

The Design Thinking Process of Creating Emojis as Visually Cultural Embodiments for the Naxi Community, China and their Functions of Stimulating In-Group Well-Being Index in the Digital Age

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Abstract

Objectives: An effort to create culturally situated emojis for the Naxi community is the focus of this essay, which delves into the user-centered research process that ran through the project. With the guidance of local authorities, this endeavor sought to tackle the discontent of Naxi aboriginals regarding existing emojis, with the goals of enhancing online communication efficiency within the community, digitally preserving and disseminating indigenous culture, and attracting tourists for economic benefit.

Methods: A one-month user-centered design process involved local stakeholders to create design alternatives that resonated with the prevailing live, ethnically cultural context identified during fieldwork. Employing design-thinking methodology, participants acted as guides, storytellers, performers, and feedback providers, leading to the development of culturally relevant emojis.

Results: This design approach not only met the explicit online communication needs of the local government and indigenous people but also contributed to the implicit goal of enhancing well-being index within the Naxi community.

Conclusions: This project showcases an effective strategy for promoting positive well-being and cultural preservation through digital innovation. Importantly, to better suit the unique context of this study and future similar design endeavors, a new design-thinking theoretical model is proposed, emphasizing the dynamic adaptation between user centrality and objectivity centrality to further ensure the reliability and validity of analytical thinking in the design-thinking process.

Keywords: Naxi Community; Emoji; Design Thinking; User-centered; Cultural Sustainability and Dissemination; Well-being Index

عملية التفكير التصميمي لابتكار الرموز التعبيرية كتجسيّدات ثقافية بصرية لمجتمع الناكسي في الصين ووظائفها في تحفيز مؤشر الرفاهية داخل المجموعة في العصر الرقمي

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ملخص

الأهداف: يركز هذا المقال على الجهود المبذولة لابتكار رموز تعبيرية ذات طابع ثقافي لمجتمع الناكسي، ويتناول عملية البحث المتمحورة حول المستخدم التي تم تنفيذها خلال المشروع. وتوجهات من السلطات المحلية، سعى هذا المشروع إلى معالجة استياء السكان الأصليين من الناكسي تجاه الرموز التعبيرية الحالية، بهدف تحسين كفاءة التواصل عبر الإنترنت داخل المجتمع، والحفاظ على ثقافة السكان الأصليين ونشرها رقمياً، وجذب السياح لتحقيق منفعة اقتصادية. الأساليب: شملت عملية التصميم المتمحورة حول المستخدم، التي استمرت لمدة شهر، إشراك أصحاب المصلحة المحليين لخلق بدائل تصميمية تتماشى مع السياق الثقافي الحي الذي تم تحديده خلال العمل الميداني. من خلال منهجية التفكير التصميمي، عمل المشاركون كمرشدين ورواة قصص وفنانين ومقدمي ملاحظات، مما أدى إلى تطوير رموز تعبيرية ذات صلة بالثقافة.

النتائج: لم يلب هذا النهج التصميمي احتياجات التواصل عبر الإنترنت لدى الحكومة المحلية والسكان الأصليين فحسب، بل ساهم أيضاً في تحقيق الهدف الضمني المتمثل في تعزيز مؤشر الرفاهية داخل مجتمع الناكسي. الخلاصة: يعرض هذا المشروع استراتيجية فعالة لتعزيز الرفاهية الإيجابية والحفاظ على الثقافة من خلال الابتكار الرقمي. والأهم من ذلك، وللملاءمة السياق الفريد لهذه الدراسة والمشاريع التصميمية المشابهة في المستقبل بشكل أفضل، تم اقتراح نموذج نظري جديد للتفكير التصميمي يركز على التكيف الديناميكي بين مركزية المستخدم ومركزية الموضوعية لضمان موثوقية وصحة التحليل في عملية التفكير التصميمي. الكلمات الدالة: مجتمع الناكسي، الرموز التعبيرية، التفكير التصميمي، التمرکز حول المستخدم، الاستدامة الثقافية والنشر، مؤشر الرفاهية.

1. Background and Study Context

The purpose of this article is to examine the design thinking process of a research project that was implemented to produce a set of Naxi-community-based emojis. This endeavor supports a government-led initiative in Yangxi Village, situated within the Naxi Autonomous County. This initiative emerged as a response to the dire predicament of cultural extinction confronting the Naxi minority. Such a crisis not only jeopardizes the cultural heritage of the Naxi people but also imperils the ethnic identity. Specifically, the gradual obliteration and overlook of Naxi cultural elements has led to a diminution in the avenues available for the offspring to explore and connect with their ethnic roots, as well as the negative ingroup attitude due to public discrimination, subsequently engendering an increasingly insecure ethnic commitment (Phinney and Ong, 2007). The research delved into the interplay among three fundamental aspects of human life: cultures, culturally specific emojis, and the ingroup well-being index of the Naxi society.

1.1. Cultural Extinction and Emoji

Experts warn that globalization and modern assimilation are silencing minority cultures, customs, and languages (Endangered Culture and Language Preservation, 2020). There's a growing concern that without state intervention, Naxi culture will die out (Poupard, 2017). Hu (2012) identifies three signs of cultural endangerment in the Naxi community: a decline in cultural transmitters, changes in social structures supporting cultural transmission, and a tendency for transmission to become static or inauthentic. This suggests that while Naxi culture still exists, its diffusion is slower than its disappearance and deformation, putting it at risk of extinction. Naxi Dongba culture appears to be on the verge of extinction due to the struggle of its traditions to adapt to modern times, diminishing numbers of cultural transmitters, and the impact of commercial tourism.

In terms of non-verbal communication, emojis are recognized as culturally significant cues online (Lebduska, 2014). Hakami, Hendley, and Smith (2021) discuss the cultural appropriateness of emojis, noting that while cultures may share similar emoji sentiments, cultural differences can shape feelings differently. Within the Naxi community, traditional practices are being replaced by modern tools, reflecting the influence of Sinicization, and further highlighting the importance of cultural sustainability through Naxi-themed emojis.

While existing research analyzes the cultural conditions of the Naxi community and provides strategies for cultural preservation (You, 2012; Hu, 2012; Zhu, 2018;), studies on the impact of cultural sustainability and dissemination respectively on young Naxi individuals' ethnic identity and ingroup well-being index are lacking. Moreover, there has been no design practice for Naxi-community-based emojis. This study, inspired by Hakami, Hendley, and Smith (2021), focuses on culturally situated aspects such as worship, rituals, written scripts, costumes, festivals, and traditional props to design emojis relevant to the Naxi context.

1.2. The main study's findings

The main study led to the development of the new design of a set of Naxi-community-based emojis, which proposed digital cultural sustainable options for this culturally niche and vulnerable group and can be used as a user-centered design product to serve convenience to in-group daily communication online, as a better stage to sustain culture insides and express their uniqueness outsides.

