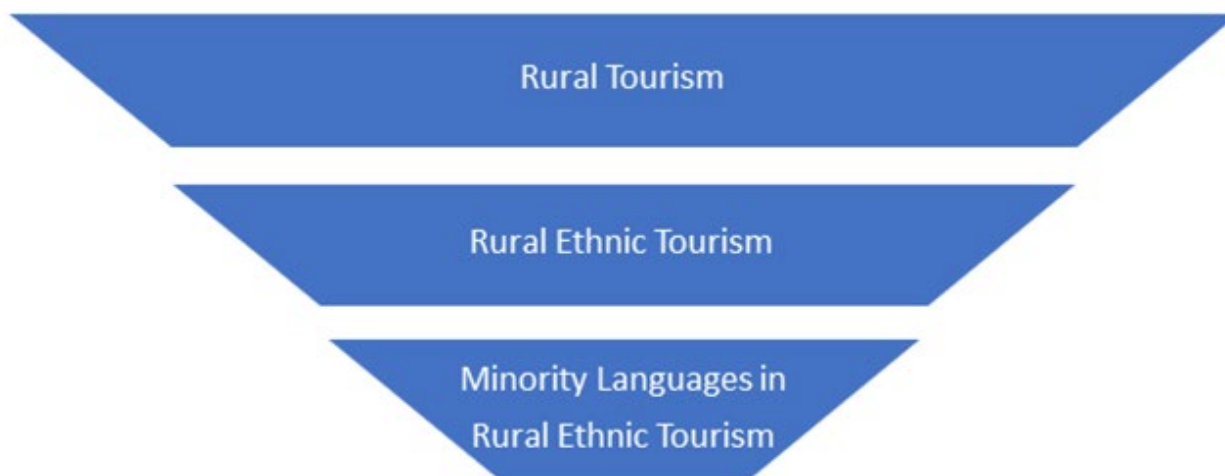
Diagram 1. Overview of the contexts described in the Literature Review

Rural Tourism in China

This section explains the project's understanding of rural tourism in China, and its importance as a larger delimiting structure that predetermines the possibilities of introducing human language technology into rural ethnic tourism. It is argued that an understanding of the larger goals that guide tourism development is important to determine how innovations like this technology can best fit within this context-specific structure. For several decades now tourism has been used by

the government as a part of a long-term national plan to bring economic and social benefits to rural communities (Gao et al., 2009; Xiao & Li, 2004; Xue & Kerstetter, 2019). More recently, a specific policy referred to as 'Rural Revitalization' has been the focus, which includes tourism as an important tool that can both balance the issues brought by urbanization and also improve rural communities (Qin & Leung, 2021). According to Su (2011), rural development has been a primary concern of the government because China is the biggest agrarian society in the world by population, and historically the majority of its people have lived in rural areas. These efforts have been quite effective in increasing the quality of life of rural residents, which is represented in the recent country-wide elimination of extreme poverty (Yew & Cadell, 2020).

Tourism has played a key part in this, and has been shown to contribute with supplementary income, new opportunities for employment, restoration of traditional properties, and the revitalization of aspects of local culture (Qin & Leung, 2021; Tu & Zhang, 2020). Its importance can be seen in the specific mention of rural tourism as a means of "enriching" the rural economy in the most recent Five-Year Plan, which are representations of national goals at the highest level and serve as "a blueprint for China's embarkation on the new journey of building a modernized socialist country" (Murphy, 2021, p. 1). Government policy in tourism has been described as a means to an end, that is, to achieve specific aspirations that are influenced by cultural values (Hall, 1994). In China, this is seen in the pursuit of the 'Chinese Dream', which has been interpreted as "creative transformation toward harmony of all things" and is what guides tourism policy (Weaver, Tang & Zhao, 2020, p. 4). Rural tourism's role in this goal of country-wide transformation therefore highlights the importance of its success and helps explain why it is guided by governance at the highest level (Qin, Wall & Liu, 2011; Su, 2011). Not only is this development meant to benefit rural communities at the local level, but it is also a direct reflection of the larger national agenda.

Sustainability + Rural Tourism in China

In recent years, the Chinese government has shifted its focus to sustainable development of rural tourism in order to address some of the impacts it has faced, especially related to those from urbanization and rapid development (Gao et al., 2009; Qin & Leung, 2021; Yang, Hung & Xiao, 2019; Xue & Kerstetter, 2019). This connects to the increased attention seen in the global

community, as evidenced by the 2019 UN World Tourism Organization (UNWTO)/Pacific Asia Tourism Association (PATA) forum I attended in Guilin, Guangxi that specifically focused on sustainable development and rural tourism (Xu & Xiao, 2020). Similarly, the theme for World Tourism Day 2020 was 'Tourism & Rural Development', where it was argued that sustainable development can "ensure the fair distribution of tourism's benefits, enhance job creation, protect natural resources and cultural heritage, promote social inclusion and empower local communities and traditionally disadvantaged groups, particularly women, youth and indigenous peoples" (UNWTO, 2020, p. 5). This understanding of sustainability extends from the principles described in the Brundtland Report (Brundtland, 1987) and the triple bottom-line approach suggested by Elkington (1994) that focuses on three dimensions or pillars to examine environmental impacts, economic impacts and social impacts.

While historically the government's main priority in tourism has been on economic benefits to further modernization, Xu & Sofield (2016) highlighted an ideological campaign beginning in 2005 that shifted the focus of the official agenda "to 'sustainable development' and 'social harmony' through its policy of Harmonious Development" (p. 1338). While making no mention of rural tourism, they found that in practice the term 'sustainable development' can be confusing because it was often used to refer to commercial viability that favored the economic dimension, especially at lower levels of government. This is similar to the findings of Chen, Huang and Bao (2016), who highlighted the different and sometimes conflicting 'logics' of the stakeholders and therefore argue for the importance of understanding the different "underlying political/social forces influencing sustainable tourism development in China" (p. 1668). They explained that, while for the most part, these logics "are enabling sustainable tourism development economically, due attention should be drawn upon the links between the logics and socially and environmentally sustainable tourism development in China" (Chen, Huang & Bao, 2016, p. 1668).

In their findings they found that local communities focus on the economic benefits of tourism in their quest for a better life, while the central government is interested in pursuing political legitimacy as the one who can provide that (Chen, Huang & Bao, 2016). Weaver, Tang and Zhao (2020) emphasized that considering the understanding of sustainable development of tourism

from the Chinese perspective can help explain how this focus on the economic pillar "may be regarded not necessarily as neglect of the other two TBL pillars, but recognition that the resultant eradication of widespread poverty can facilitate the pursuit of a happy and beautiful China once stomachs are filled" (p. 8). If tourism in rural areas is primarily intended to improve lives through economic development, it can be understood why the economic dimension is favored. As such, sustainability as it relates to rural tourism development should be understood from this context-specific perspective.

Rural Ethnic Tourism

A subset of rural tourism in China is ethnic tourism, which makes up a large part of the rural tourism in parts of the country that are home to its ethnic minorities (Sofield & Li, 2007; Yang & Wall, 2009). Li, Xie et al. (2021) explained how ethnic tourism often overlaps with, but should not be treated the same, as concepts such as indigenous tourism, heritage tourism, or village tourism because of its focus on cultural exoticism, especially of minority groups, and tourists experiencing this unique culture (p. 4). In this project the term *ethnic tourism* refers to tourism that focuses specifically on the 55 ethnic minority groups (少数民族 *shaoshu minzu*) that are recognized in China. As such, the terms 'ethnic', 'ethnic minority', and 'minority' will be used interchangeably in this project since it is limited to the specific context of China. In addition, it is informed by the understanding of ethnicity as defined by Yang and Wall (2014), who described it as "both a cultural heritage shared by a group and a form of social organization or relations, which changes over time according to political and socio-economic circumstances" (p. 6).

While language is often a part of ethnic identity construction, Gao (2017) showed how this is not always the case among some ethnic minority groups in Southwest China due to the existing social and economic conditions. So while there are various aspects of ethnic culture that are integrated into and developed for rural ethnic tourism, it should not be assumed to include the local minority languages, which will be discussed further below. Also, there are of course members of ethnic minorities and tourism activities based on them in urban areas, but this project's focus will be limited to ethnic tourism in rural communities. It will therefore use the

term *rural ethnic tourism* to represent this concept (see Diagram 2 below), which represents a unique context that will determine how human language technology might be used.

Diagram 2. Visualization of the concept of 'rural ethnic tourism'

Though conceptually in this project it is considered as a subset of rural tourism, rural ethnic tourism is guided by the national directives on tourism development. The connection to government plans is made by Li, Knight et al. (2020), who mentioned the important national-level policies of 'Targeted Poverty Alleviation Through Tourism' from 2013 and 'Rural Revitalization' from 2017, explaining that "ethnic tourism has become embedded into the national discourse of economic development and poverty alleviation" (p. 4). The reasoning for these policies and plans are best understood through an understanding of the ideologies of China's rurality.

Su (2011) explained that there are two seemingly contradictory layers, where the first "is a legendary or romanticized layer signifying an idyllic rural life and natural scenery" and the other "is an insulted or stigmatized layer associated with poverty, ignorance, insanitation, underdevelopment, backwardness…" (p. 1439). Similarly, Tu and Zhang (2020) made the connection between this understanding of rural areas and the ethnic communities who live there, explaining that the main reason that tourism is used as a tool for economic and social development in these areas is "because it makes full use of the conditions that make these minorities impoverished" (p. 2). Within rural ethnic tourism in China, the natural landscape and cultural differences of the ethnic groups, which have been seen as creating certain challenges to

modernization, are turned into opportunities for development that can meet the larger national goals (Xu & Sofield, 2016). As such, they represent important natural and cultural resources that should be protected to ensure the sustainable development of tourism in these rural communities.

Sustainability + Rural Ethnic Tourism

Rural ethnic tourism in China, however, presents unique challenges to the question of sustainable development. This project's focus on language will consider it as, among other things, an important part of culture. Discussions of sustainability often focus on the protection or preservation of cultural heritage, both tangible and intangible. Yang and Wall (2014) identified a paradox of rural ethnic tourism that exists because of the national-level focus on modernization, explaining that "making a livelihood for themselves and their families is a major concern for young minority people engaged in tourism and cultural preservation does not seem to be an important issue for them" (p. 207). This highlights what has been called the 'dilemma of development'. Simply put, tourism based on the ethnic culture is the means to a more modern life – but this modern lifestyle cannot be used as the basis for ethnic tourism. Similarly, Gao, Huang and Huang (2009) identified this paradox and warned against focusing only on the economic dimension, saying "the dilemma can be best expressed in a Chinese idiom: *to kill the hen for the egg*. While rurality is essential to developing rural tourism, all the development practices in China's rural tourism seem to eliminate rurality" (p. 448). This issue has caught the attention of those developing tourism, and can be seen in efforts to highlight the importance of cultural heritage (Qin & Leung, 2021). However, not all aspects of culture are valued the same, including minority languages, which highlights another issue connected to national goals.

While culture is often considered to be a part of the social dimension of sustainability, rural ethnic tourism provides an interesting example of why it should be treated separately. From their review of literature on cultural sustainability, Agyeiwaah, McKercher and Suntikul (2017) treated these as two separate dimensions, explaining that the social dimension is concerned with quality of life while the cultural dimension is concerned with the "maintenance of the integrity of the local community", which includes retention of local customs and language (p.

30). Within rural ethnic tourism, aspects of culture might actually conflict with understandings of social development. Yang and Wall (2014) explained how the pursuit of modernization has shaped the development of ethnic tourism and, specifically, aspects of ethnic culture:

> Ethnic culture is being utilized by the tourism industry as a resource for attracting tourists and investments, and for promoting cultural development and ethnic unity. However, although minorities are encouraged to preserve their culture and to maintain ethnic characteristics, not all aspects of ethnic culture are accepted and supported. (p. 247)

This shows that, in addition to using tourism to increase economic benefits, there is also a strong focus on a particular contextual understanding of the social dimension in rural ethnic tourism.

