



Mental Model Diagrams as a Design Tool for Improving Cross-cultural Dialogue Between the Service Providers and Customers: Case of the Chinese Restaurant Business in Milan

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Abstract. The globalization facilitated the spread of different ethnic cultures in the migratory flows, and enacted coexistence issues within local environments. The Chinese community is one of the most important foreign groups in Milan, with notable involvement of the community members in the restaurant business. The aim of the research is investigating design potentials for cross-cultural environments and scenarios. We focus on Chino-Italian services in Italy, and on the investigation of the value elements framed by different cultural points of view, so to extract design hints for the improvement of the offered services, within a design for experience approach. Specific focus of this paper is verifying the potentials of application of a tool, Mental Model Diagrams, used in the design for experience field, for framing the described main goal. While discussing the different perspectives between the service providers and customers, as well as diverse groups of the customers, we present also an enhanced structure of MMD supporting a triangulation between three mayor schemes of mental models. Such diagrams showed as helpful in underlining the mismatch of the three clusters, the Chinese catering business people and their customers, identified as Italian and Chinese cultural groups. The paper provides also a discussion on extracted design hints from the diagram, underlining its potential as a communication and design tool.

Keywords: Design for experience · Service design · Mental Model Diagrams
Cross-cultural dialogue · Design tools

1 Introduction

1.1 The Cross-cultural Context of the Chinese Restaurants in Milan

Milan is the city in Italy hosting the highest number of foreigners, and the Chinese community is the fourth largest foreign group [28]. Chinese people have reached a considerable business scale in Milan and developed a socioeconomic enclave [4]; at the same time, the situation calls for more intercultural communication between the

Chinese community and the Italian locals. The catering business is one of the traditional strengths of the Chinese community in Milan, which accounted more than 1/4 of the Chinese enterprises [2]. During the last two years, we developed research aimed to investigate the situation of the Chinese food business in Milan [11]. The research revealed that most Chinese restaurateurs aim at improving their business. By performing observations in local contexts and preliminary case study, we observed that the Italians and Chinese are the majority customer groups. Both of them appreciate Chinese cuisine and service. However, these two groups showed some interesting differences in behaviors, motivations, and preferences. It appears that Italian and Chinese customers, in most cases, gain different values and experience from the Chinese cuisine and restaurant service, possibly due to different background knowledge and communication gaps. Meanwhile, the restaurateurs play a significant role in the catering business, as they offer dishes and service from the perspective of the service provider which is diverse from the customer's viewpoint.

The Chinese food business seems to have potentials of growth in Milan, and our research aims to investigate the cultural and practical obstacles that today reduce a full appreciation of Chinese cuisine and catering services, in order to outline some design strategies. In our research, more than on the growth of the economic business, we focus on the promotion and diffusion of a more profound knowledge of the Chinese culinary culture, as a mean for a better reciprocal understanding and acceptance of the two communities living in town. Several Chinese business people, permanently living in Milan and offering food products and services, are willing to improve the reputation of their business and the attraction they elicit in Italian customer; on the other hand, they are determined to maintain the cultural identity and the values of their root culture, while evolving from tradition toward contemporaneous values and paradigms. Our research starts from the assumption that cultural variety is much valuable for urban environments, and that designers can contribute to exploit differences in value proposition. To this purpose, one main task is the investigation of the user experience with respect to the food products and services, so to provide knowledge about expectations, motivation, pain points and all factors influencing the final evaluation of products and services. This analysis provides design hints and orients the definition of design strategies.

1.2 Design for Experience of the Chinese Restaurant Business in Milan

In this research, we carry on our investigation within a UX design approach. We regard the Chinese restaurant business not only as a business opportunity, but also as a rich and complex domain of experience [6], where knowledge, understanding, and appreciation are not only related to the intrinsic value of food and service, but also depend on culture and social influence.

Investigating Different Perceived Values and Experience of Service Providers and Customers. The aim of this paper is investigating and comparing the Chinese catering service experience perceived by both service providers and customers, so to extract the perceived values from different perspectives, and to outline opportunities and design strategies to support the Chinese catering business. We consider this research activity

as a contribution to the intercultural dialogue in the current situation. Considering the specific field of an intercultural environment, and the need for comprehending an experience within a service, we draw the focus on the application of certain design tools, Mental Model Diagrams (MMDs), for meeting the described main goal.

UX Tool Applied to User Group Triangulation for Extracting Design Opportunities. We present the results of an investigation conducted on a Chinese restaurant taken as reference field to investigate the different perspectives and perceptions that characterize Italian customers, Chinese customers, and the restaurant owner. To inquire into these three roles, we adopt two sources of data, the interview of the restaurateur and the online observation of customers, and the MMDs play a crucial role to align these different two data source in a holistic perspective. We developed the dining experience MMDs of this Chinese restaurant which illustrate a triangulation analysis of the attitudes of Italian customers, Chinese customers, and the restaurant owner. The discussion of the result reveals the mismatched and aligned experience and perceived values that guide us to several design hints, and it is a contribution to the definition of a research strategy.