In terms of qualitative findings, this study confirmed four clusters of target cultural elements that are recommended as the representative of traditional Naxi culture:

1. Worship (the Naxi god of nature 'Su', god of war 'Sanduo')
2. Activity (festival of Torch)
3. Necessities (Dongba written scripts, women's and men's Costumes)
4. Prop for rituals (funeral scroll, wooden plate paintings, 'Five Gods Crown')

Only the emojis that were evaluated as qualified and accepted vehicles of Naxi culture can achieve the goal of better cultural sustainability and dissemination and, eventually enhancement of the ingroup well-being index. Fortunately, all 9

Naxi emojis are measured as carriers that are qualified and of a significantly high degree of acceptance in Aboriginals' perception through The Naxi Emoji Feedback Questionnaire (see Appendix A) adapted from Sadiq and Shahida's (2019) questionnaire (see Appendix B). The items of the questionnaire here are set for evaluating new emojis from five dimensions:

1. Image distinctiveness (is the emoji visually understandable?) (Unicode, 2018)
2. Degree of favor
3. Sentiment evoking
4. Application willingness
5. Improvement space

New qualified and accepted emojis would contribute to the following aspects in aboriginals' perception:

Practically, 1. Make up of aboriginals' dissatisfaction towards existing emojis and bring higher convenience to ingroup communication online,

2. Better indigenous cultural sustainability and dissemination particularly for those who are on the verge of extinction in a digital way,

3. Make netizens curious and attract more visitors to come here to generate financial income;

Theoretically, based on the above qualitative findings, the new design of emojis has potential implications for upgrading the ingroup psychological well-being index in two ways

1. According to the convincing research of Yip and Fuligni (2002) the association between ethnic identity salience and the positive well-being items was moderated both by ethnic identity achievement and affirmation/belonging, such that the association became more positive as feelings of affirmation sense and ethnic identity achievement became greater. The qualitative findings imply that the new emojis can positively affect ethnic identity achievement and affirmation/belonging (theoretical logical explanation later in the Conceptual Model part).

2. The enhancement of economic status will directly impact ingroup individuals' emotional states, a variety of experiments proved that income and happiness are positively associated (Inkeles, 1960; Wilson, 1967; Bradburn, 1969; Robinson and Shaver, 1969; Davis, 1965; AIPO Poll, 1970)

Notably, due to the universally limited educational level of Naxi indigenous people, the project thus is user-centered and objectivity-centered, that is, making a dynamic adaptation between aboriginals' suggestions and authoritative relevant references. The new design-thinking model is put forward and shown below in Fig.1, to theoretically guide future designers who intend to create culturally situated emojis, in particular for those projects' target users who have a limited level of cognition. This is the first study to propose a new design model which fits in practices aim at creating culturally situated emojis for education-poor regions.

2. Theoretical Motivation of Design Practice

The available research literature indicates that children, including those in their infancy, possess the ability to effectively use various semiotic and modal resources in order to comprehend and interpret diverse forms of symbolic allusions (Namy and Waxman, 1998; Plester et al., 2011). This inherent ability is also called the translanguaging instinct of humans, it can help people surpass the limitations of strictly defined verbal cues and surpass the culturally established bounds of language in order to attain efficient communication (Li, 2016). German philosopher Ernst Cassirer (Posner, 2004) first used the term "Cultural Semiotics" and implied that it is in symbolic forms of a community that forms its own culture.

The new Naxi emojis serve as a culturally worldwide stage to better express Naxi cultures on the Internet in symbolic forms, fully leveraging the translanguaging instinct of humans to make inter-cultural communication and maintain the cultural accessibility of future indigenous offspring as well.

3. Design thinking methodology

This study utilizes the design thinking technique to approach the research, which has been strongly advocated for implementation (e.g. Luchs, 2016). The Hasso Plattner Institute of Design at Stanford University, often referred to as the

d.school, has created a five-stage model for the design thinking process (shown in Figure 1). The system is in a constant state of development and iteration. The creative manifestations often rely on critical techniques, namely design thinking qualities like prototyping, the trial-and-error technique, and the use of abductive reasoning. (Deserti and Rizzo, 2014; Martin, 2009).

The goal of the design thinking is to develop applicable innovations that solve problem for people, as it considers and it is a result-oriented approach. Design thinking is first and foremost a human-centred innovation process aimed at generating innovative solutions, which involves eliciting the customer's real needs rather than simple system requirements (Araujo et al., 2015), then, a series of quick and easy problem-solving prototypes are generated, which eventually converge into innovative solutions (Vetterli et al., 2013).

More recently, design thinking has become a popular method that employs a range of tools and method such as, ethnographic methods, like observation, interviewing, and employing informant diaries (Beckman and Barry, 2007), along with representational tools such as personas and empathy journey maps, are often utilized. Design thinking also employs brainstorming and mind maps which are normally applied in team (Seidel and Fixson, 2013; Liedtka, 2015). Prototyping as a mean of visualization is the initial demonstration of the developing process of 'Object to Representamen' (Peirce, 1931), can facilitate critical thinking and serve new directions for continuous iteration and experimentation (Dalsgaard, 2014; Glen et al., 2014). While storytelling can make replacement of means visualization like, sketch or prototypes (Carlgren et al., 2016).

users,

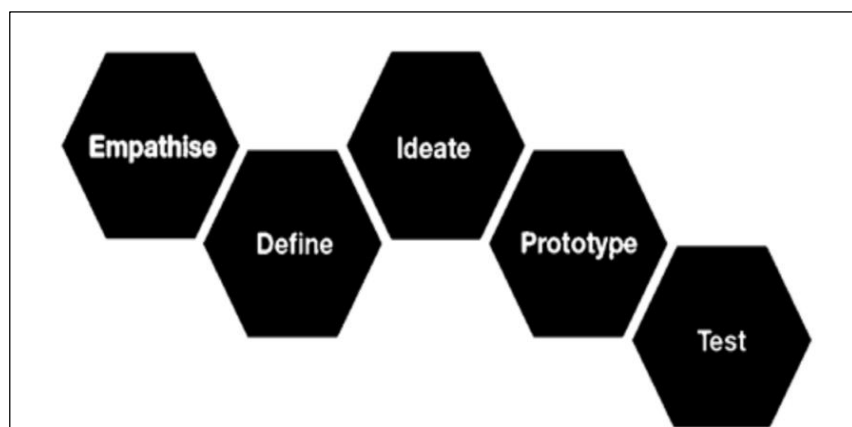


Fig 1: Five stages of design thinking (Plattner, 2010)

In every phase, issues are identified and questions arise, accompanied by additional thoughts, until the optimal solutions become clear and are selected. These steps may occur concurrently or in a sequential manner, and can be repeated (Mickahail, 2016). Unlike critical thinking, design thinking is characterized by its ability to dynamically balance between rationality and intuition (Martin, 2009). Analytical thinking deduces general rules from past data, whereas intuitive thinking aids in garnering inspiration for creating the future (Martin, 2012). The environment of end-users has to be taken account in design thinking process, it hinges on a comprehensive grasp of the issue, encompassing the customer's explicit and implicit requirements, the end-user's context, societal influences, adjacent market factors, and evolving trends (Holloway, 2009). This is the gestalt view the design thinker should espouse, which can provide a more holistic remedy transcending ones that built upon single components.

Significantly, this research constructs an enhanced theoretical model of the design-thinking process, building on the foundational model proposed by Sadiq and Shahida (2019) (see Appendix C), which is more suitable for the context of this study (refer to Fig. 1). The findings of this study continue to align with the assertions of Sadiq and Shahida (2019) and Martin (2012) that design thinking encompasses both analytical and intuitive thinking while ensuring the reliability and validity of the design. Therefore, this concept is preserved in the revised model. However, this study critically argues the

traditional notion that solely user-centered analytical and intuitive thinking in the design-thinking process is insufficiently rigorous for the specific circumstances of this research.

The design work in this study is grounded in Cultural Semiotic theory, as previously mentioned. In this research, the analytical thinking process is not solely based on analyzing participant responses in interviews but is also supported by authoritative references. The rationale for this approach is as follows:

The study found that educational attainment in the Naxi ethnic minority region is generally

lower than in more developed areas. More importantly, there is a tendency among Naxi residents to be unaware of their unique cultural elements. Furthermore, even the more widely recognized aspects of their culture are not well understood by the indigenous population. Their knowledge often extends only to the superficial elements of classical cultures. This is because contemporary members of the Naxi community tend to prioritize official knowledge that facilitates their migration to major urban centers outside their villages while neglecting the knowledge of their own ethnicity.