Specifically, this is understood through the concept of national unity, which is a core value of the government and a part of achieving the Chinese Dream (Murphy, 2021). This can lead to differing opinions because social sustainability is based on the values of the Han majority and understood pragmatically through the concept of maintaining harmony (Weaver, Tang & Zhao, 2020). Aspects of ethnic minority culture might differ from this interpretation, which could be seen as conflicting with this important national ideal. This means that those aspects that are aligned make positive contributions and help contribute to sustainability; those that do not, however, may be seen as hindering it.

This is expressed well in the understanding of Li and Huang (2004) as it relates to the Zhuang language, which is argued should have a certain relationship with Chinese that allows for the two languages to complement and not conflict with each other. They provided an example of how the cultural and social dimensions can be different, and should be kept in balance because "[n]egating Zhuang's progressive role in native cultural development is hostile to the ethnicity, while over-emphasizing the social role of the Zhuang language may degenerate into extreme ethnic nationalism" (Li & Huang, 2004, p. 254). This is the understanding of social development in the Chinese context which shows why it is important that tourism development, especially in rural areas, makes positive contributions (Tu & Zhang, 2020). From this understanding of sustainability, and specifically focusing on the social dimension, it can be seen how it should be

considered separately from the cultural dimension; understandings that conflate the two can overlook ways that they might actually conflict with each other.

In practice, rural ethnic tourism is interesting because it is the aspects of minority culture that differ from the majority Han culture that form the basis of the attraction, and it is argued should be further developed because of the interests of tourists (Wong, Lai & Tao, 2019; Li, Xie et al., 2021). While making no mention of language use as a component, Abrahams (2015) showed how tourism's contributions to ethnic group identity heightened tensions between stakeholders, "creating barriers of difference…rather than bridging them" (p. 41). This is an example of tourism development that might be seen as hindering the state's understanding and goals of social development. However, as a part of the national agenda of modernization, rural ethnic tourism should not only make positive economic contributions but also positive social contributions in order to maintain unity and fit within the higher-level goals. This leads to an environment where certain aspects of ethnic culture, specifically ethnic minority languages, seem to be ignored and even negatively affected. Sun, Wang and Ma (2018) argued that tourism development makes positive contributions by enhancing ethnic identity through the re-localization of certain aspects of ethnic culture, while at the same time it has accelerated the de-localization of the local language by greatly reducing its value in daily life. Interestingly, this presents an example of ethnic identity that is based on a perception of ethnic culture that does not need the local language; in other words, the language is an unwelcome guest in this understanding of what is to be included as ethnic culture in tourism development.

Minority Languages in Rural Ethnic Tourism

Most of the literature about rural ethnic tourism in Southwest China makes no specific mention of language as a component of ethnic culture (Abrahams, 2015; Fan et al. , 2019; Li, Xie et al., 2021; Sofield & Li, 2007; Tu & Zhang, 2020). For example, Wu et al. (2020) explained the importance of ethnic culture as both a product and a context for visitors to achieve their desired goals of happiness and enrichment, but make no mention of language. Only a few studies have focused specifically on the relationship between minority languages and the development of rural ethnic tourism in Southwest China. Their insights, however, are helpful and will be used to inform this project's understanding of the phenomenon.

The three studies that will be used are: Grey (2021) who researched the Standard Zhuang language in Guangxi; Li, Xu and Chen (2020) who researched the Hani language in Yunnan; and Shan, Adamson and Liu (2019) who researched the Miao language in Guizhou. It must be noted that these are different languages, which exhibit varying degrees of dialectical differences (Gao, 2017). For example, Zhuang has been described as more like an administrative term, which encompasses a number of linguistic varieties that have been reported to use "over 60 distinct tonal systems" (Luo, 2008, p. 318). So there is indeed much diversity that exists within them, but this is not the focus of this project. The point is that these languages share strong similarities as minority languages that exist under the same majority-defined sociopolitical structure, and therefore may not be afforded the same advantageous environments for thriving. In terms of geography, they all benefit from existing within a part of the country where highlighting ethnic diversity in tourism is more accepted. All three of these case studies show that both opportunities and challenges exist within the context of rural ethnic tourism, but they paint a picture where the former are fewer than the latter.

As for the opportunities, all three consider the use of the written form of the minority language in tourism. Two of the studies show that tourists are interested in its use on signs and product labels, which is the case whether they understand it or not because the written language adds to the their experience of the local culture (Li, Xu & Chen, 2020; Shan, Adamson & Liu, 2019). Li, Xu and Chen (2020) were optimistic about the use of the minority language, but only in specific submarkets like in tourism or on culturally-specific local products. It was argued that the local language cannot compete in the "normal market" because of power differences, policies and negative attitudes, but could be used in these specific submarkets. Similarly, Shan, Adamson and Liu (2019) argued that the language contains significant "invisible cultural value", and should be used to develop cultural initiatives like "recordings of ethnic songs and dances with multilingual captions, and designating sites for tourists to study the minority language, folklore, arts, and crafts, all of which would contribute to the distinctive features and authenticity of the village" (p. 65). This would obviously make use of the oral form and not just the written, which was suggested as worth exploring as well by Li, Xu and Chen (2020). Finally, all three case studies

encourage the use of the local languages in education, which can contribute to positive attitudes about the language within the language communities (Bradley, 2013).

As for the challenges, all three explain that the 'linguistic landscape' is dominated by Chinese and English. On signs, advertising and other media the minority languages are either invisible or overshadowed by these larger languages. The minority languages are not used because they are not perceived as having much cultural capital by both tourism officials and the members of the ethnic communities themselves. It is argued that this capital is, or at least could be, recognized and appreciated by tourists if the languages were not seen as unmarketable (i.e. having little or no economic capital) by the stakeholders who could actually make it visible (Li, Xu, & Chen, 2020). However, the current situation contributes to a cycle where the languages are not seen physically, resulting in them not being seen symbolically as having value in commercial markets like tourism. Even more, all three case studies show that members of the ethnic group might not identify with the written form because it is thought of as an oral language. Grey (2021) showed that in some cases, like with Standard Zhuang, the members of the ethnic communities may not even recognize it if it was used in print.

Another significant challenge that exists relates to the vitality of the languages and impacts from tourism itself. Both Li, Xu and Chen (2020) and Shan, Adamson and Liu (2019) showed that the speakers are becoming less interested in maintaining their languages because of the economic opportunities that come from tourism, which has also been noted in similar contexts of rural ethnic tourism in Southwest China (Sun, Wang & Ma, 2018; Yang & Wall, 2014). In the study by Shan, Adamson and Liu (2019), they described the paradox as follows:

> [Although] it is the first language and main carrier of cultural heritage that forms the basis for the current economic prosperity of the village, Miao actually has low social status, and its associated linguistic and cultural capital are not developed. Ironically, it is the same opportunity for economic prosperity through tourism that induces the local residents to cater to the language needs of other groups. (p. 64)

Members of the ethnic community having positive attitudes about their language has been shown to be key to linguistic vitality and resilience, but also significantly influenced by majority attitudes (Bradley, 2019). The communities in these studies do not exhibit very positive attitudes

about their languages. This can be exacerbated by other stakeholders like government officials and shopkeepers sharing these negative attitudes because of the utility attached to Chinese and English (Shan, Adamson & Liu, 2019). The language situation described in each of these studies is complicated, but the point is that tourism will feel the impact of the loss of the language. Specifically, the lack of positive attitudes is threatening the vitality of the minority languages, which are an important component of the culture that could be used in rural ethnic tourism.

In a case study that focused specifically on rural ethnic tourism among Zhuang communities in Guangxi, Wong, Lai and Tao (2019) showed that 'ethnic interactions', which can involve the local language, should be developed more because tourists associate them with memorable experiences. This is similar to the findings of Li, Xie et al. (2021), where emphasis was placed on strengthening "the role of language" and "the power of authentic local voices" so that tourists have more opportunities to experience and participate in the local life of rural ethnic tourism villages (p. 4). These studies show the connection between language and culture, and identify the potential to incorporate the minority languages into tourism experiences and products, which fits with the suggestions of both Li, Xu and Chen (2020) and Shan, Adamson and Liu (2019). However, the languages might not be able to be incorporated into rural ethnic tourism because, as it appears from the three studies described above, the larger systems within which they exist may actually lead to them disappearing. Even more, the culture heritage of which they are the main carriers would also be affected. The potential lack of languages could therefore be conceived as threatening the sustainable development of rural ethnic tourism.

Sustainability + Minority Languages in (Rural Ethnic) Tourism

In recent years, there has been a recognition of the importance of minority, or indigenous, languages to the sustainable development of tourism (Lonardi, 2022; Lonardi, Martini & Hull, 2020). This project will follow the understanding of Whitney-Squire, Wright and Alsop (2018), who argued for a paradigm shift in tourism that can be summarized as follows: languages are not reliant on culture, culture is reliant on language. They argue that it is common to underestimate the significance of languages in sustaining cultural identity and heritage, so taking this perspective is important to see how "sustaining culture is fundamentally linked to language as the relationship that connects and binds them fully to place and ensures the continuity of

cultural practice" (Whitney-Squire, Wright & Alsop, 2018, p. 1910). This means that if the language fades away, so does the culture. Therefore, it follows that any tourism development that depends on this culture will be impacted by language loss, which includes rural ethnic tourism.

Furthermore, the loss of linguistic resources will also impact sustainable development in general. In the literature outside of tourism, linguists have highlighted the unique value of languages and their connection to culture as reasons for considering them as key components of sustainable development (Idiazabal & Pérez-Caurel, 2019). Linguistic diversity is therefore an important part of sustainability, which is the basis for the argument that languages are deserving of attention in the Sustainable Development Goals (Ameka & Hill, 2022). Romaine (2008) argued for thinking about languages "in the same way as we do other natural resources that need careful planning: they are vital parts of complex ecologies that must be supported if global diversity is to be sustained" (p. 19). In this understanding, languages big and small are given a prominent role and should be protected as valuable resources for the sake of future generations. In addition to protection, there are growing efforts outside of linguistics that focus on promotion, with the goal of showing others the value of these languages so that they can be maintained in the face of pressures from globalization. This understanding of their importance has extended even to the United Nations, as can be seen in the ongoing Decade of Indigenous Languages that was just launched this year (UNESCO, 2022a).

In the linguistic literature, the goal of sustaining languages is described through the concept of vitality or maintenance, and focuses on the question of "how communities around the world can sustain continued use of their languages in the future in the face of the spread of global languages such as English" (Romaine, 2008, p. 8). This aligns with the understanding of cultural sustainability in tourism, where the goal is to protect cultural heritage as a valuable resource (Agyeiwaah, McKercher & Suntikul, 2017). The linguistic perspective, though using different terms, is therefore aligned with that of tourism. So even though Grey (2019) and Grey (2021) did not use the terminology of sustainability, it was shown that the system within which Zhuang exists, both in and outside tourism, is contributing to it being devalued and is limiting its domains of use. Shan, Adamson and Liu (2019) made the connection to sustainability by arguing that

threats to the local language "considerably hinders not only its maintenance but also the sustainable development of the ethnic tourism village" (p. 1). Similarly, Li, Xu and Chen (2020) argued that sustainability requires a "better ecological balance" be found between "economic progress and the maintenance and development of linguistic resources" (p. 16). These mentions of sustainability are encouraging, but point to the languages existing in an ecology that is unbalanced and does not value them as resources to be protected for future generations.

Within the tourism literature, the positive relationship between sustainable development and minority languages has primarily been presented in the context of developed countries (Lonardi, 2022; Lonardi, Martini & Hull, 2020). This points to a gap in knowledge about the role that minority languages play in the sustainable development of tourism in developing countries, and specifically their rural areas. China as a whole is not a developing nation, but some rural communities are still catching up to the development in the rest of the country. While tourism development does not have to have such a negative relationship with minority languages, and the languages do not have to be seen as hindering sustainable development, this appears to be the case in Southwest China based on the aforementioned studies. Again, this is not only because of impacts from tourism itself, but also because the languages exist within a larger structure defined by specific goals that value them differently because of how they are seen as contributing to sustainable development. Zhou (2012) explained how the ideology that favors one national language in pursuit of the Chinese Dream has led to minority languages playing "a much less prominent role", even though they have certain constitutional rights (p. 27). As noted by Mackerras (2016), "as China modernizes more and more successfully, Han language and culture will dominate more and more. Some ethnic cultures will survive and even strengthen, but most will weaken to the point where they no longer matter" (p. 239). What this shows is the need to consider how minority languages (could) fit into the sustainable development of rural ethnic tourism in China.