2 Method: Applying Mental Model Diagrams in Cross-cultural Dialogues

2.1 Introduction of Mental Models

Mental Models. Mental models, as a term in User Experience (UX) field, are referred to as more detailed understandings of how systems and institutions work [15, 17], as they are the conceptual frameworks consisting of generalizations and assumptions from which we understand the world and take action in it [26]. The term itself was established by Johnson-Laird in 1983 [13, 14], but the association of this notion to models appears much before. In 1943, Kenneth Craik [16] wrote about the ‘small-scale model’ of external reality linked to possible actions within an organism’s head, which influences his behavior and choices of actions. Within this model, the knowledge of past events influences the attitude towards the future ones and becomes active in response to environmental stimuli that appear similar. Mental models, as cognitive structures, enable individuals to construct representations of knowledge towards objective aspects of an experience, object, situation, and/or person, and incorporate subjective aspects of that object as well [18, 19].

In the early 1980s, there were two approaches to mental models in academic writings [7], according to the distinction of main objectives [5]. The first one represents the theoretical approach to mental models focusing on cognitive phenomena, while the second one the instructional approach discussing the development of technological devices [7]. Even though mental models were considered as incomplete, unstable in their permanence of structure and thus unscientific (by reflecting the people’s beliefs upon the represented system) [21], they show a value in creating ‘mental simulations’ of the real situation of a problem [7]. Problem in this context refers to a construction of a mechanism and physical system.

Mental Models Applied in Design Field. The idea that an organism may make use of an internal model of the world is not new but also being applied as concepts for human-computer interaction research [11, 27]. The use of mental models in this field was popularized by Norman [22] who defined them as ‘system causality conveyance’. As such, he used them to describe how a user reasons about a system and anticipates its behavior, and to explain why the system reacts as it does. Norman’s well-known statement is that the designer materializes his mental model of a given design, e.g. a computer system, which conveys his mental model to the user [22]. The difficulties appear in ensuring that the user’s mental model corresponds to the designer’s model, as their communication is happening only through the designed system [22]. Norman [21] also distinguishes between mental models and conceptual models. The conceptual model is thought through and implemented in the system, in order to ease the understanding and teaching of physical systems for the users. Mental Models are used in the design field for diverse applications that concern the understanding of behaviors, motivations, social interactions, comprehension of a surrounding, as well as the prediction of some behaviors and reactions [8, 19, 25]. The prediction is attributed to an automatic unconscious behavior driven by ‘mental models’, which are observed as pragmatic solutions to the complexity of life [25]. Knowledge of such mental processes implemented in the design field is helpful in diverse modes of communication. The simplistic nature of mental models might be the key to their utility, as it is enabling faster intuitive decisions [25]. The simplicity of the cities’ underground maps, for instance, represent the real network of tunnels and stations in an abstract enough way that makes them easy to read, while remaining very comprehensive in their complexity [30].

Mental Models in Experience-Centered Design. Mental Models are applied in design within the user-centric design approach, as they are associated to a deep understanding of people’s motivations and thought-processes, along with the emotional and philosophical landscape in which they are operating [25]. Young observes it is a visual depiction of a particular audience’s behavior, faithfully representing individual’s root motivations and goals, and what procedure and philosophy the individual follows to accomplish.

The research of Mental Models can be carried out as a step in the design process that follows user data collection and precedes product and interaction design concepts [23, 30]. Considering the level of abstraction, the model holds, as well as the overview scale of the user studies, the same model can be applied for diverse projects and lead to diverse design outcomes. For this reason, measuring and representing mental models is a hard task, as there are multiple possible outcomes. Measuring, therefore, is guided by the final aim for the design application of the user research activity.

Developing design strategies in experience-centered design requires thorough understandings of the users, their goals, motivations and thought-processes, guided by emotional states and contexts. An experience can be observed as an episode, a story within a certain time length, that emerges from the dialogue of a person with the surrounding world through actions [9]. Designing for everyday activities from the perspective of perceived experience through emotions, rather than from the perspective of material output, opens up many possibilities for reflecting on meaningfulness in design scenarios [10]. When describing meaningful episodes of experiences, Forlizzi

and Ford [6] consider “an experience” as a particular meaningful momentary construction, with a beginning and an end, that grows from the interaction between people and their environment.

This is where Mental Models take part in the design field, by supporting development of empathy towards potential users and their experiences. Understanding and getting to know the potential users in their lived and felt life implies understanding what it feels like to be those people, and this is calls for empathy [28]. The term ‘design empathy’ has been used in the field from 1990s for depicting the actual role of designers and user researchers [1].

2.2 Mental Model Diagrams (MMDs)

Structuring the MMDs. Understanding the other individuals in everyday life and in user research often involves an approach of empathy through dialogue, which brings to an empathic analytic response [28]. Pucillo et al., propose an extraction of psychological motives of the users through the narrative analysis of their stories with products [24]. It indicates that experiences can be observed as a sequence of events or actions, similar to a plot, which brings together different parts in the creation of a meaningful whole [4]. Michailidou et al. recognize a particular type of stories with UX related elements, referring to a narration about a specifically aimed interaction, developed between a subject and a system, emphasizing subject’s needs, motives and goals that are shaped within a given physical and emotional context [20]. Such a narrative-oriented approach contributes to identifying the subject so to enable the empathy.

There are diverse channels, such as interviews and feedback surveys, available for gathering information as to extract empathic elements for analysis. Such channels, following a narrative manner of communicating information, are the first step towards a structural analysis for building Mental Models. It is possible to extract meaningful blocks for the construction of Mental Models from a narrative of an independent experience. Therefore, a structural analysis shows that Mental Models can support the segmentation of users’ concerns.