Therefore, to better fit the context of this study, it is advocated that the analytical thinking in the design-thinking process should rationally balance between user-centricity and objectivity-centricity. This requires the researcher to further validate the authenticity of the human-research data by referring to expert literature. This adaptable step ensures that the new emojis developed in this research are based on truth, thereby disseminating cultural truth and avoiding misleading the audience. If cultural facts are not mentioned by interviewees but appear frequently in prestigious references, the research still considers them as necessary knowledge and translates them into new emojis, as niche cultural elements are more susceptible to being forgotten over time and are thus more worthy of preservation.

3.1 Hypothesis

From qualitative findings, the new emojis designed for Naxi cultures have the potential to 1) more effortless ingroup online conversations, 2) a global-scale platform for cultural expression, 3) digitally longer cultures' lifespans, and 4) promote local economic growth through advertising. As a result, these advantages will strongly solidify two essential aspects of ethnic identity: the exploration process of ethnicity and an ingroup positive attitude. For example, aboriginal people can use daily conversations as a digital channel to learn about or review their knowledge of their ethnicity, and the widespread dissemination of cultural content online can help their ethnicity gain higher visibility and recognition both at home and abroad, which in turn boosts members' sense of pride and confidence, combats ethnic discrimination.

Ethnic identity achievement (EIA) and affirmation/belonging (EIB) moderated the association between ethnic identity salience (EIS) and the positive well-being items; the strength of the association elevated with higher levels of EIA and EIB (Yip and Fuligni, 2002). The two terms posited by Phinney (1992) to describe two dimensions of ethnic identity are ethnic identity achievement (EIA) and ethnic identity belonging (EIB). EIA mainly refers to members' efforts to understand their ethnicity, while EIB denotes members' attachment to and positive attitude toward their ethnic group (Phinney, 1992). Therefore, the qualitative findings of qualified emojis can reinforce the exploration process, such as a deeper understanding

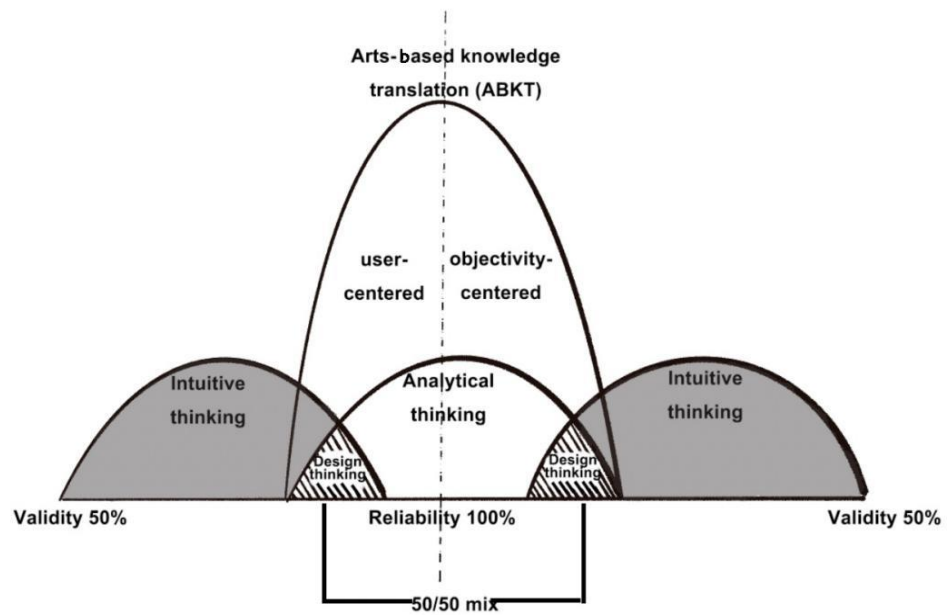


Fig 2: Theoretical backbone of design thinking applied in this study

of the Naxi aboriginals' ethnicity and a positive ingroup attitude, such as feeling proud by communicating their unique culture globally, accordingly, this provides more fuel for EIA and EIB, respectively. The positive feedback loop will be constituted, since the enhanced EIA and EIB serve as moderators to the association of the Naxi ingroup's ethnic identity salience and well-being index, then achieving a higher ingroup happiness index within the Naxi community.

Additionally, if in aboriginals' perception, the new emojis are qualified enough to be empowered to the potential capability to make economic growth, then the higher economic status will theoretically contribute to members' psychological well-being index. Given that tons of prior experiments confirmed that, income and happiness are positively associated, those in the highest economic status group were happier, on average, than those in the lowest economic status group (Easterlin, 1974; Inkeles, 1960; Bradburn, 1969; Robinson and Shaver, 1969; Wilson, 1967 and Davis, 1965).

To validate the hypothesis, the study's qualitative and quantitative findings must be consistently ideal. Initially, the Empathy phase of the in-site interviews aimed to uncover the genuine design motivation, specifically, whether aboriginals perceive the new emoji as contributing directly to easier daily online communication, enhanced cultural sustainability and dissemination. Subsequently, the online surveys conducted during the Testing arm were to gauge the Naxi community's acceptability and willingness to utilize the new emojis, and the inseparability of process and product. The conceptual model of the hypothesis is shown above in Fig.3.

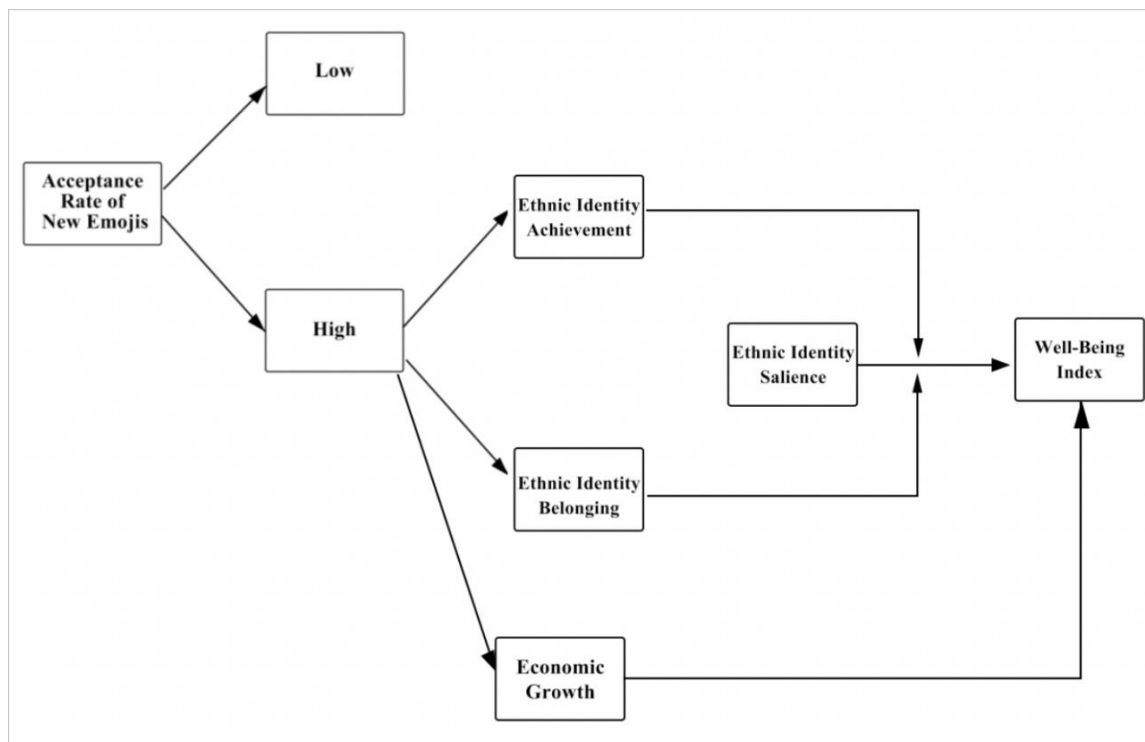


Figure 3: Conceptual Model of the Role of Naxi Emojis with High Level of Local Application Rate in Separately Facilitating Ethnic Identity Achievement, Ethnic Identity Belonging and Economic Growth to Influence Naxi Ingroup Well-Being Index.