Interestingly, an important conference was held in China that focused specifically on the connection between linguistic diversity and sustainable development, and included minority languages as valuable resources to be protected and promoted (UNESCO, 2018a). This conference was held in partnership with UNESCO, and was the precursor to the 2019 Year of

Indigenous Languages. The proceedings from this conference, referred to as the *Yuelu Proclamation*, concluded with the following:

1. The protection and promotion of linguistic diversity is crucial to the achievement of the Sustainable Development Goals (SDGs).
2. The protection and promotion of linguistic diversity requires the proactive, accountable and measurable participation of all sectors of the international community.
3. It is essential to combine the protection and promotion of linguistic diversity with the development of science and technology.

More specifically, recommendations connected to the third conclusion acknowledge language as "an invaluable, non-renewable socio-cultural resource" and therefore suggest that stakeholders should use different technologies to "promote the creative transformation, innovative development and effective dissemination of language culture and seek new ways for the protection and inheritance of endangered, minority, indigenous languages, as well as non-official languages and dialects" (UNESCO, 2019, p. 7). From this conference, it shows that the government is acknowledging the significance of linguistic diversity to sustainability, and sees technology as an important tool to protect and promote these valuable resources. Though this was not connected to tourism, it is the only resource found that connects minority languages as important to the larger goals of sustainability. Based on this understanding, then, it is suggested that the sustainable development of rural ethnic tourism is dependent on the protection and promotion of minority languages. Furthermore, in light of the relationship that was shown to exist between the two, the conclusions from this conference provide the justification for considering how human language technology could contribute to highlighting the value of these languages and their importance to sustainability.

Human Language Technology

This project will use a broad understanding of human language technology. Jurafsky and Martin (2009) acknowledge a "vibrant interdisciplinary field with many names corresponding to its many facets", but clarify that the overall goal is "to get computers to perform useful tasks involving human language" (p. 1). This is often associated with machine translation, but can include a variety of applications that could not only remove language barriers but also promote and preserve language as a valuable resource. It is important, however, to acknowledge that the use

of human language technology is not free from challenges because most languages in the world are not actually benefitting from its use. Brinklow (2021) described a "technology ecosystem that favours a handful of the world's most common languages", but is also optimistic in showing how indigenous communities "are pushing back by engaging language technologies to proactively support their work of language maintenance and revitalization" (p. 1). So even though minority languages could benefit from its capabilities, they face a number of challenges. From a technical perspective, this is related to the technology requiring large amounts of data that often doesn't exist for these low-resource languages.

As explained by Ansari & Petras (2018), "even with the power and potential of this technology, hundreds of millions of the world's poorest, least educated, most vulnerable populations are being left behind" (p. 2). As an example of a positive use of human language technology, they highlighted the Gamayun Project run by Translators Without Borders, which is being used to help minority language communities through translation so they can gain access to important legal or health care information. This is an example of using the technology with low-resource languages to remove barriers in communication. An example of human language technology being used to protect and promote languages is Wikitongues, who has collaborated with UNESCO on the upcoming World Atlas of Languages. The founder of this initiative acknowledged that technology can hurt minority languages, but also believes that it should be seen as something that can help them, explaining how:

> Young language activists are creating new generations of language learners through mobile apps, in the form of games and dictionaries. Social media has provided the opportunity for language meetups… By keeping languages woven into the fabric of daily life, we are able to ensure that younger users will maintain them in the generations to come. (Moseley & Tcherneshoff, 2019, pp. 68-69)

These examples show innovative uses of human language technology to benefit minority language communities. While the literature is lacking examples that focus on the context of China, a relevant study highlighted how language revitalization in a rural community is being aided by the use of social media. Lhawa (2019) did not make use of human language technology for translation, but showed how the increased presence on WeChat lead to more positive

attitudes among members of her language community. At the same time, challenges were identified that should be taken into consideration:

> Indigenous communities are naturally skeptical of how technology can aid in language and culture revitalization. Technology in language and cultural revitalization, therefore, has been somewhat under-utilized. Technology is by no means the most important channel to maintain a language, but it is an effective mode to communicate and interact using the language. The emerging use of social media such as WeChat provides a platform for language use in the contemporary context for unrecognized and under-resourced languages. (Lhawa, 2019, p. 579)

From this example, it can be seen how connecting human language technology with minority language communities in China could present unique challenges. Specifically, the delimiting structure within which rural ethnic tourism exists could affect how it is received. So even though the technology has been shown to have great potential to benefit minority languages, it should not be assumed that it will be readily accepted. What is helpful then is a way of conceptualizing the existing relationship between these languages and rural ethnic tourism, and how they could be seen as valuable resources to be protected as a part of sustainable development. This leads to the theoretical perspective that will be employed in this project.

THEORY

This project will be guided by a sociolinguistic understanding of language, which means that it "is not merely content; rather, it is something that we do, and it affects how we act and interact as social beings in the world" (Mallinson, 2015). This means that, within rural ethnic tourism, minority languages are not just forms of communication or a type of cultural heritage. In addition, they can be understood as a type of 'capital' that speakers use to negotiate identity and roles within culture and society (Bourdieu, 1986). More specifically, this project is informed by the theoretical contributions of Bourdieu (1991) and his concept of linguistic capital. Explaining his perspective and the concept of the 'linguistic marketplace', Thompson (1991) described it as follows:

> Linguistic utterances or expressions are always produced in a particular contexts or markets, and the properties of these markets endow linguistic products with a certain 'value'. On a given linguistic market, some products are valued more highly than others… (p.18)

Taking this perspective, this project will consider minority languages not only as communicative tools and cultural treasures, but also as linguistic capital. They therefore may be valued differently than other languages like Mandarin or English within the symbolic linguistic marketplace. This multidimensional perspective of language provides a way of understanding how members of an ethnic minority community may choose not to identify with their language. It also provides a way of understanding language as existing within a larger ecological system that influences how community members may choose (not) to use it in different ways.

The conceptualization of language as a form of capital will be used in this project to explore the phenomenon of minority languages within rural ethnic tourism. Using this theoretical perspective can help make some sense of what is happening with Zhuang and the other languages in Guangxi. Focusing on the standard variety, Grey (2019) used this perspective to conclude that the language policies and 'sociolinguistic economy' within which it exists "are producing a low social value for Zhuang… These factors will not necessarily prevent Zhuang being spoken in the future, but they will reduce its domains of use and its social, educational and market values" (p. 491). Similarly, Grey (2022) looked at Standard Zhuang as a linguistic

resource, but showed that is "out of place in commerce" because it "has not found many uses in commercial practices and commercial discourses – even as a commodified, written icon – and because symbolically powerful, national and global discourses normatively associate Putonghua and English with commerce" (p. 179). This work was focused on an urban setting, but it shows how languages like Zhuang exist within ecologies that lead to them being devalued when compared to other languages that are seen as having more linguistic capital.

While not focused on Zhuang, Li, Xu and Chen (2020) applied the Bourdieusian perspective within rural ethnic tourism and showed how the linguistic capital of minority languages is undervalued because speakers in rural communities "lack awareness of the need for language maintenance, especially in the economic market, where they are not only in need of outside assistance, but also unaware of the possibility and importance of the effects of multi-linguistic resources on economic capital" (p. 5). They argued that examples from developed countries cannot be used to explain the phenomenon of minority languages in rural ethnic tourism because of its unique context, and instead suggested that minority languages have potential to be converted into economic capital which can help improve how they are seen and valued.

Their findings showed that "outsiders favour the utilisation of multilingual resources in the submarkets of local tourism and sales of regionally specific products", which suggests that there is room for minority languages to be used as linguistic resources within submarkets like rural ethnic tourism (Li, Xu & Chen, 2020, p. 1). This project will take a similar approach to its understanding of minority languages in Guangxi. It has already been shown how the ecology within which languages like these exist is leading to them being devalued as tools for communication, and as a part of culture with which to identify. However, it is possible that human language technology could help by considering them as valuable resources that can enhance interactions and lead to richer experiences within the sustainable development of rural ethnic tourism.

CONCEPTUAL FRAMEWORK

In order to explore how human language technology can be used within rural ethnic tourism, it is helpful to frame the project's understanding of its key concepts. This includes rural ethnic tourism as a unique context, the different ways minority languages can be viewed (and therefore valued), and human language technology as tool to incorporate the languages into rural ethnic tourism. What follows is a description of the relevant ideas and concepts that shape it, as well as a visual representation incorporating its key elements (see Diagram 3 below).

This project's representation of the Chinese understanding of sustainable tourism development will adapted from the work of Weaver, Tang and Zhao (2020), who used Chinese cultural values to interpret the three dimensions of sustainability as "better life of people", "poverty alleviation" and "ecological civilization". This understanding is based on a systems approach to society, and seeks harmony as the key component. Therefore, it may differ from the Western understanding of sustainability because of how harmony is defined in the Chinese context. As argued by Xu, Cui and Sofield (2014), this focus on harmony means taking "a pragmatic approach rather than a 'romantic' fuzziness to implementation" (p. 1145). In addition, it is important to note that the pillar often referred to as 'socio-cultural' is treated as two separate dimensions. This is because of the aforementioned recognition of conflicts between the two that can be overlooked when they are conflated. Put simply, some aspects of minority culture may be valued differently according to the contributions they or may not make to the social dimension.

It should also be noted that cultural heritage is understood differently in China, and is described here as 'dynamic heritage'. As shown by Sofield et al. (2017), the inevitability of change is embraced in the Chinese perspective, which leads to a philosophy for built heritage that replaces the old with the new but can be misunderstood from the Western perspective. This connects with the understanding of UNESCO (2022b) toward intangible cultural heritage, also called living heritage, which is seen as being constantly recreated and continuously evolving as it is transmitted to new generations. This project's understanding of the cultural dimension of sustainability therefore acknowledges that language, and culture, are dynamic. Considering the Chinese perspective, it has been well summarized as follows:

Tradition has no value unless it plays a positive role in modern social life. So the safeguarding of the intangible cultural heritage is not for lamenting over the past, but rather for creating a better life and a bright future for the public, and for promoting the development of the cultural diversity. (Liu, 2012)

As for the concept of minority languages, the framework represents them in the different ways that they could be understood, affecting how they may fit within rural ethnic tourism. Human language technology is then conceived of as an intervention to incorporate the language into rural ethnic tourism.

Rural ethnic tourism

- Environmental: ecological civilization
- Economic: poverty alleviation
- Social: better life/happiness
- Cultural: dynamic heritage

Minority language

- Tool for communication
- Cultural heritage
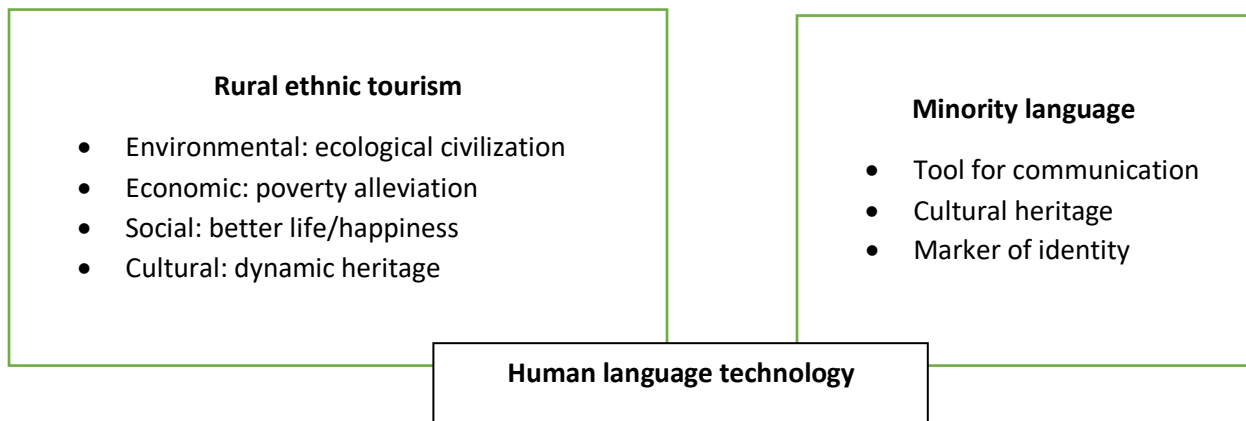- Marker of identity

Human language technology

Diagram 3. Representation of key concepts

METHODOLOGY

This section will describe the methodological considerations of the project. Since human language technology was used in several ways in the course of the project, I will include some personal reflections to provide a better understanding of what it can and cannot do in real practice.