A mental model is in essence based on cognitive mapping, that is presented through affinity diagrams [2]. Young, the author of the book ‘Mental Models: Aligning Design Strategy with Human Behavior [25, 30] recognizes these diagrams as Mental Model Diagrams (MMDs), and we refer to them as such in this paper. Namely, Young points out the importance of providing an alignment between the service providers offerings and service customers’ mental models, in order to define a design strategy. For this purpose, she provides a structure for building the MMDs, starting from the material gathered from user surveys. Analyzing the transcripts of the surveys requires a further interpretation to underline well the users’ intentions, identify the patterns and group behaviors. Thus, coding is a significant step of transcript analysis. As elements for coding, Young proposes to follow some of the following: Task, Implied Task, Third-Party Task, Philosophy, Feeling, Preference, Desire, Expectation, Medium, Statement of Fact, Explanation, Circumstance, Complaint, Particular Task, High-Level Task. The grouping is represented in three scales of information in the diagram: Boxes, Towers and Mental Spaces (see Fig. 1).

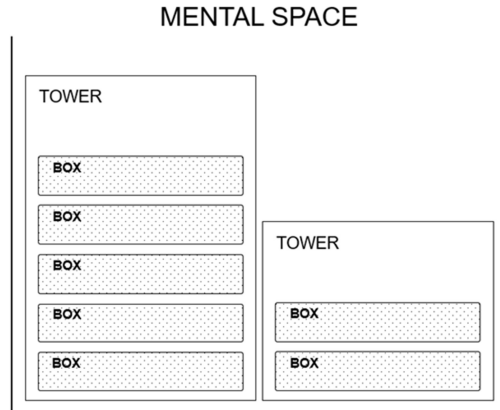


Fig. 1. Three scales within the structure of MMDs, according to Young (2008).

Boxes are the basic building blocks of the structure, and they reflect on subjects' thoughts, actions, feelings, and motivations. Further, the Boxes are being grouped into an upper level scale of reflection towards an experience, called the Towers. Finally, the Towers gather in order to build Mental Spaces. Connected Mental Spaces reflect to what is perceived as the "root" task, which would be the main goal a user sets for himself in a certain context. As an example of a Mental Space, Young refers to the diagram of a morning of a certain subject, by considering activities of waking up in the morning, getting dressed, eating, and getting on the train.

Applying MMDs in a Cross-cultural Context. Young points out that in her book she refers to models of a person's consistent behaviors, rather than the models that are seen as temporary representations of a situation [30], and we refer to the same in our analysis. To do so, we intend to deal with models that on the basis of an accumulation of entrenched reasons of why a person is acting in a certain way. These reasons were built over a long period of time of acting and experiencing, and represent a base for solid mental representations.

MMDs, as presented by Young, have as a backbone of their structure an alignment between the service providers and service customers [15]. Kalbach describes them as alignment diagrams that help understanding the feedback loop between the user and the system [15]. Namely, the upper aligned side is the one that is person-focused, while the lower side is the one that represents the elements of support deriving from service business aspects and offerings. Young suggests that in the part where there is a gap in the alignment, there are visible opportunities to redefine, combine, or augment existing aligned content [30]. Our research is rooted in a cross-cultural context, and we want to understand if MMDs are the suitable tool for extracting design hints for improving the Chinese restaurant business service in Milan, and possibly further support the intercultural dialogue. The alignment in our case is happening between the Chinese restaurant owners and the restaurant customers. However, the customers are classified in two groups, considering their cultural background, into Italian and Chinese customer groups.

In service design, the investigation for alignment is usually aimed at two main tasks: the detection of pain-points in the service process as it is perceived by customers, and the identification of potentials for innovation related to expectations, needs and motivation of customers. In other words, the issue of alignment is related to the effort of the service provider to become aware of what customers consider as valuable, so to evolve the service characteristics toward a more effective and efficient production of value. In our approach, alignment as a goal is not intended as the smoothing of cultural differences between the Chinese offer and the expectations of Italian and Chinese customers. On the contrary, our goal is the understanding of how to make differences acceptable and appreciated as value by customers. In our research, we focus on service providers offering Chinese food products of high quality, and capable to innovate their offer, while maintaining deep roots in the contemporary Chinese food culture. In order to produce a systematic representation of collected knowledge, we developed three mental models, according to the material extracted from user surveys. For the service provider part, we made a semi-structured interview with the restaurant owner. For the part of service customers, we gathered materials from online surveys for rating restaurant. The online surveys were chosen as a suitable source for building a model based on the opinion of a massive group, rather than making interviews with just a few selected visitors in the restaurant. The two diverse sources gave diverse outcomes that we manage to meet, according to the same coding principles, applied for building the structure of a mental model. Finally, after the analysis was made through the set coding, we provided a triangulation of the three mental model schemes through a developed MMD, that brought us to the extraction of the design hints. The points in whom the three models meet are recognized as the Mental Spaces, and are based on main actions that an individual is undertaking. The representation of the diagram is based on the structure defined by Young [30], explained previously. We observe MMDs as a design tool, therefore, all the research and analysis were guided by the final scope, which is the ability for extraction of design hints. MMDs lack of chronological flow, which according to Kalbach [15] is a lack. We, however, observe it as an advantage for the design application of the tool, considering that this is the tool to be used in the design process before development of the design concept [23]. Therefore, we want to take into account all the main points that brought to sense-making of an experience, observed through anticipation, interpretation and recounting of it [1, 28]. This does not require a chronological flow, but an opening of major field of consideration for possible design interventions. After MMDs, other tools should be applied within the process in order to define more in detail the steps to the realization of the final tangible outcomes, which also considers thorough reflection to detailed time sequences of interaction.