3.2 Empathy

In this stage, according to Stanford d.school, empathy is used as a basis for understanding the user's intentions through understanding the user's behavior in their life, interacting with the user and understanding their needs in various areas, and experiencing the user's life as they experience it (Plattner, 2010). This study adopts the first version of the EM template proposed by Matthews that four different areas should be covered when making an Empathy Map of a person (Ferreira et al., 2015)(see Fig.4).

In terms of the EM template, the author records what the Naxi aboriginals (target users) see, say/do, hear and think/feel during qualitative stage in a hand-drawn empathy map (see Fig 5). Based on seeing, feeling, understanding, communicating,

hearing, observing throughout the on-site interviews, the author has acquired a deep understanding of the cultural situation, as well as the aboriginals' use and perceptions around the current emojis and unborn Naxi emojis.

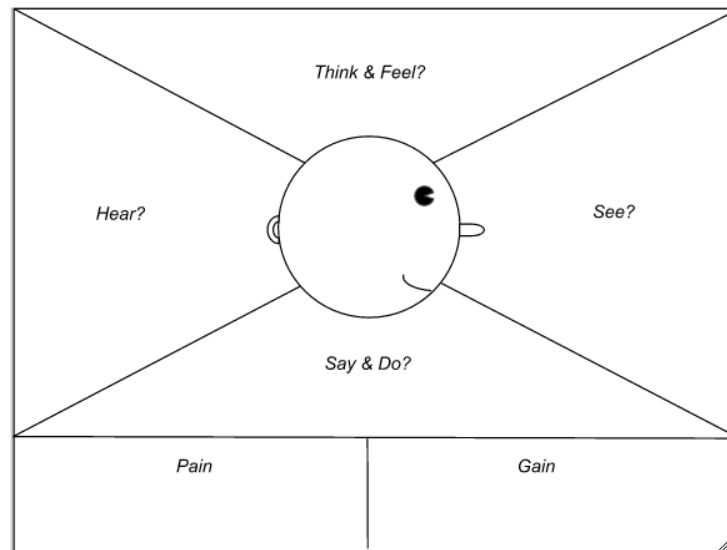


Fig 4: Template of empathy map (Ferreira et al., 2015)

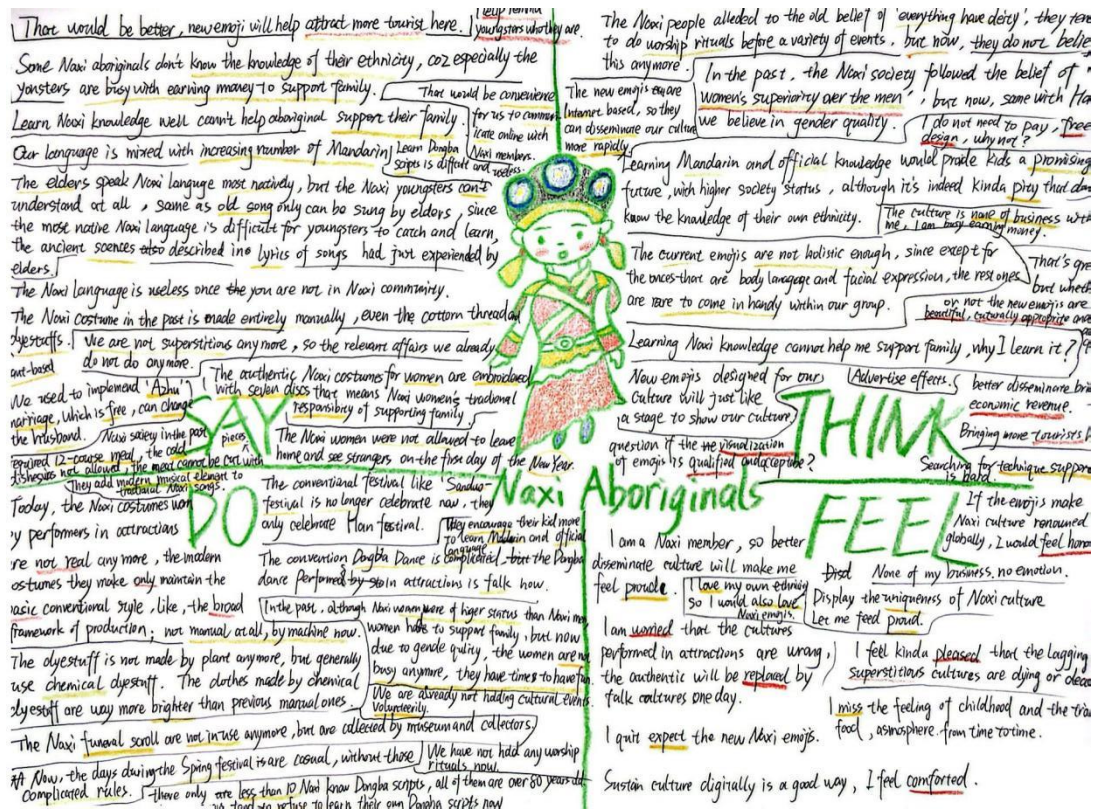


Fig 5: Emphy map handpainted by author

The researcher conducted interviews with a sample of 15 Naxi aboriginals. This study centers on conducting interviews with indigenous leaders and esteemed individuals who master more ethnic knowledge than average aboriginals, the demographic information of participants is shown below in Table 1. The finding revealed that most aboriginals are heavily reliant on emojis as essential means of communication, all the youth population within the community use emojis, WeChat,

and other social media. However, the participants tend to express slight dissatisfaction with current emojis, which contain too many Western-culture emojis that are regarded as useless within the Naxi ingroup online conversation.

Table 1. Demographic information of Naxi participants

No	Name	Age	Education	Job
1	He Shouchun	50	Senior school	Official in General Committee of the Whitehorse Community
2	He Zezhou	30	Tertiary	Official in General Committee of the Whitehorse Community
3	Mu Chongqiong	53	Middle school	Official in General Committee of the Whitehorse Community
4	Bao Chunlei	35	Bachelor	Official in Education Bureau
5	Shu Runzhen	42	Middle school	Average person in Naxi community
6	He Xu	24	Bachelor	Average person in Naxi community
7	He Youjin	42	Senior school	Tourism practitioner
8	Yang Jiaqin	50	Middle school	Tourism practitioner
9	He Guoqiang	49	Senior school	Party branch secretary
10	Yang Jinquan	48	Middle school	Tourism practitioner
11	He Maolan	42	Middle school	Tourism practitioner
12	He Zhifang	40	Middle School	Tourism practitioner
13	He Shengli	31	Middle School	Average person in Naxi community
14	He Shaowen	50	Middle School	Official in General Committee of the Whitehorse Community
15	He Cuiying	31	Middle School	Average person in Naxi community

Subsequently, the following action included verifying the existence of pre-existing emojis that represented the Naxi community's culture. After conducting a search on Google and consulting Emojipedia, a widely recognized online resource for emoji references, this study still cannot locate any emojis specifically associated with the culture Naxi minority group.

To ensure process and product are inseparable, every participant contributed details and historical insights about their cultural heritage, encompassing topics like cuisine, notable sites, god of worship, nomenclature, myths, clothing styles, and celebrations, prestigious intangible cultural heritages such as ethnic musical instrument, dance, and craft. The researcher intentionally refrained from posing queries like "What aspect of your culture might become an emoji" to prevent influencing responses based on what participants believed would be most effectively depicted or easily recognized by others in emoji form.