Research Approach

This project employs a qualitative research approach because of its acknowledgement of tourism as a socio-cultural phenomenon (Ren, 2014). In attempting to explore a relatively understudied area of tourism research, it is guided by the paradigm of interpretivism and its corresponding ontological and epistemological assumptions. As explained by Lewis-Beck, Bryman and Liao (2004), the "study of social phenomena requires an understanding of the social worlds that people inhabit, which they have already interpreted by the meanings they produce and reproduce as a necessary part of their everyday activities together" (p. 1). Using this approach allows for the exploration of complex phenomena like minority language use and sustainability, which are socially constructed and subject to differing interpretations even within tourism literature (Pernecky, 2012). Since the interpretivist approach seeks knowledge in relation to people's understandings and interpretations of their social worlds, it is therefore relevant in considering these topics that are nuanced and shaped by particular socio-cultural contexts. As such, the project adopts an exploratory design in order to fulfill the goal of providing a rich and in-depth understanding of how human language technology could be incorporated into rural ethnic tourism.

Language as a part of culture can be considered socially constructed phenomenon, and is therefore valued for different reasons by the different actors involved in tourism development. Also, these actors have different understandings of what rural ethnic tourism development is and should be used for, as well as what sustainability means in that context. For example, one stakeholder's perception of sustainability might conflict with that of another stakeholder. A qualitative approach can help provide a deeper understanding of what these concepts mean to the various actors, as well as what importance they give to minority languages, rural tourism development, and sustainability as it relates this specific context. By considering these issues

from different perspectives, the opportunities and challenges that might exist can be identified in relation to using human language technology to contribute to the sustainable development of rural ethnic tourism.

Study Population

In order to provide a "thick description" of the relevant phenomena, it was necessary to acquire knowledge based on the issues described in the Literature Review (Tracy, 2013). This was done through qualitative data that came from a variety of professionals and practitioners in order to learn from individuals who are experts in their respective fields (Onwuegbuzie & Leech, 2007). Selection was based on their expertise in either tourism or linguistics, and included empirical data from both primary and secondary sources. This included both academics and tourism consultants familiar with issues related either to rural ethnic tourism, language vitality and preservation, or the incorporation of technological innovation into either field.

A filter based on geography was used to group and delimit relevant sources of data, which was done in order to consider insights from practitioners who are familiar with issues related to either tourism development or the diversity of languages and cultures in Southwestern China. In addition, the project's focus on innovation and exploration of previously understudied areas of research led the researcher to limit the scope of in-country informants to academics and private businesses. Public officials within tourism were not included as primary sources for direct engagement because of the insights provided through the secondary data. Cultural and political considerations were used to determine that policies and publications made available would suffice in this regard. In addition, while it would have been valuable to communicate with rural community members in order to incorporate their insights and perspectives, this was not possible due to reasons which are described below.

Informants

In line with the methodological considerations above, it was deemed important to incorporate diverse perspectives in order to explore a variety of "individual experiences in rich detail, situated in their tourism contexts" (Buda, Martini & Garcia, 2017, p. 1). Therefore, a variety of different practitioners in both tourism and linguistics were used as the primary sources of data.

Purposive sampling was used to identify key informants who could contribute their insights to the project. This lead to the researcher sending nearly 50 different requests-for-help in English, and some in Mandarin, to various practitioners. This was done through either email or LinkedIn based on the contact information that was obtained online. For Chinese contacts, their name in Chinese characters was used in the greeting of the initial message or email. A handful of practitioners identified are ethnic minority members, so a greeting was attempted in their language as a way to be consistent with the project's understanding of language and identity. For example, a greeting in Standard Zhuang that was used was 'mwng ndeiz', which was done in line with the project's understanding of language as more than just a tool for communication.

The option was given to participate in a semi-structured interview online or to respond to a list of open-ended questions as a way to respect cultural differences and to try and ensure a higher likelihood of willingness to participate. From all of the practitioners contacted, only 20 responded to the initial request. Among this group, some were either unable or unwilling to participate, but a few provided the contact information of colleagues of theirs who could help. Requests-for-help were partially informed by the grey literature that was used for secondary data. This meant that, even if a particular practitioner did not respond or participate, some form of their insights could be incorporated. Of course this is not comparable to engaging with them directly, but it did help contribute to the broader picture of perspectives that was desired for this project.

The final list of participants includes the following (see Table 1 below): a professor of tourism from Guangxi University of Tourism who is ethnically Zhuang, and works with international organizations on rural tourism development; a professor of tourism with a specialization in ethnic tourism and cultural sustainability from Guangxi University of Technology; a business professional who serves as the Chief Marketing Officer for Destination Mekong, an international DMO focused on public-private partnerships in and around Guangxi; a professor of linguistics who worked on the UNESCO Atlas of the World's Languages in Danger and is consulting on the upcoming UNESCO World Atlas of Languages; a professor of language and culture from Guangdong University of Foreign Studies who has studied the linguistic landscape in Guangxi, and collaborates with sustainable tourism practitioners in the region; a student of linguistics

from rural China whose research project in the United States explored the use of social media for minority language revitalization.

Table 1. Key Informants for Primary Data

	Background	Relevance
Informant 1	Ethnic Zhuang, university professor of tourism & consultant for rural tourism development in Guangxi	tourism
Informant 2	University professor of tourism who researched ethnic minorities & cultural sustainability in Guangxi	tourism
Informant 3	International tourism consultant & affiliate member of UNWTO	tourism & technology
Informant 4	University professor and UNESCO consultant on language vitality and protection of endangered languages	linguistics
Informant 5	University professor of linguistics who researched linguistic landscape in Guangxi in relation to tourism	linguistics
Informant 6	Student of linguistics who researched use of social media for minority language revitalization in rural communities	linguistics & technology

It should be noted that a number of the key informants hold positions across different disciplines. For example, Informant 4 is a professor of language and culture who collaborates with national sustainable tourism development practitioners in Guangxi, and Informant 3 is business professional who also serves on the UN World Tourism Organization (UNWTO) working group for the implementation of the Sustainable Development Goals. Not only does this highlight the interdisciplinary and cross-cultural nature of tourism, but it also helps provide a more nuanced picture of the overlapping themes within this project. Instead of trying to silo their roles and responsibilities into neat categories, this more holistic perspective fits within the scope of qualitative research that can "accommodate for nonquantifiable or noncumulative ways of enquiring into, understanding, and representing tourism" (Ren, 2014, p. 2).

For the secondary data, grey literature was used as a way to represent the perspectives and values of key practitioners in both human language technology and ethnic tourism. According to Byrne (2017), grey literature is relevant for use "as the basis of empirical findings" and refers to "documentary materials which lie somewhere between traditional, academically produced

secondary literature and 'raw' primary sources. Typically, it is the product of research by an organization, often one within the realm of governance" (p. 1). This helped supplement the primary data, and provided some information from practitioners who either did not respond or did not end up participating in an interview. Having both sets, therefore, contributed to the richness of perspectives that was desired. While more could have been collected, a balance was found thanks to the practical implications of the project. As explained by Tracy (2013), too little would "result in shallow and stale contributions" but too much would "result in a paralyzing amount of data" (p. 138). Since I was working alone but also wanted to provide a deeper understanding of the area of focus, these limitations were welcomed and necessary to determining what was feasible within the time limits of the project writing.

Data Collection Methods

The primary data was collected using two methods. The first was through semi-structured interviews, where "respondents are allowed space to tell their stories, to detail on their experiences while the researcher cautiously and swiftly directs the discussion toward the project's research questions" (Buda, Martini & Garcia, 2017, p. 2). All of the interviews were conducted online using Microsoft Teams, with three done in English and one in Mandarin at the request of the participant.

An interesting advantage of using Teams is that it can provide automatic transcription of the speakers' dialogue, using speech-to-text technology, in a variety of languages. Since I was working independently, this saved an immense amount of time, especially for the interview in Mandarin. I am not a native speaker of Mandarin but, thanks to this transcription technology, I was able to go back and catch things that were missed during the actual dialogue with the informant. However, one limitation of this technology is that it did not recognize certain words, or had a hard time if the speakers code switched (i.e. inserted words from another language). For example, the transcription for the English interviews failed to recognize words like 'Zhuang', or place names like 'Guangxi'.

Another form of human language technology that greatly benefited me during this stage of the project was machine translation. Specifically, I used Google Translate to convert the transcription

of the interview done in Mandarin from Chinese characters into English. While this could have been done manually, it would have required an incredible amount of time going through the recording because of my limited working proficiency in the language. The machine translation technology is not completely accurate, but it provided a very sizeable "head start" and allowed me to then manually review the transcript for accuracy based on what was machine translated. I identified a number of errors, mainly in long stretches of text, which showed another limitation with the technology.

The second method for collecting primary data was through email interviews, which was the preferred method for two of the participants. As noted by Martin and Buda (2019), email interviews allow the interviewee to reflect and organize their narrative and may feel more comfortable answering privately. Another reason is practical, since Informant 6 was located in a rural community at the time and did not have strong internet connection. With both of the participants, the researcher sent follow-up emails to ask for clarification on their responses. While this is not as in-depth as an online interview due to lack of body language and contextual information, it contributed to the project's focus on a diversity of perspectives from individuals who otherwise may not have been able to participate (Buda, Martini & Garcia, 2017).

The interview guides used in the interviews were tailored to the areas of expertise of each of the participants. For example, informants with a background in tourism were provided with more questions related to topics like rural tourism and ethnic minority culture, while informants with a background in linguistics were provided with more questions related to topics like language vitality and protection of linguistic resources. In this way, interacting with the questions allowed for the respondents to share their understandings and provide insights centered around these key concepts as it related to their professional experience. All informants were asked about the relevance of sustainability in order to better understand how it might be perceived differently as a socially constructed concept.

Qualitative Analysis

Through the collection and analysis of qualitative data from the key informants and the grey literature, this project attempts to explore "the meaning individuals ascribe to their experiences,

through close interactions, rich conversations, and multifaceted interpretations" (Billups, 2021, p. 2). In order to do this in a way that is consistent with the research design, thematic analysis was incorporated as the method to qualitatively analyze the primary and secondary data that were collected. As explained by Buda, Martini and Garcia (2017), this follows the three stages of: familiarization; coding, conceptualization and ordering; and enfolding of literature.

In the first stage of analysis, the data were engaged through formatting and repeated readings of informants' responses in the transcripts. Even though human language technology was used to transcribe the online interviews, I still had to spend a good deal of time "cleaning up" the machine transcribed documents. For example, the technology had a difficult time when speakers talked over each other, or when a speaker diverged from a topic but then returned to the point being made. Since the program requires you to pick the language of transcription, it often mis-transcribed words and phrases that it did not recognize as belonging to that language. While this can be seen as a limitation of the technology, it provided me with ample opportunity to become familiar with the data through the process of correcting mistranslations and making the transcription more accurately represent natural speech.

In the second stage of analysis, the data were divided into concepts and categories based on keywords that were identified, which allowed me to "gain a comprehensive understanding of the empirical material and identify topics and themes that are emerging" (Buda, Martini & Garcia, 2017, p. 4). This was done using the theoretical framework to consider the different ways that minority languages are valued and how they are understood as fitting within rural ethnic tourism. So while this project is about uses of human language technology, it is tied directly to the different perspectives that stakeholders have about the minority languages. Finally, the two sub-questions of the project were used to sort the relevant data into either constraining or enabling factors, which led to the realization that the issues are interrelated and should not be thought of as discrete categories that exist independently of each other.

In the third stage of analysis, the literature was used to make connections between the issues identified there and those that were identified in the data. In this way, similarities and differences were highlighted between the two. This was primarily done by comparing the

findings in the data to the unique context of rural ethnic tourism that was previously described as a way to understand the larger national goals that influence how human language technology could be used. Doing so revealed different understandings of sustainability that helped contribute to the diverse perspectives that were desired. At the same time, it also led to the determination that the constrains and enablers should not be seen as inherently positive or negative, and that answering the primary research question would best be done in a way that allows for these different perspectives.