3 Understanding the Service Providers: Interview

3.1 Organization of the Interview

The restaurant locates in the neighborhood of Chinatown. It is one of the restaurants which first started to offer Chinese regional cuisine instead of Asian fusion in Milan.

After the owner changed the menu, the restaurant's reputation improved a lot, and there is an increase of Italian customers. The interviewee was the owner of the restaurant, and has been living in Italy for six years. He started the business since the third year in Italy. The interview aims to investigate the service provider's perceived value and the experience of the Chinese catering business, so to compare with the customers' perceptions latter. The restauranteur as a service provider holds his opinions about the customer expectations and evaluation criteria; thus, another aim is to understand the interviewee's viewpoints of Chinese and Italian customers. Also, the interview intends to investigate the service provider's current strategies regarding the service and product quality, cultural value and communication efficiency. The last question is dedicated to inquiring the service providers' awareness of the design contribution. Therefore, we set up 23 questions as shown in Table 1.

Table 1. Interview question list

General view	Q1_ Could you introduce yourself and why did you start your business?
	Q2_ What do you expect to achieve?
Service process	Q3_ What service do you provide?
	Q4_ What is the service process in your restaurant?
	Q5_ What do you do for managing the service quality?
	Q6_ If we regard the restaurant operation and service as a system, what the customers can see and perceive is a part of this system. Can you introduce this part?
	Q7_ How about the 'backstage' part?
Ambient	Q8_ Why did you choose this neighborhood?
	Q9_ What were your concerns while setting the dining environment?
Service personnel	Q10_ Can you introduce your staff?
	Q11_ How do you train your staff?
Menu	Q12_ How did you decide the menu? What are the considerations?
Dishes	Q13_ How do you control the dishes' quality?
Social interaction	Q14_ How do you promote your restaurant? Which means of advertising have you adopted? Why?
	Q15_ Reasons for Italian customers to have picked your restaurant? And the Chinese customers?
Cultural differences	Q16_ What do you know about your customers? What are the differences and similarities between Italian and Chinese customers? Are there any gaps between you and your customers (both Chinese and Italian)? If it's possible, could you please tell me some examples?
	Q17_ How do you meet customers' needs for customers from different cultural backgrounds?
Value	Q18_ Do you see your restaurant as the 'traditional' cuisine or 'innovative' cuisine ones?
	Q19_ What are the values in your business?
	Q20_ What can customers get from your restaurant?
Future	Q21_ Are you satisfied with your business? Why?
	Q22_ What's your opinion of a successful/ideal catering service? What would it be like?
Design	Q23_ What can design do for your business?

The interview lasted 80 min which was recorded on video. Besides, the researcher took notes of key points that might be the insights for capturing the interviewee’s mental model. The interview was conducted in Chinese. The interviewee shared his thoughts and reflections in respect of the general view of his business, the brief understandings of the service he is providing, concerns of the significant touchpoints, the perceived value, and the feasible contribution of design. In order to stimulate the interviewee to share more and explain better, the conversation conducted a loose structure of deduction and the interviewee was encouraged to give some specific instances.

3.2 Analysis

To enable analysis, we transcribed all the original speeches from the video. Then, we refined the original transcript by taking away the stutters and grammar self-corrections. Since the interviewee answered the questions in loose structures, we also reformed the structure of the answers.

The criteria of coding are necessary for identifying meaningful information from interview and online comments, nevertheless, it can result in two kinds of data meet in the middle. Young [30] suggests focusing on what people are doing, thinking, and feeling and proposes five keywords (task, implied task, third-party task, philosophy, and feeling) to deal with the transcript. For the specific purpose of this research, we draw the focus on four questions: (1) what do they want; (2) what are the actions; (3) what do they think; (4) what do they feel? Table 2, in the following, shows the categories for coding.

Table 2. Categories for coding

Type of insight	Code
T1: what do they want?	T1_1 goal
	T1_2 motivation
T2: what are the actions?	T2 action
T3: what do they think?	T3_1 stated opinion
	T3_2 other’s opinion
	T3_3 implied opinion
T4: what do they feel?	T4_1 positive feeling
	T4_2 negative feeling

Following the criteria, we selected quotes from the transcripts that refer to the four questions mentioned above. Furthermore, we labeled the quotes with the code while selecting, then we rephrased the labeled quotes to give them an overview. Table 3 lists several examples of such a transcribe-code-rephrase process.

4 Understanding the Customers: Online Surveys

4.1 Organization of Online Surveys

According to our preliminary research [11], most customer of the Chinese restaurants in Milan are the Italians and Chinese. They share some similarities and meanwhile hold divergences of the dining experience due to different cultural backgrounds. Nevertheless, the restaurateur's interview partly verified these findings.

We chose TripAdvisor as the first source of customers' online comments. As the second source, we chose Google Maps for Italian customers, and another Chinese website, DaZhongDianPing, as the second source of the Chinese customers' reviews due to the two clusters' different preferences of using restaurant recommendation sites. We considered all the customers' comments (33 Italian comments and 35 Chinese comments) from the year of 2017.