The findings of the interview question, 'What advantages would arise from the introduction of emojis tailored to the Naxi community?' showed that, in aboriginals' perception, the Naxi emojis can 1) compensate for aboriginals' dissatisfaction towards existing emojis and provide higher convenience of ingroup online communication, 2) sustain and disseminate indigenous culture which is on the verge of extinction digitally, make not only ethnic knowledge can still accessible to indigenous offspring but also boost cultural exposure and visibility globally, 3) attract more visitors here to make economic growth, 4) serve as a substitute for written texts.

These findings are the practical motivations of the design project here and also have theoretically extended knowledge of psychological well-being. Deduced by the authoritative theories such as income-psychology positive correlation (Easterlin, 1974; Inkeles, 1960; Bradburn, 1969; Robinson and Shaver, 1969; Wilson, 1967 and Davis, 1965) and EIS-well-being relationship positively moderated by EIA and EIB (Yip and Fuligni, 2002). The benefits brought by new emojis to the community can augment the ingroup well-being index through respectively three dimensions, improvement of economic status, and reinforcement of EIA and EIB. The thematic analyzing process is illustrated below in Table 2 and Table 3:

Table 2: Main themes and categories for the question ‘What advantages would arise from the introduction of emojis created for the Naxi community?’

Themes	Categories
Positive Well-Being Items	Economic Growth Ethnic Identity Achievement (EIA) Ethnic Identity Belonging (EIB)

Table 3: Process Code Frequency from Semi-Structured Interviews’ Data

Categories	Codes	Frequency
EIA (Exploration Process)	Better cultural sustainability	12
	More convenient than existing emojis make users love	12
	Ingroup must-follow trend	5
	Compensation for no written texts	6
	Review and engrave ethnic knowledge	10
	Remind users who they are	11
	Keeping cultural future accessibility	9
	Available to aboriginals who live outside the group	8
EIB (Ingroup Positive Attitude)	Better cultural dissemination	12
	Better cultural expression	11
	Proud	10
	Confident	9
	Less discrimination	4
Tourism Industry	Like advertisement on the Internet	8
	Making outsiders curious	7
	Attracting more visitors	12
Any Other Consumption	Tourism relevant like accommodation and souvenir shops	1

If all the new emojis could receive a high degree of acceptance among Naxi aboriginals, they would be considered as the suitable remedy to enhance the ingroup well-being index. The results of emojis' feedback will be measured by survey and shown in the Testing stage of the design thinking process.

According to the perceptions of indigenous interviewees, the findings of the first category of Economic Growth argue that new emojis that are designed for the Naxi community are crucial due to the anticipated economic returns. Previous research has pervasively focused on Within-Country Comparisons of the association of socio-economic status and happiness and related emotional states/ mental health, making clear there is a clear indication here that income and happiness are positively associated, those in the highest economic status group were happier, on the average than those in the lowest economic status group, defeating the image of "carefree but happy poor", (Easterlin, 1974; Inkeles, 1960; Bradburn, 1969; Robinson and Shaver, 1969; Wilson, 1967 and Davis, 1965), these results theoretically demonstrate that new emoji designed Naxi cultures are capable to indirectly contribute to the in-group well-being index via fostering economic growth. An indigenous official in Naxi local Education Bureau stated,

As we all know, the Internet is a way more rapid channel to disseminate our culture, (so emoji) a great stage to display our culture...without the limitation of both space and time, people can pick up and appreciate our culture anywhere, anytime... they (outsiders) will be curious with our special culture, attract more tourists here... finally upgrade our economy here, we can live a better life...

The association between ethnic identity salience (EIS) and the positive well-being items was moderated both by ethnic identity achievement (EIA) and affirmation/belonging (EIB), such that the association became more positive as feelings of affirmation sense and ethnic identity achievement became greater (Yip and Fuligni, 2002). According to Phinney (1992), ethnic identity achievement (EIA) relies on the member's exploration and understanding of the role of one's ethnicity as a part of one's self-construal, and ethnic identity belonging (EIB) derives from the member's feelings of attachment and

positive ingroup attitude for one's ethnic group. The exploration process and positive ingroup attitude are two critical components of ethnic identity (Phinney and Ong, 2007).

Exploration, which may be described as the active pursuit of knowledge and experiences on one's ethnic background, encompasses a diverse array of activities like reading, engaging in conversations, acquiring cultural customs, and participating in cultural gatherings (Phinney, 1990; Phinney and Ong, 2007).

It is unanticipated that, new emojis in Aboriginals' perception are capable of 1) making daily conversation tie local culture tighter, b) new emojis can keep cultures that are no matter at the verge of extinction or absence in behavioral performance digitally, then maintaining the accessibility of local knowledge to ethnic offsprings, this will directly contribute to EIA. Specifically, when it comes to the exploration process of their ethnicity, firstly new emojis can sustain indigenous cultures digitally, although cultural activities are fading away, preventing members' ethnicity exploration process from inaccessibility; secondly, new emojis used online daily conversation can remind users who they are from time to time, and doing the exploration process every day to facilitate individual's ethnic identity achievement, even applicable for members are working or studying outside the minority, that is, remotely supportive cement or rebuild the process of seeking information and experiences relevant to one's ethnicity, especially the younger generation who cannot leave without mobile phone and with yearning for big cities. An Naxi Official in General Committee of the Whitehorse Community said,

Having emojis for our culture is great, it would just be convenient to send messages to another communicator online, just with a touch on the screen, but not type words.... hhh...moreover these emojis can remind those youngsters of their root ethnicity whenever as long as they turn on their phones.

Beyond that, in aboriginals' perception, new emojis have the potential to shape more positive ingroup attitudes and feelings of Naxi aboriginals through higher visibility that is brought up by better cultural dissemination, this will directly contribute to EIB. According to Tajfel's (1978) argument having positive perceptions of one's own group and self-identity within the group is crucial, especially for members of minority and lower-status groups. These individuals often face discrimination, which can result in negative attitudes towards their own group. Fortunately, in Naxi aboriginals' perception, designing emojis for their ethnicity can better disseminate culture, help them rise to fame, enhance the visibility on a global scale and degree of exposure of their ethnicity, to some extent rebuild the positive attitude like pride and confidence to aboriginals themselves and then further facilitate aboriginals' ethnic identity affirmation/belonging. Some participants said with pride and expectation:

Emojis would let people from all over the world know us, a unique minority, once they get access to our culture, they would get curious and crave to get here...you know...our culture is exclusive and splendid...they will love our culture if they know them...it will make me feel pleased and proud...

The findings convincingly provide theoretical support that through strengthening two critical components of ethnic identity, exploration process and positive ingroup attitude, then accordingly, stronger EIA and EIB as fueling moderators to the positive correlation of EIS and well-being index, ultimately achieving a higher happiness index within Naxi society.

3.3 Define

Define is the second stage of the design thinking methodology. It is the process of defining the problem statement according to the pain points found in empathy stage (Plattner, 2010).

In the empathy stage, this study empathises with the user of social media in the context of Naxi community. The findings of in-site interview demonstrate that for Naxi communities, 1) there is not a single emoji that stands for their cultural elements on social media; 2) creating a set of new emojis that are closely tied to local culture is what the Naxi aboriginals' need and wish; 3) as earlier mentioned, due to the universally limited educational level of Naxi aboriginals, this project has to combine the responses of participants with authoritative referenced. These are the problems, or design challenges, that we would like to solve. The problem statement is as follows:

Which cultural elements can be considered as the cultural representations of the Naxi community and designed as new emojis?

3.4 Ideate

During the ideation phase of the design thinking process, participants engage in developing ideas and exploring numerous potential solutions to address the identified problem. This approach facilitates innovation and thorough examination within a limited timeframe. To approach the research problem, we used a combination of methods including interviews and sketches, utilizing Procreate, a digital painting tool.

The researcher did the in-site interviews with the real-world natives raised in the Jinuo community and spent almost half a month there in Naxi Autonomous County.