Ethical Considerations

In order to respect and ensure their privacy, all informants were thoroughly informed of the purpose of the project and voluntarily agreed to participate by sharing their insights and experiences. Their names were omitted from the project because some of the participants preferred to remain anonymous. Discussions of minority languages and ethnic identity require a certain degree of tact. So in order to respect the wishes of the participants, the researcher made sure to limit the amount of personal information and only provided what was necessary to explaining why they were included in this project.

Limitations

An epistemological consideration of qualitative research is that "a researcher's background, values, ideologies, feelings, and emotions influence a project" (Buda, Martini & Garcia, 2017, p. 1). While this provided motivation and a certain degree of familiarity based on my personal interests and experiences traveling in Southwest China, it also influenced the entire project from the design to the findings that will be discussed later. As such, what is presented here could be seen from other perspectives that may differ to varying degrees. The specific focus of this study also adds to its subjectivity, and means the findings may not be relevant in other contexts.

Another limitation is that gaining access to key informants, who are busy with their own professional careers, was challenging. In requesting their help, it was important to frame the project in a way that spoke to their interests and areas of expertise. However, as an exploratory study trying to connect human language technology to rural ethnic tourism, its relevance to their professional experience may not have been communicated well. Also, the topic of minority

languages may have been one that some practitioners did not feel comfortable speaking about, likely limiting the number of informants. There were practical challenges in connecting with key stakeholders from a distance but, more importantly, the researcher did not have close connections with them and …

Finally, it was deemed impractical to connect with minority language communities in Southwest China. Not only were there practical challenges because of physical distance, the lack of personal connections to them was a limitation. This cultural distance could have created challenges in trying to learn from their experiences because they may not have felt comfortable responding to the interview questions that were deemed relevant. So while there was in interest in including this group, the project had to rely on the insights from practitioners who are actively engaged with them.

ANALYSIS

This part of the project will present the findings from the data, and analyze them using the theoretical perspective based on Bourdieu (1991) to identify themes that arose as they relate to the two research sub questions. The first relates to constraining factors to using human language technology, while the second is concerned with enabling factors. Using this sociolinguistic theory as a lens to interpret the data provides a way to understand how minority languages may be valued in different ways, which will either help or hinder the use of human language technology in rural ethnic tourism. At the same time, there are interpretations that do not line up with the theory, so the intention is that it is used generally to guide the analysis while still being open to different understandings. Also, it should be noted that these themes are all interrelated to differing degrees, which means it was not possible to completely isolate them from each other. They should therefore be thought of as overlapping and interconnected, as can be seen below. The format used will be to present the theme, explain what it means, and then present data to show how the theme is understood from the different perspectives of the respondents as either a constraint that should be addressed, or an enabler that could be developed.

Constraining Factors

The first half of the analysis is guided by the first sub question and will consider constraining factors that could limit or hinder the use of human language technology in rural ethnic tourism. The themes identified in the data that relate to this sub question are as follows.

1. Intergenerational transfer

The most prominent theme identified in the data is intergenerational transfer, which means the transmission of the language to younger generations. Not only must one generation pass it on, but the next generation must inherit it for the language to be sustained. Cultural sustainability is therefore significantly impacted by this important group of stakeholders. They are the key to whether or not a language will be available for future generations, regardless of whether or not it will be incorporated into rural ethnic tourism. This is reflected not only in the linguistics literature, but also in the tourism literature where it is often connected to Intangible Cultural Heritage (Kim, Whitford & Arcodia, 2019; McKercher & Du Cros, 2002; Moseley & Tcherneshoff, 2019; UNESCO, 2022b).

The importance of the younger generation was mentioned by all respondents, and identified as the most important factor by Informant 1, Informant 2 and Informant 5. Informant 1, who is ethnically Zhuang, provides an interesting perspective:

> And they [the younger generation] tend to forget about their traditions, their cultures and even their languages. OK for example, like take myself for example. I am Zhuang but I was born in the city. My dad was born in the countryside and grew up there. So he spoke the language and he knows the customs but, in my generation, I grew up in the city. Now I think I'm very far away from those cultures. I guess that is the largest of challenges.

Here a connection is made between culture and language, but shows how part of the culture will not be present or able to be used in tourism if the younger generation do not inherit it. The work of Bodomo (2010) identified this language shift in Zhuang children, highlighting those born in the cities, and argued that this is endangering the future of the language. This of course means that human language technology cannot be used if there is no language to use it with.

Informant 4 also made this connection between languages and cultural sustainability, identifying the importance of transmitting the language in order to sustain the culture used in tourism:

> Because if there isn't much intergenerational…if it's declining that means the range of domains where the language is used is maybe getting smaller. Then it's an uphill battle to promote tourism as one ethnic group to another, to put it that way, one ethnic group discovering the fascinating aspects of another. It's an unequal position to be in.

Here the informant was talking about domestic Chinese tourists and their interest in rural ethnic tourism. It shows how the loss of language because of little intergenerational inheritance would make it more difficult to promote tourism between the Han majority and the ethnic minorities when this part of culture is no longer there. It also reflects a sociolinguistic understanding of language as capital that can lead to unbalanced relationships because of the differences in symbolic value that exist.

Another interesting connection between culture and the younger generation was made by Informant 2, who was describing her 20 years of experiencing researching cultural sustainability in the rural ethnic tourism of Guangxi:

> This aspect, of the clothing, is still preserved quite well… But many folk customs, such as the clothing culture I mentioned just now. Some old people still, there are traditional festivals, they wear some [ethnic minority] clothes. But, in fact, the young people do not like to wear [the ethnic minority] clothes.   [translated from Mandarin]

While not talking about language, this still highlights a challenge with the transfer of culture between generations. Even if it is well preserved, it may not be seen as important or valuable to the younger generation. So even the tangible aspects of culture are affected by internal factors. This highlights the importance of considering how language, or any part of culture, is valued because it will affect its transmission (Grey, 2021; Li, Xu & Chen, 2020; Sun, Wang & Ma, 2018). As for minority languages, human language technology can be used to preserve them but it is another issue altogether of engaging the younger generation so that they see the value in sustaining it. Intergenerational transfer therefore can be a constraining factor in rural ethnic tourism when it is either not passed on or not inherited by the next generation. Put simply, the languages, and therefore the technology, cannot be used in rural ethnic tourism if they are no longer there.

2. Urban vs. rural differences

The second theme that was identified is the differences between the urban and rural settings, which includes external and internal factors, and is therefore directly related to the first theme of intergenerational transfer. It can be described by urbanization, which refers to the large number of rural residents who have moved to the cities for work, education, and a better life. It can also be described by modernization, which represents a certain ideology that could conflict with understandings of rural country living (Su, 2011; Yang & Wall, 2014). The Rural Revitalization strategy is using tourism to encourage those in the city to move back to the rural countryside (Qin & Leung, 2021; Tu & Zhang, 2020). However, there could be challenges because of the differences between the two. The UN World Tourism Organization (2020) identified rural youth as particularly vulnerable, and explain how some rural areas are facing "increasing demographic challenges, particularly depopulation, lower income levels, a digital divide, decline in traditional economic activities and lack of economic diversity" (p. 7).

Focusing more on the external characteristics, Informant 5 made note of these differences in relation to the younger generation:

> Some of the parent generation has moved outside the village for modern and urbanized life, so the younger generation may not get the good way of living in the rural villages. The underdeveloped infrastructure (compared with urban one) might be the challenge for the younger generation who has gotten used to the modern life in the city.

It is interesting that the rural life is described as both a 'good way of living' as well as underdeveloped, at least compared to the urban setting. Here both positive and negative aspects are connected to life outside the city, but it could be a challenging developing rural ethnic tourism if the younger generation does not see it that way. This connects to the findings of Zhang (2021), who showed that tourism alone could not counter the migration of villagers to the city. This was connected to issues of sustainability by Pu and Golden (2021), who explained that "without young and educated villagers, there would not be sufficient people available to sustain local tourism. Consequently, the shortage of human capital creates vulnerabilities for sustainable development" (p. 15). Part of what makes this a constraining factor in rural ethnic tourism is that ethnic language and culture are stronger in the rural areas (Bodomo, 2010), but may barely be present in the cities. This was identified by Grey (2021) and Grey (2022) in relation to Zhuang, who showed that the linguistic marketplace of the city places more value on languages like English and Mandarin.

This relationship was noted by Informant 2, and shows how the difference between urban and rural can also be understood as internal factors related to values. Explaining some of the challenges to cultural sustainability, she describes the development of rural ethnic tourism as follows:

> 然后当然还有就是发展旅游业的地方呢，它外来文化对它本地的**冲击**会更大一些。社会风气啊、人的观念呢，就会有很多改变吧。当然，这些改变当中可能有积极的方面，也会有一些消极的方面。

> Then, of course, there are also places developing tourism where the **impact/assault** of the outside culture will be greater on the local culture. There will be a lot of changes to the social atmosphere and the people's ways of thinking. Naturally there may be positive aspects to these changes, as well as some negative aspects.   [translated from Mandarin]

This also shows the dual nature of the different lifestyles, since modern life in the city is generally connected to a better quality-of-life. At the same time, it also highlights internal differences that could be conflicting with each other in rural ethnic tourism. What is interesting here is that the Chinese word used for 'impact' can be translated as 'attack' or 'assault' in other contexts. It is a verb used to describe waves beating against rocks. As a noun it is the word used to represent 'shock' in the term 'culture shock'. Here the respondent is expressing ideological differences between urban and rural life, which seem to crash against each other in the context of rural ethnic tourism.

While great efforts are being made by the government to improve infrastructure and quality-of-life in rural communities, this could be a constraining factor since rural ethnic tourism is supposed to present a distinct way of life. Qu et al. (2022), who looked at heritage tourism in rural ethnic communities, found that community members felt restricted or lacked motivation to participate in heritage conservation when they didn't perceive benefits from tourism. In other words, they did not see the value in protecting their heritage for the sake of tourism. So even if the younger generation is interested in maintaining, or re-claiming, their language, the differences in living situations between urban and rural would need to be addressed in order to make sure the actual speakers of the language remain. Put simply, languages, and therefore the technology, cannot be used in rural ethnic tourism if their speakers are no longer there.

3. Pride/Language attitudes

The third theme that was identified in the data is pride, which refers to positive identification by the speakers with their minority language. This is related to the first theme because speakers will not pass on, nor will the next generation inherit, a language if they are not proud of it. Bradley (2013) uses the term 'language attitude' and identifies it as the most important factor for the maintenance of a minority language. In the literature, both Li, Xu and Chen (2020) and Shan, Adamson and Liu (2019) found that ethnic minority members often have negative attitudes about the use of their language in tourism, even though tourists find them interesting. In the data, this issue of pride or positive attitudes about language and culture was connected to the development of rural ethnic tourism. From his work as a consultant on marketing for international tourists, Informant 3 explained how problems can arise when tourism projects fail

to develop aspects of culture that rural communities are proud of. However, he was optimistic and stated:

> So there is actually, there are ways of preserving such…making cultures sustainable by developing a destination. By making it interesting for young people. And making the culture interesting. And giving them the pride to show to others. And to say, "OK, I'm proud this is my culture. So I want to preserve this. I want to also preserve the dialect. I want to preserve the language, and I want to share it."

This shows an understanding of sustainability that includes the languages, as well as one that attaches importance to engaging with the younger generation in order to protect their language. It also shows how negative attitudes can lead to parts of culture being devalued. This respondent has seen how rural communities can have negative attitudes when they compare their lives to international tourists, but tourists actually see them as valuable. So he believes consultants should help the rural communities, especially the younger generation, see that their language is worth maintaining and sharing through tourism. Interestingly, one respondent thought of more than just the language community:

> [T]he biggest nut you've got to crack, I suppose, is the question of pride compared with the Han influence, the Han pressure, if I might put it that way. And what they feel that they can be proud of and display, you know? When I say 'they', I mean local authorities in the region, in the area, in the province.