Table 3. Example of transcript and coding: interview

	Transcript	Code	Rephrase
Q1_	so that I wanted to offer tasty Chinese food for an affordable price	T1_1	offer good taste
		T1_1	offer affordable price
Q1_	I wanted to operate the best Chinese restaurant in Milan	T1_2	be the best
Q3_	We kept some dishes of the old-fashioned Chinese restaurants, because many Italian customers believe this kind of dishes is the representation of real Chinese food	T3_3	personal stereotype of current situation
		T3_2	Italian customers' stereotype
Q6_	starts from when the customers arrive to the restaurant until they finish ordering	T3_1	customers perceive the service from dining phase
	I would recommend the dishes which was well-known by Italians so that it could be easy accepted by the Italian customers who didn't have Chinese food experience	T2	follow the stereotype of beginners
	For the 'advanced' Italian customers who already had some Chinese food experience, I would recommend the specialties of the restaurant and focus on explaining the cooking process to meet the customers' curiosities	T2	meet customers' curiosities
T3_3		change the stereotype of advancers	
Q21_	I was happy and 80% satisfied with my business	T4_1	happy and satisfied

4.2 Analysis

The analysis of the online comments follows the same coding criteria of the interview transcript, as the aim of the analysis is understanding customers' goals, motivations, actions, thoughts and feelings and comparing with the service provider's so to outline

the mismatches and alignments. In order to lessen the language barrier between English and Chinese/Italian, two coders were involved in this session. The first coder speaks fluent Italian, and took charge of coding and rephrasing the Italian customers’ comments. The second coder is a Chinese native speaker who interpreted the Chinese comments. The two coders cross-checked the results to ensure the reliability of the rephrases. Table 4 shows examples of the synthesis of the results.

Table 4. Examples of the transcript and coding: online survey

	Transcript	Code	Rephrase
IT_	We often visit this restaurant and it is not the usual “Chinese restaurant”. Excellent value for the payed amount. Friendly and pleasant staff. A proof of quality? Majority of the customers are Asian	T3_1	Great quality-price ratio
		T4_1	Great
		T3_1	Friendly staff
		T3_3	The place is good when the majority are the Chinese customers
		T1_1	Frequent place for eating
		T1_2	Not a “usual Chinese” place
IT_	Finally, a Chinese restaurant without the usual frills made of dragon pendants and Ming vases. Instead, there is an elegant furniture combined with excellent cuisine and impeccable service. Prices a bit higher than the average, but the quality-price ratio is good	T3_1	Does not have a typical Chinese décor
		T3_3	It is appreciated the sophisticated appearance of the place, rather than a typical Chinese décor
		T3_1	Good dishes
		T3_1	Good service
		T3_1	Quality-price ratio is good
CH_	I was here for dinner the day before yesterday. The taste for a Cantonese person like me was just so-so. However, it’s already something for an uprooted Chinese (...) and that led me back here again. I wanted a typical dish of my home, the soup of fish and tofu, and I asked the chef to cook for us. That was so touching! We paid more, but it was worth. There is a huge gap between the taste here and home. The amazing thing was they offered me free fruits! We spent only 57 euros (we paid 30 euros for the soup), the rest dishes weren’t expensive. Here attached the pictures we took from the other day	T1_1	Revisit
		T1_1	A special dish
		T1_2	Ease nostalgia
		T2	Ask to cook a dish out of the menu
		T2	Take pics
		T2	Get free fruit
		T3_1	Taste is so-so
		T3_1	Worth
		T3_1	Not expensive
		T4_1	Touching

5 Results and Discussion

5.1 The Triangulation Between the Mental Models

Constructing Mental Model Diagrams for Chinese Customers, Italian Customers and the Restaurateur. The coding of the transcripts contributes to extract meaningful quotes, as well as the further interpreted phrases from the original quotes, which provides the building blocks for constructing the MMDs. Thereafter, as shown from Figs. 2, 3, 4, 5 and 6, we construct the MMDs of the customers and the restaurant owner, based on the synthesis of the interview and online survey. The diagrams aim at facilitating a triangulation among the three key roles so to identify the matches and mismatches occurred in the Chinese restaurant business, by comparing the group and individual mental models. The diagram has been segmented into seven parts due to the limit of the margin of this paper. We sorted the phrases with similarities and grouped them as towers. In the MMDs, the Chinese and Italian customers are regarded as two clusters, and we illustrate the clusters' mental models by merging them in same mental spaces and comparing them between; meanwhile, the restaurant owner's mental model is identified as the view of the service provider. To enable such a triangulation, the customers' mental models are placed in the upper part of the diagrams which are colored in dark green, moreover, the boxes in white on the left part of the towers represent Chinese customers and the yellow ones on the right represent Italian customers. The service provider's mental model is put in the lower part and colored in red. Following the narrative flow of subsequent activities within the service, the similar towers are divided into 10 mental spaces: (1) reflecting on general beliefs, (2) becoming