Importantly, through a thematic analysis of interview data obtained from a sample of 15 participants, the researcher has generated a concise overview of the present state of traditional culture see Table 4 & Table 5.

Table 4: Main themes and categories for the question ‘Which cultural elements can be considered as the cultural representations of the Naxi community and designed as new emojis?’

Themes	Categories
Prevailing Cultural Elements	Acticity
Disappearing Cultural Elements	Necessities
	Principles
Oral Expressions	
Dead Cultural Elements	Worship
	Prop for Rituals

Table 5. Process Code Frequency from Semi-Structured Interviews for the question ‘Which cultural elements can be considered as the cultural representations of the Naxi community and designed as new emojis?’

Frequencies of Codes		Frequencies of Codes		
		Codes	Categories	Codes
Torch Festival	Activity			
12	Featured Men’s and Women’s Costume	Necessities	Dongba written scripts	15
3	New Year Relevant Rules	Principles	‘Everything have deity’	6
		Worship	War God 'Sanduo'	5
3	Funeral Scroll	Props for Rituals	‘Five Gods Crown’	6

Participants generally commented that the most representative elements of the Naxi culture are as follows: Dongba written scripts which are dubbed as the only living pictograph, The Naxi featured attire for women and men, the Torch festival, the Naxi war god 'Sanduo' (The specific explanations of each cultural element are shown below in Fig 16). However, this study found the implicit pain point exists here in the Naxi community, since the educational level of Naxi people is normally low. And the knowledge of their own ethnicity is also neglected by both schooling and parenting. They tended to be illiterate about the relatively unsung and unclassical culture and beliefs of their own ethnicity. This study uncovered that some nich cultural elements were much easier to freeze in time like those to be accessible only to particular

prestigious Naxi aboriginals in the past, the average aboriginals had no chance to get in. For instance, the researcher has read a variety of authoritative references written by experts who dive into Naxi cultures (e.g. Clarke, 2003; Arcones, 2015; Yuhua, 2002; Bai, Sun, and Bai, 2014): the human-faced, snake-bodied Su God is the god of all things worshipped by the ancient Naxi people; the Naxi wooden plate paintings are inserted around the sacrificial site where past Naxi members offer sacrifices to the gods or ancestors; the Naxi Sacred Road scroll used to apply in Naxi funeral rituals aims at releasing souls of the dead from purgatory in the past. However, during the interviews with Naxi heads or cultural practitioners, the researcher found that none of the 15 participants mentioned or remembered the 'Su' God and wooden plate paintings. Luckily, one out of fifteen participants knew and unfolded the details and stories on the Sacred Road scroll since his grandfather once had one. His grandfather was a 'Dongba' who used to host the local funeral ritual, which is a title for the recognized wise men in past Naxi society; conversely, the rest of the participants even did not hear of the Sacred Road scroll, since they did not have relatives of 'Dongba'.

Those above niche ignored cultural elements are more worthy to be designed as emojis for in-group education on ethnic knowledge, protecting these exclusive niche cultures from completely drowning in time. That is why this study proposes a new design-thinking model (see Fig 2) that features the dynamic adaptation between the user centrality and objectivity centrality. It is the use of authoritative literature for cross-referencing, where appropriate, to check for gaps and authenticity in the data provided by the users and to further ensure the reliability of the data obtained from the analytical thinking process.

Besides, the cultural elements of old principles are hard to visualize, it will be the next project of this study. Finally, a total of 9 Naxi cultural elements are selected here to be visualized as emojis :

1. Worship (the Naxi god of nature 'Su', god of war 'Sanduo')
2. Activity (festival of Torch)
3. Necessities (Dongba written scripts, women's and men's Costumes)
4. Prop for rituals (funeral scroll, wooden plate paintings, 'Five Gods Crown')

During the ideation phase, the researcher employed another technique: sketching, utilizing materials that originated from photographs shot by the researcher or provided by indigenous participants during qualitative stage. As well as the authoritative sources (Bai, Sun, and Bai, 2014) identified by the researcher. Sketching, a freehand drawing technique, allows for the rapid testing of ideas. In terms of existing reliable sources, the researcher created a series of sketches corresponding to various cultural elements, drawing upon these sources to inform the design of emojis. These sketches were created digitally using Procreate software and an Apple pencil. Below, we present all 9 sketches for new Naxi emojis, along with their referential materials, designed specifically for the Naxi community.



Fig 6: Naxi Representation 1: Funeral Scroll

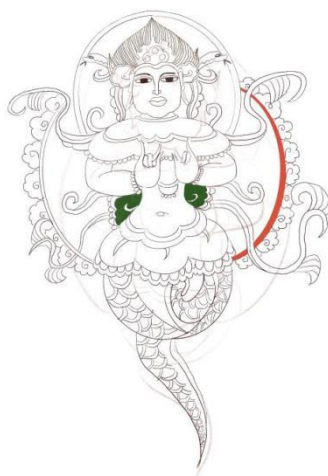


Fig 7: Naxi Representation 2: Nature God 'Su'
Source: (Bai, Sun, and Bai, 2014)



Fig 8: Naxi Representation 3: Torch Festival
Source: Provided by He Maolan, the Tourism Practitioner



Fig 9: Naxi Representation 4: War God 'Sanduo'



Fig 10: Naxi Representation 5: 'Five Gods Crown'



Fig 11: Naxi Representation 6: Costume for Men

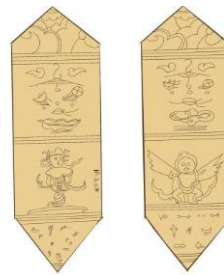


Fig 12: Naxi Representation 7: Wooden Plate Painting
Source: (Bai, Sun, and Bai, 2014)



Fig 13: Naxi Representation 8: Dongba Pictograph



Fig 14: Naxi Representation 9: Costume for Women

3.5 Prototype

A vital step in the design thinking process is prototyping, for communication and experimentation (Li et al. 2017). Designers often generate innovative ideas that are non-verbal and challenging to articulate in words. Technicians then translate these ideas into tangible objects or diagrams to convey their concepts (Ferguson, 1977). The initial set of 9 Naxi-community-based emojis was created using Procreate (see Fig. 15). While high-fidelity prototypes traditionally require Adobe Photoshop and a Wacom tablet, the use of Procreate on an IPAD with an Apple pencil is more practical for in-site interviews due to its portability.