This is interesting because he connected the issue of pride to the local authorities who are developing tourism. So it is not necessarily just the speakers of the language who may have negative attitudes and devalue the minority languages. Informant 6, a linguist who has been working on a language development program in her own rural community, identified the potential challenges with what was described as "rural-urban stereotyping", which is related to the second theme. At the same time, she thought that incorporating tourism as a tool for language development could also be beneficial because "any new language domains will improve how the locals view their language, domain expansion gives speakers confidence in their language" (Informant 6). This insight is helpful because it incorporates a sociolinguistic perspective, especially from someone who is working to protect their own language in light of some of the issues already mentioned.

The issue of pride in ethnic culture was identified as important and something that has been improving the last few years. Informant 1, a professor of tourism in Guangxi, provided a relevant example showing this and connected it to cultural sustainability:

> But today I think something that is very good is that today the ethnic minorities seem to be more confident about their cultures. They are more proud to showcase their cultures. For example, you know, the Third Month Festival. Yeah, and this Festival is just a couple days away. And you know what I saw today on my campus? I saw some students on campus in the school canteen, they put on their dress. I'm not sure whether it was Zhuang or some other ethnic minority, but obviously ethnic minority costumes. They wore their costumes on campus. So that is very important. And also that is a way they showcase and conserve their cultures.

The festival he mentions is the largest festival of the Zhuang, and has been made a public holiday in Guangxi. I happened to conduct the interview right before this important festival, which provided interesting data as seen here. So while this is not related to language, it is worth noting as an understanding of what constitutes ethnic culture. It is also interesting that it was not obvious which minority group was represented by the clothing. There are many different subgroups of just the Zhuang, each with their own traditional patterns, so this is understandable. However, it shows the challenge of presenting culture in ways that can be recognized and identified with.

Relating it to languages, Grey (2021) showed how it was not just non-Zhuang but also the Zhuang themselves who may not recognize the language if it displayed publicly. Sun, Wang and Ma (2018) seemingly presented language as unnecessary for identity, and argued that tourism made positive contributions to ethnic identity but was negatively affecting language attitudes because of pressures from Mandarin and English. So it is therefore important to determine which aspects of their culture the community identifies with, and whether or not that includes the language. From the sociolinguistic perspective, this relates directly to what aspect of their culture are valued. In rural ethnic tourism, the issue of pride can therefore be a constraining factor to incorporating human language technology because of pressures to maintaining positive language attitudes. Even more, this challenge could be complicated if language is not seen as an important part of their identity. Put simply, the technology won't be seen as worth using if the language is not seen as something worth helping or highlighting.

4. Economic & educational opportunities

The fourth theme, connected to the theme of pride above, is that of economic and educational opportunities that are limited, or do not exist, in the minority language. It is connected to the influence that comes from Mandarin, the official language, and English, the international language, which are often associated with success because they are languages of and mobility (Li, Xu & Chen, 2020). These languages are afforded much more symbolic capital because of the economic and educational opportunities they provide. In their research Sun, Wang and Ma (2018) found that tourism exacerbated this pressure, because villagers wanted to learn English in order to engage with tourists and be more involved in the tourism activities.

In the data, English was not mentioned, but Mandarin was. Informant 5, a professor of linguistics, made this connection to the pressures on the minority languages:

> [The] government puts effort promoting Mandarin, being eloquent in Mandarin is an important skill for the younger generation for study or employment. This may lighten their cultural identity with their mother tongue. Sometimes mother tongue means under-cultivated, and Mandarin means successful and modern, which also make it harder maintaining cultural identity via minority language.

Here the respondent identifies language as an aspect of ethnic identity, and one which can be impacted because of negative attitudes that could result from external influences like national policy and the focus on modernization. These afford more symbolic capital to Mandarin and English, which leads to a devaluing of the minority language.

At the same time, members of the ethnic minority groups may not see this so negatively, or may be divided in their opinions, because it allows them to achieve the goals reflected in the policies. In rural communities there are legitimate reasons to focus on the prospects of better economic and educational opportunities, which are made available through the languages with more linguistic capital. As noted by Informant 6, who was speaking about her own language community, rural ethnic tourism could benefit the minority language, but it would also have to provide economic benefits:

> [O]ne of the biggest challenges for indigenous language maintenance is job prospects, income from tourism business [sic] will allow them to stay in the natural environment as opposed to moving into towns and cities.

This shows how, paradoxically, opportunities that exist through Mandarin and English could be a constraining factor if similar opportunities, especially economic ones, are not provided in rural ethnic tourism. This relates to the findings of Zhang (2021), but from a sociolinguistic perspective also shows how languages are not seen as just forms of communication but also something that can impact the speakers' well-being.

What can be seen is that this theme is especially complicated. While it can be considered a constraint to rural ethnic tourism if not addressed, the opportunities that become available through Mandarin and English also provide many benefits to the member of the ethnic communities. This paradox was noted by one of the respondents:

> The pressure to learn Mandarin must exist at all levels of society. Even the poorest, least ambitious people, even they are being pressed in different ways to learn Mandarin, as far as I understand it. Whereas he had a socially mobile reason for learning Mandarin, it got him where he is today now.

The person being referred to here does not speak the language of his ethnic group, but is a university professor and consultant with an international marketing company promoting sustainable development in his home. It is assumed that these opportunities would not have existed had he not learned Mandarin and English. This could also be said about Informant 6, who is from a remote village in Southwest China but was able to complete a degree in linguistics abroad. She is proficient in her language, which was the focus of her studies and helped her get a grant to protect it. However, it was her ability to communicate in Mandarin which led to opportunities to learn, and then eventually study in, English.

The point is not that Mandarin or English are "better", but that the opportunities they provide far outweigh those in the minority languages, which often leads to them being valued differently. According to Zhou (2012), this is because of the unbalanced national ideology that has created a "linguistically discriminative" job market and an educational system that is meant to transition students from the minority language to Mandarin (p. 28). Here the ideology appears to be reflected in a larger system that values languages with more linguistic capital. Minority languages have to compete with them, which can be a constraint to the use of the language in rural ethnic tourism. Therefore, the use of human language technology should be considered in ways that

can provide economic and even educational opportunities that do not have to compete with those available in Mandarin in English. It is for this reason that the UN recommends a trilingual education policy as a complementary strategy (Idiazabal & Pérez-Caurel, 2019). While this is outside the scope of the study, opportunities like this could be created through, or connected to, rural ethnic tourism and the use of human language technology in order to ensure the languages remain. However, they may not be around to be used within tourism if opportunities are not developed that can compete with, or at least complement, what is available in Mandarin and English. Put simply, the technology can't be used to create more value within tourism if it isn't used to create opportunities that value the language outside of it.

5. Understandings of sustainability & culture

The fifth theme identified in the data relates to different understandings of sustainability and culture. It is revealed in how rural ethnic tourism is understood by stakeholders based on the unique challenges that it presents. This has been highlighted in the literature by explaining the importance of understanding the Chinese perspective in tourism development (Chen, Huang & Bao, 2016; Sofield & Li, 2007; Weaver, Tang & Zhao, 2020; Xu & Sofield, 2016). In this project, it has to do with how minority languages might be perceived as relating to culture and to the goals of sustainability that are unique to rural ethnic tourism.

In the data, this is reflected by limited mentions of language as a part of the culture that is being preserved, even when sustainable development was mentioned. While it is not possible to present data that does not exist, the data does reflect the understandings of stakeholders as they relate to other important aspects of rural ethnic tourism. In line with the previously described literature (Gao, Huang & Huang, 2009; Xu & Sofield, 2016; Yang & Wall, 2014), the economic dimension of sustainability is considered to be of utmost importance. As noted by one of the informants:

> If you look at the Sustainable Development Goal number one it is "No Poverty". So if you don't take care of number one, everything else is unimportant, you know? So they have to have their livelihoods…once they don't have this poverty problem anymore, once this first Sustainable Development Goal is out of the way, that's when we can talk about social factors. Because the social is unimportant if you're hungry.

Here the respondent highlights the importance of "their livelihoods", which is connected to the economic dimension. This understanding of sustainability in rural tourism represents the national-level policies that guide its development, and it also reflects the understanding of some of the rural communities themselves. As shown by Fan et al. (2019), community members may be generally supportive of rural ethnic tourism development, but have certain "commercial expectations" in its ability to contribute to their livelihoods. As such, this theme relates to theme four above, and specifically economic opportunities that may (not) exist. For legitimate reasons, rural ethnic tourism is valued as a means to make contributions to the economic dimension.

Similarly, the understanding of culture within rural ethnic tourism often focuses on the economic dimension as well. Informant 2, who has looked at cultural sustainability in Guangxi for twenty years, provides her perspective on those developing rural ethnic tourism:

> 那对于开发商来说，文化可持续性对他们来说，他们当然知道文化本身就是一种资源。文化是可开发的资源。文化不存在了，旅游业也不复存在。他们知道文化其实就等同于**资源**，等同于**资本**。所以他们知道要保护文化。
>
> As for the developers, cultural sustainability for them, of course they know that culture itself is a resource. Culture is an exploitable/developable resource. If culture ceases to exist, then tourism will no longer exist. They know that culture is actually equivalent to **resources**, it is equivalent to **capital**. So they know that the culture needs to be protected.   [translated from Mandarin]

Here the respondent talks about the motivations of the developers, which is connected to economic profits. However, the point being made was not to say that what they are doing is wrong. In the previous comment she said that the development of rural ethnic tourism is a good thing because it can enhance a community's "identification with and pride in their own ethnic culture" (Informant 2). Her comment about the developers is pragmatic, reflecting the reality of rural ethnic tourism. What is interesting is that the term translated as 'exploitable resource', which can have negative connotations in English, can also be translated as 'a resource that can be developed'. Also, the first half of the words for 'resource' and 'capital' are the same, showing a certain relationship in Chinese.

This does not mean that all resources are thought of in economic terms, but that they are linked in their understanding from the context of Chinese culture. The point is that rural ethnic tourism

exists in a certain context which values resources like cultural heritage for the positive contributions they make to the economic and social dimensions of sustainable development. The different understandings of sustainability and culture could be a constraining factor if the integration of human language technology doesn't fit within its goals. As previously mentioned, the approach of Li, Xu and Chen (2020) is relevant as an example of how the linguistic capital of minority languages can be converted into economic capital in rural ethnic tourism. Therefore, it is important to consider the differences in these understandings in order to show how human language technology, and the languages themselves, add value to the relevant stakeholders. Put simply, the value of the technology may be missed if not communicated using their 'language'.

6. The technology itself

The sixth and final theme that was identified in the data relates to issues with the technology itself. More specifically, it includes issues related to the potential uses of the technology as understood by the different respondents. So the focus was not on what the technology could or couldn't do from a technical perspective, but what it should or shouldn't do in terms of application. This relates to the sociolinguistic perspective and its focus on what is done with language based on its perceived value. Three of the respondents considered the use of human language technology for interpreting between the community members and tourists, but did not think there was much need because most villagers are proficient in Mandarin. Also, some community members may be able to communicate in English to foreign tourists, especially where tourism has already been developed, which relates to the findings of Sun, Wang and Ma (2018).

This shows an understanding of language as a form of communication, where the goal with the technology would be to remove barriers. Considering it in this way would likely lead to limited applications for using human technology to facilitate communication because of language preferences. Informant 6 explained it as follows:

> I would see language technology as marketing tool for people to visit these communities, once they are there, in person communication will be more memorable for tourists as most of minority language speakers understand Mandarin. Especially for cultures with long oral

language traditions, creating voice assistants and audio translations will feel extremely unnatural for the villagers.

This is an interesting example because it presents two different understandings of language, both as a cultural marker to be marketed and also as a tool to communicate. For the second, the respondent was talking about domestic Chinese tourists, and believed their preference would be to avoid using a device for translation and/or interpretation when they could speak to the community members in Mandarin. She noted earlier in the interview that in her language community members would also prefer to speak in Mandarin, which highlights sociolinguistic reasons that relate to Mandarin being the official language. As for this statement, it also highlights how it is important to consider the natural use of the language by the language community itself, since that could limit the use of human language technology. This relates to the findings of Li, Xu and Chen (2020) and Shan, Adamson and Liu (2019), who identified challenges in adapting tourism products using minority language orthography because the community members only thought of their language as being used orally. So the use of languages in marketing should also consider how effective they are as cultural markers, by both the consumers and the communities themselves.