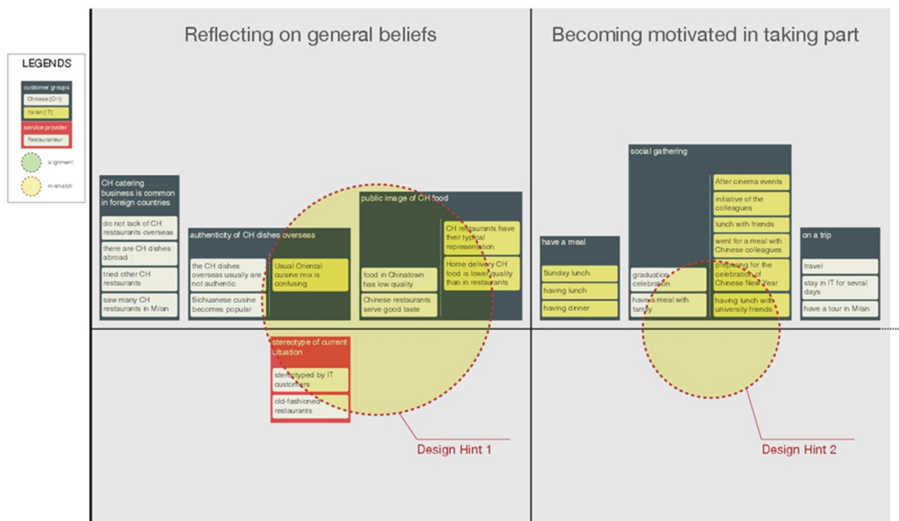


Fig. 2. Mental Model Diagrams of Chinese customers, Italian customers and the restaurateur (Part 1) (Color figure online)

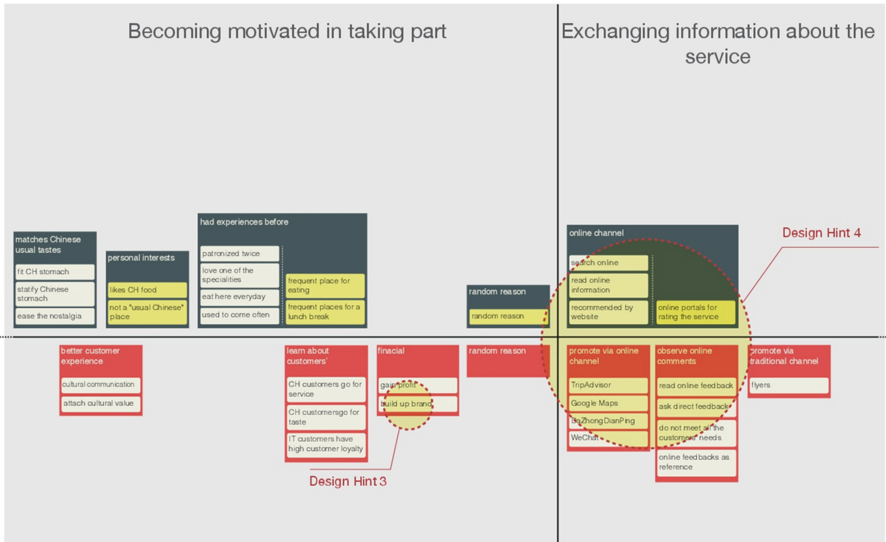


Fig. 3. Mental Model Diagrams of Chinese customers, Italian customers and the restaurateur (Part 2) (Color figure online)



Fig. 4. Mental Model Diagrams of Chinese customers, Italian customers and the restaurateur (Part 3) (Color figure online)

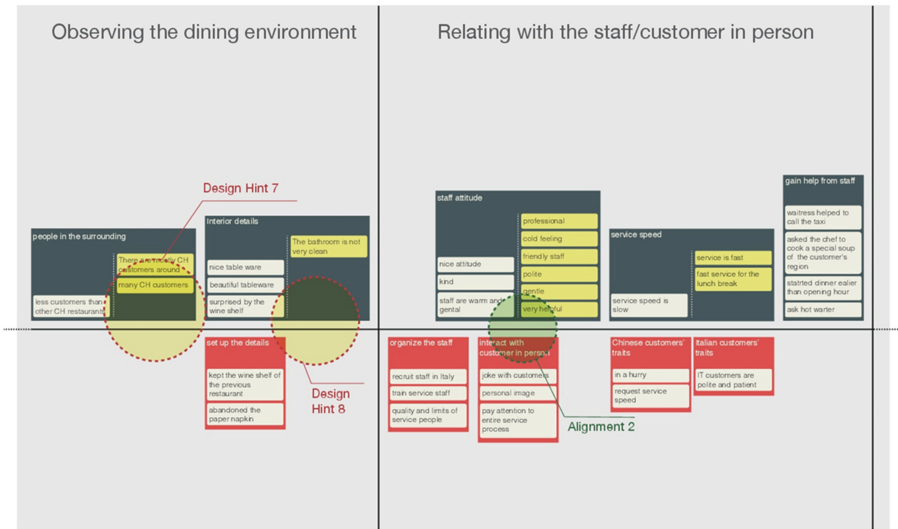


Fig. 5. Mental Model Diagrams of Chinese customers, Italian customers and the restaurateur (Part 4) (Color figure online)