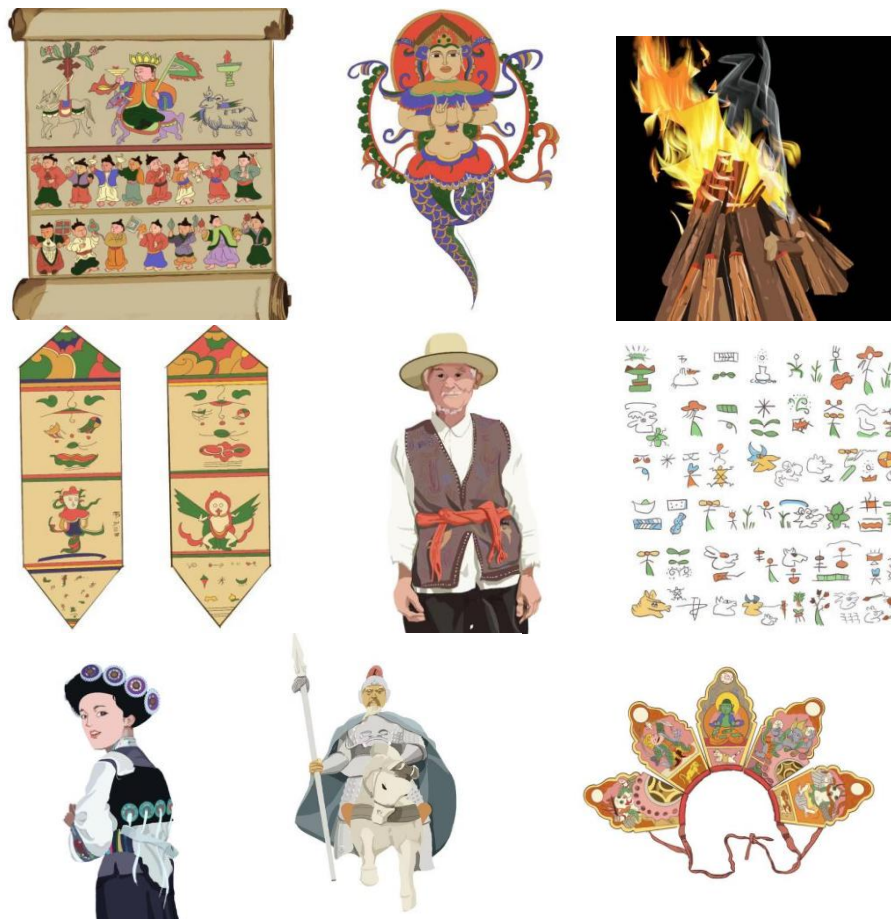


Fig 15: prototypes of 9 new Naxi emojis

Before proceeding to the final survey to test, the researcher contacted and employed a coordinator who is a Naxi aboriginal named Bao Chunmei and helped to recruit 12 people with snowball sampling to examine the first prototype version of the Naxi emoji set. The researcher made QR codes for questionnaires and sent them to Bao Chunmei. Then participants scanned the QR codes of questionnaires that were distributed by the coordinator to fill up questionnaires. The two questions the researcher asked are as follows:

Q 1: Write down one word that comes to your mind after seeing the emoji.

Q 2: Would you like to give any suggestions to improve these Naxi emojis?

The respondents' feedback is given below:

Q 1: Write down one word that comes to your mind after seeing the emoji.

a) 8 said the first clue comes to them is absolute Naxi style.

b) 3 said that they like these emojis.

c) 1 said this set of emojis is terrific.

Q 2: Would you like to give any suggestions to improve the Naxi emoji?

a) 6 people said that no need to modify or good already.

b) 5 said there should be accompanying texts to educate the viewers the meaning behind each emoji, due to the facts that the outgroupers (Non-Naxi people) cannot catch them.

c) 1 said that the Naxi emojis should be all-round launched and disseminated online.

In the above feedback, participants mentioned two issues: the addition of accompanying texts and the official launch. Based on the comments, we further improved the emojis. The change can be seen in the second version of the prototype (see Fig. 16), the accompanying texts serve as explanation and education function.



The Naxi Sacred Road Scroll used to apply in Naxi funeral rituals to release souls of dead from purgatory in the past.



Naxi nature god 'Su'



Naxi Torch festival



Naxi wooden plate painting which are inserted around the sacrificial site



Naxi men's costume



The Naxi written scripts which is dubbed as 'the only living pictograph in the world'



Naxi women's costume



Naxi war god 'Sanduo'



'Five Gods Crown' which is exclusively worn by the Dongba (the Naxi wise men) during worship ritual

Fig 16: Improved Naxi emojis with accompanying texts

The researcher gathered feedback again from 12 people (to finalize the emoji design). The feedback below was made by the participants:

- a) The combination of pictures and its accompanying essay make it clear.
- b) Then, no matter whether our offspring or the non-Naxi can learn our authentic cultural knowledge more easily.

3.6 Testing

According to the Stanford d.school, the purpose of testing is to refine and improve the solution by putting it in a real operating environment (Plattner, 2010). This study utilized survey methodology during the testing phase. Based on the original version of the questionnaire of Sadiq and Shahida,(2019) (see Appendix B), this study critically adapted a little. Specifically, the fifth item was self-developed, to better fit the situation of this study, since the application willingness of users is of great significance here, that is, the practicality of new emojis, which is overlooked in Sadiq and Shahida's (2019) research. To examine if the wording of the questionnaire and the logic of items is suitably read by users, the pilot studies were conducted twice in the Prototype stage. Each of the 11 emojis was tested and analyzed individually, yielding numerous results in both textual and pictorial formats, as illustrated in Appendix D. The volume of test data obtained from the surveys of all 11 emojis is too extensive to present in detail. Therefore, this report will focus on providing a holistic conclusion and highlight the most significant findings.

Questionnaire item: The questionnaire consisted of two parts. The first part aimed to collect demographic information such as respondent age, gender, use of social media, and educational qualifications. The second part was designed to collect the participants' feedback on the Naxi emojis. This part consisted of six questions:

- Q1: Write down one word that expresses your first impression, after seeing this emoji.
- Q2: What culture do you think this emoji represents?
- Q3: Please rate this emoji in terms of the degree you like.
- Q4: Please describe why you like or why you dislike this emoji.
- Q5: Would you like to use this emoji to make online communication?
- Q6: What improvement do you think should make for this emoji?

Questions 1, 2, 4, and 6 are opened-ended questions, 5 is closed-ended question. To get feedback on Question 3, we used a five-point, Likert-type scale: 1 = Pretty like to 5 = Pretty dislike it. The questionnaire can be viewed in Appendix A.

2) This study received 349 questionnaires (see Table 6) online of the 9 Naxi emojis. The anonymous survey was hosted on Questionnaire Star, a secure Chinese website used to collect survey-based data for research. The researcher remotely contacted and employed a Naxi aboriginal woman named Bao Chunmei to distribute QR codes for filling up questionnaires of emojis to the other Naxi members. The online survey took place in November of 2023.

Table 6. Numbers of Participants of Each Questionnaire of 9 Emojis

No.	1	2	3	4	5	6	7	8	9	total
Number	37	39	39	39	39	39	39	39	39	349

The study revealed that while most Naxi people can identify the 9 emojis as part of Naxi culture, only a few, like those representing the war god Sanduo, Naxi lady costume, Torch Festival, and 'Five Gods Crown', are widely recognized for their cultural significance. In contrast, emojis representing niche elements like the traditional Naxi god of nature 'Su', Naxi sacred road scroll, and wooden plate painting are largely unfamiliar to many Naxi, even though they are based on authoritative publications and known mainly to Dongba who used these items. The study emphasizes the importance of promoting less-known cultural elements that are at risk of being forgotten, alongside more popular ones like Naxi costume, Sanduo war god, and Torch Festival.

Regarding the popularity of these emojis, most of them are well-received, with a medium value of 1, indicating a high

level of favorability. The 'Naxi lady costume' emoji is the most popular, with the highest mean value of 1.435, indicating strong favorability among Naxi people. However, the 'god of Su' emoji is comparatively less popular, with a median value of 2.

The primary reason for the popularity of these emojis among Naxi people is their representation of Naxi culture and customs, which resonates with their ethnic identity. There is also widespread support among Naxi people for using these emojis in online conversations. The emoji depicting the Naxi lady costume has the highest application acceptance rate at 97.43%, while the emoji representing a niche cultural element unfamiliar to many Naxi people has the lowest acceptance level at 64.102%. Overall, the mean value of local application acceptance for all nine Naxi emojis is high at 81.0546%, despite varying acceptance rates among the emojis. Additionally, most Naxi people expressed satisfaction with the emojis that have been updated in the Prototype stage, indicating that they have no further suggestions for improvement.

Overall, the results support the hypothesis proposed in the study, both practically and theoretically, indicating a positive reception and preference for the incorporation of Naxi cultural emojis in online communication among Naxi aboriginals, which will contribute to ingroup well-being index through the effects brought by qualified emojis that were anticipated by Naxi aboriginals during qualitative stage.