As for the tourists, the question of how to use the technology also brought up other potentially limiting factors. Informant 3 described part of his work as a consultant as helping organizations and governments find solutions, including those that are technological, in the tourism sector. Similarly, he mentioned being a part of the technology working group of the UN World Tourism Organization, though it no longer exists. In considering rural ethnic tourism, he warned against imposing "our own perspective" when developing any new technology:

> And we have to understand that a lot of people have their preference of what they're using… depending on their profile. So they might not be willing to embrace a new technology that forces them to change their behavior in terms of technology usage. And that's where you might run into problems because you might say, "OK, this is so cool. So easy. I speak on my phone and it translates it!" But maybe this other person doesn't want to use the technology the way you're using it… Or if the tourist profile is maybe, it's senior citizens who travel there more, who are not willing to use this kind of technology… Even if it's the nicest technology.

These insights show the importance of understanding the different tourist profiles in order to make sure any technology that is implemented will be accepted. This warrants its own study and cannot be addressed in depth here. However, it shows the importance of acknowledging differing preferences about how the technology can be used, which is connected to potentially differing perspectives on how the languages themselves should be used within rural ethnic tourism. So the technology itself could be considered a constraining factor depending on how it may be used by the consumer, as well as by the communities. If it is used for translation and/or interpretation, the challenge lies in making sure both sides will see value in using it. Put simply, it doesn't matter how "nice" the technology is if the users don't want to use it. Even more, it could be a constraining factor based on how it is thought the technology should be used with the language, either to remove it as a barrier to communication or to highlight its connection to culture. This relates to the previous issues discussed from the sociolinguistic perspective, where the challenges lie in making sure consumers and communities see the value in using the languages, whether in rural ethnic tourism or not. Put simply, it doesn't matter how interesting the language is as reflection of culture if the users don't want to use it.

Enabling Factors

This half of the analysis is guided by the second sub question, and will consider enabling factors that could help human language technology be incorporated into rural ethnic tourism. The themes identified in the data that relate to this sub question are as follows.

1. Interest of the government

The most prominent theme identified in the data is that of the interest of the government, which refers to the focus they have been putting on sustainability and, specifically, protecting culture and connecting it to tourism. This increased focus on sustainability is noted in the literature, and connects with the multiple mentions of tourism, including rural tourism and ethnic minorities, in the most recent Five Year Plan (Murphy, 2021; Qin & Leung, 2021; Sun, Wang & Ma, 2018; Xu & Xiao, 2020). Informant 2 highlighted this interest of the government, and connected it to the ongoing Rural Revitalization strategy:

政府也意识到自己有责任去保护，他在用财力、物力和人力去保护这些传统的文化，在国家层面的政策上去保护。然后这个是政府推动这种乡村振兴保护其实是起到很大的作用的。它可以唤醒民众，他对自己民族文化的那个认同，就是 "cultural identity"，它会更强烈，民众他们也意识到他自己的文化是宝贵的。他们就有意识的去传承自己民族的文化。就是政府层面，国家层面的这种倡导，和保护是非常重要的。对国家来说，他意识到文化是**一笔财富**。

> The government is realizing they have a responsibility to protect it. They are using financial, material and human resources to protect these traditional cultures, and are protecting them through national-level policies. With the government's promotion of Rural Revitalization, protection actually plays a big role. It can awaken the people to identify with their own ethnic culture. The "cultural identity", it will be stronger and the people will realize that their own culture is precious. They will consciously pass on the culture of their own ethnic group. It is this kind of advocacy from the government level, the national level, and protection is very important. The country is realizing that culture is **an asset**.   [translated from Mandarin]

Here the respondent was stressing the involvement and interest of the government to protect the 'traditional cultures' of the ethnic minority groups. This includes the national-level policies, but also refers to the local government and the efforts they are making to implement them. She connects this protection to a strengthening of ethnic identity, which will cause the members to pass on their cultural heritage. The final comment is interesting because the word translated as 'asset' refers to wealth or riches. It does not always refer to an economic focus, since the term 'natural wealth' uses the same word. While the economic dimensions of rural tourism is very important, the sense here refers to a valuable resource. This fits with the understanding of rural ethnic tourism that has been described, where culture is considered a valuable resource that can be used to contribute to the country's larger goals of prosperity. It also provides an example of how languages can be considered resources from the sociolinguistic perspective, which could be connected to that national understanding to benefit the languages.

Informant 1 highlighted the efforts of the government, and connected cultural diversity to the concept of sustainability. Talking about marketing Guilin as a sustainable destination, which is the most popular destination in Guangxi, two important aspects were mentioned:

> I guess one of the focuses is about the environment… the other focus for marketing China is our very diversified culture. So probably we will show how diversified China is and also we would like to highlight the you know, our efforts to conserve our cultural diversity. Yeah. How we present our cultural diversity, I think this is also something very important.

In tourism this cultural diversity is allowed and emphasized, which, according to some of the respondents, is motivating the government to take actions at even the national level. This is also connected to the understanding of sustainability in rural ethnic tourism, where minority culture is valued as an important resource that can be used to improve the lives of rural communities. However, it appears that it is not only in tourism where this is being realized.

Focusing on the work of the local government in Guangxi, Informant 2 mentioned an interesting campaign that was initiated in recent years. She explained how they have realized the importance of protecting 'cultural sustainability', which also includes transmission:

> Therefore, in many ethnic minority areas in China, including the Dong, Zhuang, and Yao people I mentioned, there is something from the local government... There is an initiative called "Ethnic Culture Entering the Campus". It is entering the campus of primary and secondary schools. It is very useful and meaningful... Primary and secondary school students are taught from the primary stage, that is, from a very young age, that they should respect, protect and love their own ethnic culture.   [translated from Mandarin]

This respondent also identified intergenerational transmission as the biggest challenge to cultural sustainability, so this initiative provides an interesting example that shows some of the efforts that are being made to counter it. She also mentions how this is meant to help the young children "respect, protect and love their own ethnic culture", which relates to the aforementioned issues of pride and the importance of seeing the different aspects of culture as valuable and worthy of passing on and promoting.

Informant 1 also works in Guangxi and mentioned this program. His first-hand experience shows how in the last few years the government is trying to connect the younger generation to aspects of ethnic minority culture:

> It seems that the government today, they have more priorities to those connections between the school, education and our traditional culture and also our ethnic minority cultures. I will give you another example. I have kids in kindergarten. During the Third Month Festival, the kindergarten asked us to buy them some traditional costumes and put on the costumes on the day of the festival. This is also, you see, I guess this is from the government. The government would like to see those things happen. That's something very good and we are also really happy to see those things happen.

As previously noted, this festival is the largest festival for the Zhuang in Guangxi, and was about to be celebrated when I happened to conduct the interview. This is the same informant who described feeling "very far" from aspects of Zhuang culture because he doesn't speak the language, but is glad for programs like this to connect to it in other ways. So even though there were no mentions of programs that the government is using with minority languages, their interest in protecting and promoting minority culture in Guangxi is something that could help integrate human language technology into rural ethnic tourism.

At the same time, the absence of mentions to ways the government is incorporating these languages in their work to protect and promote ethnic minority cultures is noteworthy. The respondents mentioned negative impacts of tourism on the languages, but provided few examples of ways it is helping them. Informant 5 mentioned a bilingual education program that is being offered to a minority language community in neighboring Yunnan, but the literature seems to indicate that the pressure from Mandarin and English could make this challenging (Sun, Wang & Ma, 2018). Informant 2 mentioned the 'Project for the Protection of Language Resources of China', which is was implemented in 2015 to address issues of language loss and endangerment through documentation and recording.

What is interesting, though, is the project highlights its 900 surveys of the 10 major Chinese dialects, and 300 surveys of the "more than 130 languages" recognized in the country (China Ministry of Education, 2018, pp. 20-21). Taking a sociolinguistic perspective that acknowledges that languages, and dialects, are not valued the same, it appears that minority languages may be at a disadvantage based on these numbers. Also, even though the languages might be preserved through recordings as a form of cultural heritage, it needs to be considered what is being done to pass them on as living heritage. Human language technology could help if it was deemed worthwhile, which could be done in the context of rural ethnic tourism as a way to contribute to its sustainable development by ensuring their transmission.

2. Involvement of the community

The second theme that was identified in the data is involvement of the community. What this means is that the members of the ethnic groups themselves are important stakeholders to

involve when trying to integrate human language technology into rural ethnic tourism. While nothing has been written about this specifically in regard to the technology, the literature acknowledges the importance of community involvement in rural ethnic tourism planning and development in China (Li, Knight et al., 2020; Tu & Zhang, 2020; Yang & Wall, 2014; Zhuang et al., 2017). In the data, the importance of this issue was highlighted by Informant 6, who has been using social media for language revitalization within her own minority language community. She explained that involving them from the beginning was crucial to developing a sustainable project because "they know best what they need and what they use", and also suggested the following:

> I think organizing a training session for the villagers on how to better market local languages and intangible cultural heritage is vital. Based on the local culture, village leaders and socially respected families will play an important role in leading these kinds of new changes.

This connects to the research of Shan, Adamson and Liu (2019), who suggested that ethnic community members be invested in educationally to acquire "new knowledge and skills or qualifications" (p. 65). It was noteworthy that the respondent mentioned 'village leaders and socially respected families', so it would be important to identify the key players in the communities to make sure they are engaged. It is possible that their acceptance of human language technology could ascribe more symbolic value to the languages with which it would be used.

Similarly, it is necessary to acknowledge that these communities are not homogenous. Both Yang and Wall (2014) and Sun, Wang and Ma (2018) highlighted the differences in interests and motivations between older and younger generations. Qu et al. (2022) showed that there were differences between local and non-local members of the same ethnic group, nothing that these communities "are the result of social processes that are constantly flowing or changing based on people's common interests, undertakings, collective experiences, and views of how to respond to external pressures" (p. 3). This reflects the sociolinguistic perspective employed in this project that acknowledges pressures that come from the ecologies within which the language exist. It also shows how this theme of community involvement can actually become a constraining factor to incorporating human language technology if not done in culturally-appropriate ways, or if it assumed the individual members of the community will all have the same perspective or level of

interest. Though it was not possible to explore that further in this project, it would therefore be necessary to conduct more research in order to mitigate potential challenges that could arise.

Another interesting perspective that was added relates to the importance of women in the transmission of Intangible Cultural Heritage. The research of Informant 2 has focused on the relationship between gender and cultural sustainability in Guangxi. Based on her 20 years of experience, she explained how:

> [W]omen are the key players in the inheritance of folk culture. Moreover, in ethnic tourism, in China's ethnic tourism, women play a very important role. In fact, women are not only the transmitters of culture but also the main players/participants.   [translated from Mandarin]

Based on this insight, it makes sense that a person's first language is often referred to as their "mother tongue", which reflects the importance of women in the transmission of cultural heritage and language. Therefore, they should be included in any development of human language technology. Though not connected specially to heritage transmission, the UN World Tourism Organization (2020) highlighted the importance of empowering women as a key stakeholders in the sustainable development of rural tourism. So while the involvement of community can be seen as a facilitating factor to incorporating human language technology into rural ethnic tourism, failing to include the right community members would likely make it a constraining factor.

3. Versatility of the technology

The final theme identified in the data is the versatility of human language technology. This refers to the different uses of existing technology that could be used in innovative ways in rural ethnic tourism. In this way, the focus was not on the technology itself but on considering where it could be used. During the interviews, the respondents thought of different opportunities or needs that exist where human language technology could play an important role in rural ethnic tourism. While it was considered, most did not think that using it to bridge language barriers was the area of most potential, which was discussed in theme six above. Instead, the informants thought of ways the technology could be used with tourism products, or for the promotion and protection of minority languages. For example, Informant 1 thought in terms of developing "some

experiential tourist products, some very creative tourist products based on the language technologies", and explained:

> The Zhuang culture is a very complicated culture with lots of traditions, customs and a very long history. But so far, I would say, it is only a very small portion of their culture that is being developed as tourist attractions. And also this is not very deep. And basically tourists they cannot stay, you know, they cannot stay for very long there. So they cannot go deeper into the local life.