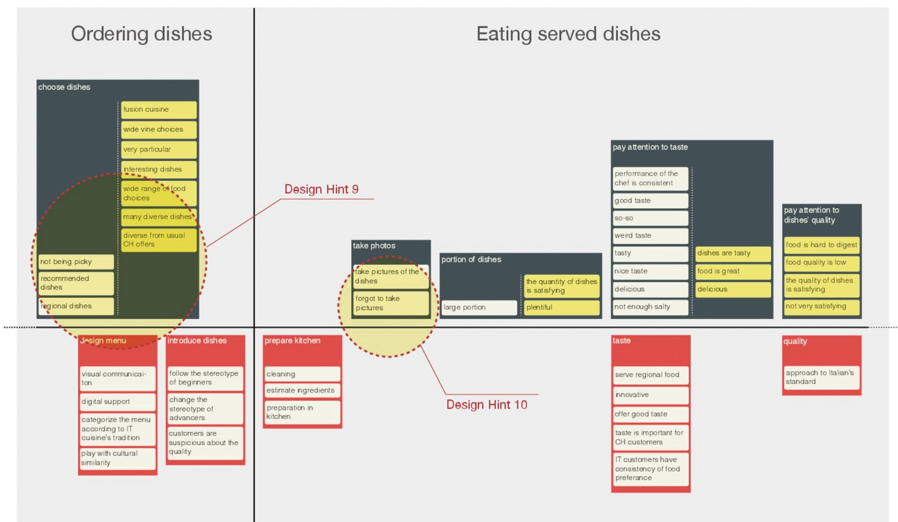


Fig. 6. Mental Model Diagrams of Chinese customers, Italian customers and the restaurateur (Part 5) (Color figure online)

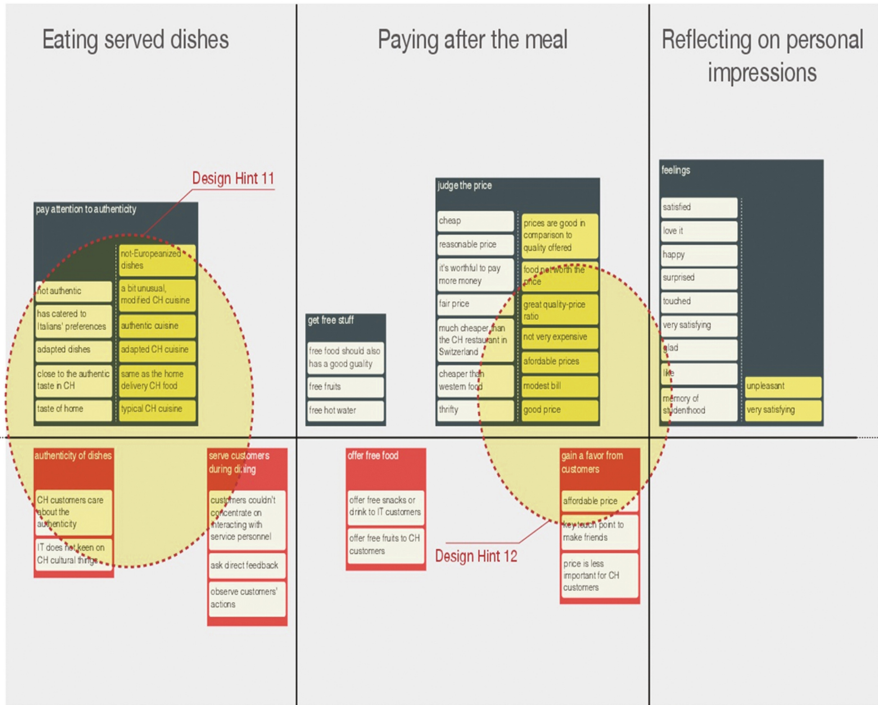


Fig. 7. Mental Model Diagrams of Chinese customers, Italian customers and the restaurateur (Part 6) (Color figure online)

motivated in taking part, (3) exchanging information about the service, (4) reaching the location, (5) observing the dining environment, (6) relating with the staff/customer in person, (7) ordering dishes, (8) eating served dishes, (9) paying after the meal, and (10) reflecting on personal impressions (Figs. 7 and 8).

Design Hints Shown Through the Matches and Mismatches. The MMDs have illustrated the matches and mismatches between Chinese and Italian clusters, also, between the Chinese customers (CH), Italian customers (IT) and the service provider (SP). We highlighted several mismatches which implied the design hints in Figs. 2, 3, 4, 5 and 6 as instances, and we discuss each design hint in the following Table 5: Besides the mentioned mismatches, there were certain points in whom the involved sides are aligned. The two major issues of alignment are the interior appearance (Alignment 1) and the service attitude towards the customers (Alignment 2).

Some of the main issues derived from the application of the tool, are correspondent to the expectation we had at the beginning. Namely, the issues such as the considerations about the ratio between the prices and the quality of the food, as well as the reflection on the staff efficiency, were expected. These are the usual elements that are