4. Human-centered design in the context of culturally-situated emojis

This article examines the utilization of the design-thinking principle which is featured as its user-centered trait to conserve and propagate niche cultural elements within the Jinuo community in Jinghong City. It highlights the significance of this approach in comprehending the genuine cultural milieu, generating diverse potential interests through proposals for community-based emojis, and fostering positive transformations in mental health, especially for the Jinuo indigenous people, whose daily communication and livelihood are deeply rooted in their ethnic culture.

Design thinking is often associated with Information Technology (IT) and Business; however, its application in the visual design industry, particularly in culturally-specific emoji design, is less common. Sadiq and Shahida (2019) introduced a Namaz emoji tailored to Pakistani culture, highlighting the five-stage design thinking process and user-centric modifications. Similarly, Goh and Kulathuramaiyer (2020) developed a visual symbol for 'Oroo,' a sign language used by the Penans, emphasizing a user-centered approach where "creativity designers and non-designers work together" to ensure cultural relevance and support the sustainability of indigenous cultural values. Kimura-Thollander and Kumar (2019) employed a combination of surveys, interviews, participatory design, and participant observation to understand user needs, creating 40 emojis representing 16 nations. Their work addressed cultural gaps in the standard emoji repertoire and advocated for emojis that encompass a broader spectrum of cultural identities and narratives.

These scholarly contributions in the design industry underscore the pivotal role of engaging in meaningful dialogue with target users to fulfill the objectives of a user-centric design paradigm. User-centric design is increasingly recognized as indispensable, particularly in crafting enduring solutions to pressing social challenges such as the gradual erosion of cultural identity within ethnic minority communities.

Conclusion

This study mainly examines the design-thinking process within a PhD project aimed at supporting an initiative led by authorities in Naxi autonomous county. The project focuses on creating community-based emojis, which inspired and updated centering both the viewpoints of Naxi aboriginals and authoritative references, to enhance cultural sustainability and promote the dissemination of the Naxi community's culture.

Importantly, this is the first practice that creating community-based emojis for Naxi culture in the design industry so far. The set of community-based emojis serves as a conduit for the authentic culture of the Naxi community to facilitate substantive dialogues with pertinent stakeholders concerning the community's most cherished cultural aspects, thereby acting as a premier showcase of Naxi cultural uniqueness. Emojis are applicable to all relevant parties, including Naxi aboriginals, local officials, community organizations, and tourists, serving multiple purposes: firstly, enabling more

streamlined communication online among aboriginals, and secondly, better cultural sustainability and dissemination, then lastly, functioning as promotional material for tourism aimed at drawing a global tourist audience, thereby generating income for both governmental and local commercial bodies.

This design practice narrows the unconscious cultural gap made by the Unicode Consortium's emoji-adding decisions, the new community-based emojis can serve as make-up for current emojis to meet their need for more efficient ingroup communication online as well as a better worldwide stage that contributes to offering them the opportunity to express their unique cultures. Technologies therefore can reshape global cultural boundaries or transcend them. This effort enables cultures outside of Japan and the West to have the ability to convey their daily lives through emojis and participate in this new universal language, involving niche ethnic cultures. It is important for more and different nationalities to find representation through emojis; researchers or designers are advised to delve into specific countries or other aspects of culture in society that may be underrepresented. This will be the subject of future research.

It is worth noting that this is also the first study that put forward a new design-thinking model that embodies the new insight of dynamic adaptation between the user center and objectivity center. Simply put, due to the Naxi indigenous people universally having limited educational levels, the design-thinking process better resorts to related authoritative references edited by experts with high reputations, to achieve higher reliability and credibility of design process. This design-thinking model can contribute to the design industry, which focuses on community-based or culturally-situated emoji, especially for those projects' target users normally with limited educational levels, to better theoretically guide future designers, and empower higher reliability to design products to further ensure cultural authenticity implied by emojis, longer the lifespan of genuine culture but not fake culture.

Surprisingly, qualitative and quantitative findings provide support for the hypothesis that the Naxi emojis are widely accepted within the Naxi community and contribute to the Naxi ingroup psychological well-being index through two dimensions: improved economic status and enhanced EIA and EIB. In aboriginals' perception, the new emojis can contribute to the enhancement of individuals' ethnic identity achievement (EIA) and ethnic identity belonging (EIB) by directly nourishing its two critical components of ethnic identity, exploration, and positive private regard. Then theoretically motivate the positive association between ethnic salience and well-being index, in this way the association became more positive as feelings of belonging sense and ethnic identity achievement became greater, finally achieving the goal of a higher ingroup well-being index. Besides, the pervasively convincing truth of the positive relationship between income and well-being index within a country or a group provides theoretical dedication to the higher ingroup happiness index again. Accordingly, the qualitative findings show that, in aboriginals' perception, the Naxi emojis to some extent can functionally serve as advertisement and attract more tourists or capitalists, then generate revenue.

Upon validating this hypothesis, a limitation was identified. A unique aspect of the quantitative phase in this study, to better ensure the consistency of the standard of judgment of each emoji, compared to other research, is the requirement for participants to complete multiple questionnaires simultaneously. However, the limited patience of participants poses a challenge and may lead to non-response bias, a common issue in survey-based research. Specifically, Naxi aboriginal participants were required to complete 9 questionnaires at once, corresponding to the 9 new Naxi emojis. The demand for completing numerous questionnaires simultaneously often exceeds the participants' patience. In this study, three phenomena were occasionally observed: 1) some participants, eager to complete the task quickly, tended to provide overly simplistic responses to each questionnaire; 2) others, responded in socially desirable manners; 3) some only filled up a few of all 9 questionnaires, the researcher had to recruit participants again and again to fill up questionnaire that is insufficient number.

Appendix A

B. Emoji Study

Please note: All fields are mandatory



Write down one word that express your first impression, after seeing this emoji.

What culture you think this emoji represents for?

Please rate this set of emoji

pretty like	1	2	3	4	5	pretty dislike
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Please describe why you like or why you dislike this emoji

Would you like to use this emoji to make online communication?

What improvement you think should make for this emoji?

Note: this is just a template of questionnaire, the image of emoji is changeable to separately adapt to 9 emojis' feedback.

Appendix B

APPENDIX

Learning Pakistani Culture through 'Namaz' Emoji

1	Name (Optional):
2	Age:
3	Gender (M/F):
4	Are you using any Social media (Facebook, Twitter, Instagram etc.)?
5	Qualification?

Non-verbal communication is increasing use in the electronic messages. It is used to convey feeling, emotion, attitude and considered substitutes of the written language. Emoji is a form of non-verbal communication that has become very popular on social media (Facebook, Twitter, and Instagram). Emoji's are the representation of colourful pictorial images. These images are frequently used to express emotion and culture. The purpose of this study is to find out how Emoji's can represent the Pakistani culture. And how Pakistani people interpret the different Emoji's.

How much do you like the Emoji?

Like it a lot	1	2	3	4	5	Don't like it
---------------	---	---	---	---	---	---------------

Please describe why you like or don't like the Emoji.

A. *Emoji Study*

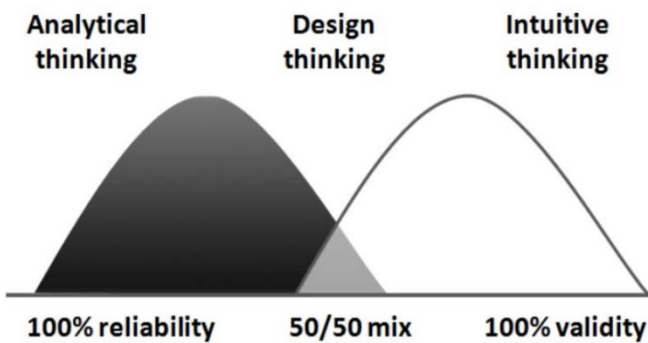
Please note: All fields are mandatory



Write down one word that comes to your mind after seeing the following Emoji:

What's the meaning of the above Emoji and what culture does it represents?

Appendix C



Appendix D

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