The respondent noted the interest of both domestic and international tourists in ethnic minority cultures like the Zhuang, but also thought much more could be done to integrate it into the development of tourism. Similarly, Yang and Wall (2014) argued for strengthening the interpretation and representation of ethnic culture because of the limited role of tourism middleman, and because the tourists themselves "usually lacked the time and depth of experience to appreciate the intricate aspects of ethnic culture" (p. 152). Human language technology could therefore be used in different ways to provide tourists with a deeper engagement with ethnic culture because of the connection between language and the group's traditions, customs and history. In this way, its value as linguistic capital could be enhanced through different applications of the technology.

Informant 6 focused on applications in media, which is based on her experience of using social media as a tool for language revitalization in rural communities like her own. She thought that it was important for outsiders to know about the minority language through "the media and content created via language technology", and explained the current situation as follows:

> The mushrooming of social media such as WeChat and TikTok in China is opening up some opportunities for minority languages to showcase their local cultures. Many internet influencers (网红/主播) are using their native tongues to make short video clips as marketing strategy. However, live-streaming is only allowed in Mandarin, with some flexibility with other Chinese dialects.

Here, the concept of showcasing culture using language fits with the sociolinguistic perspective. While she was hopeful that social media could be used in connection with human language technology for language promotion, she also expresses some reservations because of the restrictions that limit the use of minority languages. This highlights the unique structure within

which rural ethnic tourism exists, and the considerations that must be taken therewithin. It also points to the high value ascribed to the symbolic capital of Mandarin and Chinese dialects, which is in contrast to the minority languages. It is possible that within tourism, where cultural diversity is more accepted, this could still provide for opportunities to showcase minority languages through marketing for rural ethnic tourism if it is connected to the larger national-level goals.

Finally, several of the informants considered using the technology for the purpose of preservation. Informant 2 thought of 'Project for the Protection of Language Resources of China'. As just noted, this is an initiative aimed at protecting the country's various Chinese dialects and minority languages through documenting and recording (China Ministry of Education, 2018). While I was in correspondence with representatives working on this project in order to learn more about it, I was unable to get them to provide their insights for this project. Within the data, however, similar potential uses were also mentioned. Informant 3 connected this technology to work that could preserve the language and culture for future generations:

> So even if they lose it. That actually might be very interesting. And then a future generation decides, "Oh it's such a pity we lost our culture." And they decide they want to explore it more again. It's preserved so they can actually go and say, "My parents never talked to me about it, but my great grandparents actually, they recorded it so I can find out. How life was for them and I want to recover it.

This same respondent also talked about the importance of 'cultural rooting' and social connections to family, which youth who move away from home may not realize until they are older. Working as a consultant, he is taking a long-term perspective in regard to the languages, which have been shown to be important resources that have the potential to be used in tourism. So even if the language is threatened or no longer used, human language technology could contribute to its sustainability by preserving it for future speakers. It could also be incorporated into tourism in ways that do not require human speakers. While this may not contribute to the personal experiences tourists are looking for in rural ethnic tourism, it could potentially contribute to an increased interest that later leads to revitalization because at least some form of the language is present. In this way, maybe it is better that the language is valued only in limited ways rather than not at all.

Summary

The themes presented here represent the constraints and enablers identified in the data as they relate to incorporating human language technology into rural ethnic tourism (see Table 2 below). For the most part they reflect what has been described in the existing literature, which shows that the minority languages in Southwest China are valued differently inside and outside the context of tourism. Even though the constraints outnumber the enablers by two to one, it is impossible to give weight to them and evaluate their impact or influence. For example, the interest of the government could be strong enough to overcome some of the challenges identified in the constraining factors. Whether or not that is a positive thing is a matter of interpretation. Also, while it is visually helpful to present them separately, these themes are interrelated and should not be thought of as independent of each other. In reality, they exist within a larger system where they interact and influence each other in different ways. Finally, it is important to note that these issues represent what was seen as most significant based on my subjective opinion, which was shaped by a certain theoretical perspective to consider the value of minority languages and their relevance to rural ethnic tourism. Different ways of looking at it would of course reveal others.

The findings described above provide a range of insights, which highlights how each stakeholder has a different understanding of the issues involved based on their unique perspective. So the enablers should not be thought of as inherently positive, nor should the constraints be seen as inherently negative. Some of the constraints described above could become opportunities depending on how they are managed. Likewise, some of the enabling factors could become constraints, as was previously mentioned. Furthermore, one stakeholder may see a specific enabling factor in a positive light, while another may not, and vice versa. The question of how human language technology might be able to be used is indeed one that cannot be answered easily, so it should be considered from multiple angles. At the same time, it is important to emphasize that rural ethnic tourism exists within a certain context that leads to sustainability being understood in a particular way. This implies that applications of human language technology that have the most potential of being used should be shown to fit within the

understanding of those in charge of, and involved in, its development. In other words (pun not intended), it should speak their language.

Table 2. Summary of Themes Identified in the Data

Constraining Factors	Enabling Factors
Intergenerational transfer	Interest of the government
Urban vs. rural differences	Involvement of the community
Pride/language attitudes	Versatility of the technology
Economic & educational opportunities	
Understandings of sustainability & culture	
The technology itself	

REFLECTIONS: What is a Language (Good For)?

Before ending with concluding remarks in the final section, space will be given here to share some reflections that have come to mind throughout the course of this project. Indeed, it was a long journey that took me on a number of twists and turns. This process, however, has added fuel to the fire which began as an idea that was sparked by my personal fascination with languages. At the same time, I have been faced with the fact that people view languages differently, which can lead to them being valued differently -- and may affect what happens to them. Romaine (2008) connected this to the potential responses that may be taken to language loss, which include doing nothing, documenting endangered languages, and sustaining or revitalizing threatened languages, and argued that "the various assumptions underlying these three approaches articulate different conceptions about the values of linguistic diversity" (p. 8). This has been shown to be relevant to tourism, where its development as a part of larger goals can lead to minority languages being devalued by even their own language communities. Even more, it is understandable how some of the goals like economic and educational opportunities are being pursued, especially if the languages are seen as limiting them.

What is important in these discussions is not to see the languages as being independent of but connected to the language communities. In this way, it is hoped that uses of human language technology can help them feel more connected to their languages. As explained by Romaine (2008):

> [T]here is a tendency to reify languages, when it is communities and language ecologies we should be talking about... When we lose sight of people and the communities that sustain languages, it becomes easy to argue, as a number of critics have, that there is no reason to preserve languages for their own sake. (p. 19)

Ultimately, it will be the choice of the communities themselves whether or not these linguistic resources remain for future generations. However, this study has led me to remain hopeful that rural ethnic tourism can create a place, though maybe a small one, where minority languages can be seen as worth protecting and promoting.

From this perspective, the point is not that rural ethnic tourism should be seen entirely negatively. Indeed, it is hoped that human language technology can turn the very thing that can hinder linguistic vitality into something that helps it. This could be called a form of optimistic pragmatism, which seeks to understand the larger structures and ecologies that contribute to this phenomenon. This is a result of combining my background in linguistics with my more recent pursuits within tourism. It relates to the perspective of Bradley (2019), who acknowledged the inevitability of change but also the adaptability of languages in the face of them:

> [O]ur challenge as linguists is to help communities to make and implement informed language-related choices that meet their new needs in a changed world, and where possible lead to renewal of the language and preservation of its cultural riches, and to develop more positive attitudes about the language and its users, both within the community and outside. (p. 510)

Instead of seeing language as only static heritage, maybe the technology can show ways that these minority languages have a place in the modern world by highlighting them in the context of rural ethic tourism. This of course means engaging directly with the language communities themselves in order to understand their needs and desires, which will no doubt be diverse and potentially conflicting. From this study and the reviewed literature it seems that the common consensus is that their only options for modernizing and advancing do not include the minority languages, but maybe human language technology can say otherwise.

In order for it to do that, it will of course be necessary to accept that differing perspectives exist. One of the most interesting comments from the project's data came from Informant 1, who is Zhuang and noted that "the Intangible Cultural Heritage does not only belong to the Zhuang, right? But it also belongs to the world." This seems to reflect the Chinese understanding within the context of rural ethnic tourism, which can be seen as a positive thing for tourists who may not be aware of the country's rich cultural and linguistic diversity. It has been shown that tourists place value on ethnic minority cultures and their experiences interacting with them, which could and should include the minority languages. One of the goals of human language technology should therefore be to promote the languages to make them more visible, because it is hard to value something you don't know exists. This also shows the need to protect the languages, because it is even harder to value something when it no longer exists. While some may see the

use of minority languages in rural ethnic tourism differently, it is argued that them being valued in some ways is better than not at all. Furthermore, in order to keep using them in rural ethnic tourism, which is intended to provide certain benefits to the communities, efforts should be placed on making sure they are passed on as living heritage to future generations. Failure to do so will result in the paradox previously described as killing the chicken for the egg.

Ultimately, making sure the languages are not just protected and promoted as cultural heritage but also passed on as living culture will lie in finding ways to highlight the value of the language and not just the technology. Put simply, it is more about the 'human language' than the 'technology'. Said differently, the technology should be shown to be a valuable resource for the languages, and ultimately the language communities. If the languages are only seen as resources for the technology, their value may be limited to tourism. It can be assumed, then, that how the technology is used will communicate different understandings of what a language is (good for). And if how they are viewed will affect how they are valued, it is hopeful that human language technology can improve one by way of the other. In the end, whether or not these minority languages will be seen in the future depends on a number of factors, not the least of which includes if, and how, they are seen now.

CONCLUSION

The problem formulation in this study was based on exploring ways that human language technology could be used to contribute to the sustainable development of rural ethnic tourism in Guangxi. It was motivated by a growing international emphasis being placed on the importance of minority languages to sustainability, which pointed to a gap in knowledge about their role in and relationship to tourism development in Southwest China. The concept of rural ethnic tourism was used as a way to describe this unique context, where understandings of sustainability are shaped by larger national goals that will determine the potential uses of the technology based on how it is seen as contributing to them. With this in mind, two sub-questions were incorporated in order to answer the main research question.

The first was used to consider the existing constraining factors that might hinder the uses of human language technology, and the second was used to consider the existing enabling factors that might help. As for the first sub-question, the findings indicate the following six constraining factors: Intergenerational transfer; Urban vs. rural differences; Pride/Languages attitudes; Economic & educational opportunities; Understandings of sustainability & culture; and The technology itself. As for the second sub-question, the findings indicate the following three enabling factors: Interest of the government; Involvement of the community; and Versatility of the technology. These are all interrelated and should not be seen as necessarily positive or negative. It appears from this study, however, that they present a picture of a larger system where human language technology may be limited not because its value is not seen in tourism, but because the value of the linguistic resources upon which it depends is seen in different ways outside of it.

Connecting these findings to the main research question, it was shown that there are a number of ways that human language technology could be used in rural ethnic tourism, but whether or not they are seen as contributing to its sustainable development depends on how sustainability is defined. In the Chinese context, it is important that rural ethnic tourism contributes to the national goals of sustainable development. This means that uses of human language technology should be shown to fit within, and be making contributions to, this larger context-specific understanding. Rural ethnic tourism does not exist independently of the system and is actually

understood as an important tool to support it. As such, any uses of technology that do not contribute to the goals outside of tourism will likely not be viewed as contributions within it. This also means that the findings from this study may not be applicable to other countries or regions that are using ethnic tourism in rural communities to contribute to their goals for sustainable development. There will likely be some overlap, but it would be important to consider the specific context and how the technology, and more importantly the languages, fit within it.

Finally, while this project is limited in scope and shaped by a certain perspective, it appears to indicate differences between the way minority languages can be valued in and outside of tourism. There is great enthusiasm from the government to protect the country's rich cultural resources and highlight them within rural ethnic tourism, so human language technology provides a way to make visible the value of its precious linguistic resources. Therefore, their importance to culture should be shown in and connected to the unique and immersive cultural experiences that tourists seek. Further research should be conducted to explore their interests from the demand side, but it is important that human language technology is also being used to make sure the resources are still there on the supply side. What form that takes, and whether or not that translates to increased evaluation outside of tourism, remains to be seen. For now, rural ethnic tourism seems to be a welcome place for the minority languages. As for the technology, it is hoped that future uses will be considered in ways that not only use the languages as a resource to develop tourism, but also use tourism as a resource to develop the languages.

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