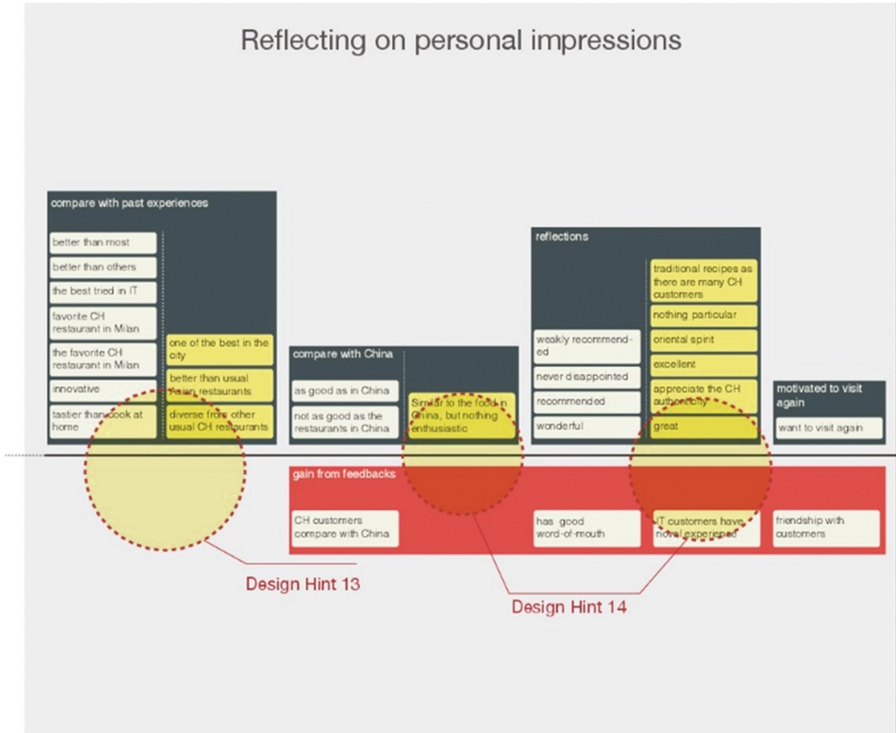


Fig. 8. Mental Model Diagrams of Chinese customers, Italian customers and the restaurateur (Part 7) (Color figure online)

proposed in the structures of online rating platforms, like TripAdvisor for e.g. However, we discovered that there are other considerations that are present in the mental models, that influence the experience of a service, but are not present in the online rating platforms. Here emerged the two main points we want to stress out – Authenticity and Stereotypes. These two considerations are present in the Mental Spaces, in regard to Chinese restaurant business, and have an influence on the holistic experience of the service. The two points provide a base for diverse design hints that can further be developed. Furthermore, the diagram itself showed that there are points in whom the coherence with stereotypes are desirable, and others in whom they are not. An example for a desirable stereotype is the believe that if the restaurant has a lot of Chinese customers, it serves good and authentic food. In this case, it is desirable as the customers support this belief, and practice it when choosing a restaurant. An example for a non-desirable stereotype is the belief that Chinese restaurants should have Chinese decor in the dinning environment. This is not desirable from the side of the customers, as they perceive it as bad taste, and they do not want their experience of a Chinese cuisine to be augmented by an obvious fake trivial surrounding.

Table 5. Design Hints derived from the Triangulation of the MMDs

Mismatch	Design Hints
SP did not notice the stereotype of CH	1. Design for dining experiences needs to consider not only the served food and service, but also some given knowledge which pre-influences customers' mental frames
SP did not mention the public image	
CH and IT had different concerns on the public image	
Both CH and IT are influenced by the social interaction while SP did not notice the social influence	2. Designing for dining experiences as a ritual to bring more interpersonal interactions through food
SP mentioned brand value while customers did not	3. Design for constructing the restaurant brand, and communicating the brand value
Online channel is an important source for CH and IT, while SP did not make the most of it	4. Coordinating the suggested outline of online recommendation
IT perceived peer influence from CH, while SP did not specify it	5. Building a public image of the Chinese restaurant should have a diverse approach from the one of building a brand. The customers do not read the brands in this case
CH mentioned free parking	6. A neglected location advantage
IT regarded the amount of CH as a reference of the authenticity	7. The number of Chinese customers is a background of cultural experience which is a desirable stereotype of Italians. Design for facilitating this kind of desirable stereotypes can contribute to broaden the acceptance of the less-known culture
CH did not mention the amount of IT	
SP did not mention the influence of the presence of customer groups with diverse cultural backgrounds	
SP and CH reach a consensus of interior décor while neglected IT's perspective	8. An opportunity to improve dining environment by refining the interior design
CH and IT held divergent viewpoints about the menu	9. Cultural value can be better-communicated through the menu design
SP's applied strategies did not match with the customers' viewpoints	
Only CH mentioned taking photos during dinner	10. Design for triggering customers to share more pictures on social network
SP thought IT were not interested in the cultural value which was the opposite of the real situation	11. The design focus can fall on illustrating the authenticity and cultural values which is undifferentiated between Chinese and Italian clusters
SP mentioned that price was less important for CH while CH recommended the fair cost many times	12. Price benefits can be another desirable stereotype, however, the cheapness is not the only attraction. Improving the quality of dishes and service is helpful, as the customers also consider the quality-price ratio
IT discussed the quality-price ratio	
CH and IT both made comparisons with their past dining experiences, while SP did not make a similar reflection	13. Service provider needs to better understand customers' past experience, thus, coordinating the suggested outline of online recommendation
SP thought IT were looking for novelty from Chinese cuisine, however IT also expected the authenticity	14. Do not focus on designing a 'novel' experience, but an experience as much authentic as possible

6 Conclusion

The results reported in this paper are part of a wider research aimed at investigating design methods for the design of services and products in multicultural environments. We focus on the analysis of the mismatch between the perception of value between the different stakeholders of the Chinese food business in Milan and we employed a tool, MMDs, to frame the different perspectives of the service provider and customers. As we deal with different groups of customers, we adapted the MMDs to the purpose of envisioning the triangulation of information. The approach produced design hints orienting re-design of existing services, and it revealed suitable to support service design in multi-cultural environments; we consider this result as a contribution to the development of a shared language for the project of intangible sources of value.

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