Culturally Friendly Design Method based on Machiya System of Kyoto

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1. Introduction

1.1 Outline

This research deals with design issues of architecture and urbanism oriented to local communities. It approaches the case of Machiya in Kyoto, as it is a vernacular type of dwelling representing the remains of the cultural background of the city and its traditions. The approach will focus on Machiya as a system defined by its inhabitation. Such type of systems can be divided as well into subsystems, covering different scales from urban scale to parts of single houses.

The research is based on semiotic theory of Charles Sanders Peirce, regarding the definition and classification of signs. As well the research involves approaches in semantic, syntactic and pragmatic order, focusing especially on how Machiya and architecture in general is related to its cultural background.

The aim of the research is to develop architecture with high cultural value and cultural sustainability, based on the Machiya System of Kyoto.

1.2 Culturally friendly design method

When we design architecture, we deal with many issues, including several difficult technical problems. Therefore, we might use many methods to solve such technical problems, but at the same time try to take care about artistic creativity, in order to create beautiful designs. In some cases we could consider the technical approach as already having its own beauty, and in some cases we might consider necessary to include additional efforts. But we cannot ignore who is supposed to appreciate the architecture at the end; its inhabitant.

It means that the successful design (the design inhabitants can appreciate) can be appreciated by the inhabitants, and not only the architect. In such case, if we would appreciate the beauty of a design expressed in its technical solutions or other approaches, the inhabitant must be able to understand such approaches or at least the design itself express them in a way that the inhabitant can understand it. As we can see there are obvious reasons why certain design is successful at a given time, when its context matches what it expresses. Or in other words, if the inhabitant is prepared for certain design, it might be successfully understood.

There are some severe problems related to the previously explained situation:

-Successful design might be related to temporal trends and not transcendental, resulting in buildings that later would be considered a burden for the resulting cityscapes after the trend finishes.

-Success might be bound to the shallowest issues, in order to ensure everyone can understand it. Under such circumstances we would face a scenario of constant cultural loss; a vicious cycle where increasing simplicity of design competes with decreasing effort to understand

its value.

Still we can find a background on which we can base a design in order to make it understandable without relying on superficial issues or temporary trends: the culture of the inhabitants.

But the culture of the inhabitants is not only a great opportunity for design but it is important for many other aspects; therefore, we consider that the design method should not only be based on culture but at the same time strengthen culture. Therefore we consider a cultural friendly design method.

For a cultural friendly design method we approach our study object (Machiya), as a sign, which can be interpreted by the inhabitant. As well as can be seen in this dissertation, inhabitation will become one of the most important issues to be considered in order to establish the link in between the object Machiya, the inhabitant, and the designer. Therefore, we consider as design method the semiotic framework explained in the next chapter rather than a process.

1.3 Background

This research started motivated by the interest of the author in Machiya in Kyoto, but soon the focus of the research turned towards the intriguing relationship of old Machiya and the contemporary context mainly in the central area of the city. Having in consideration the diversity of contemporary architecture in Kyoto and the many different ways it combines with Machiya (in part due to a freedom in designing buildings not common to find in other historical cities around the world), we found an interesting and complex research topic.

One important point to have in consideration is that in such a mishmash of Machiya and modern buildings, is that we can also find an encounter of different cultures. Such context transforms the case of Machiya into a great opportunity to not only focus on a problem in a familiar context but to start reviewing what is architecture itself. If we would focus on a more familiar topic, perhaps we would never realize about obvious particularities of the case someone with a different focus would notice immediately. In the case of Machiya as contemporary architecture strongly influenced by western culture and the vernacular traditional architecture face each other with such an evident contrast that we can find out things we would take for granted in a more homogeneous context. Therefore this research does not focus just on the traditional Machiya but on the actual context of remaining Machiya in Kyoto.

In contemporary times Architecture might deal with almost anything imaginable. But within such a complex fabric of possibilities, recognizing what is happening with architecture becomes very difficult. Even if we have much information available to analyze and many methods to do such analyses, at certain point we might face a lack of definitions; at some point we might not

know anymore even what architecture is, hence we might not know if what we are analyzing or investigating is actually architecture, moreover great part of researches and book about architecture lack of any clear definition of what architecture is. Therefore one of the first intriguing questions inspiring this thesis was, what would be if many of those books we read about architecture are not even dealing with architecture?

Once we struggle with architecture itself we can find clearer ways on how Machiya is related to its context. We can then think about if such relations are in fact "architectural" or not. We can start thinking about not just formalistic or superficial approaches towards Machiya but also at deeper levels.

1.3.1 Context of the city of Kyoto

In the history of Kyoto the city suffered many changes, but not only physically, also we have to remind that this city was once the imperial capital of Japan. Today Kyoto is still one of the ten most populated cities of Japan with a population near to the one and a half million people. But one of the most relevant conditions of Kyoto today is its historic and cultural heritage, being designated as part of world heritage by the UNESCO in 1994.

The development of Kyoto can be summarized in the following way:

Rational Model: the hypothesis of Kyoto.

Kyoto is founded with the name of Heiankyo (平安京) in 794 according to the Tang Dynasty Chinese capital of Chang'an (modern day Xi'an). Kyoto was originally a capital city completely conceived according to the existing Chinese model, its rectangular master plan (Fig. 1- 1) was implanted in the valley consisting in an orthogonal grid of streets, dividing the city in many blocks (高橋, 2003). The further development of the city required many adaptations; first the geography was adapted to the master plan including the canalization of the Kamo River, but later on the city changed its form according to natural and artificial causes.

Adaptation phase 1

Kyoto was destroyed several times due to fires and wars. As the city was mainly made of wood fire could easily spread throughout the city, so that vast extensions of it were destroyed in such occasions.

Mayor changes were introduced after the Ōnin War and in the late 16th century Toyotomi Hideoshi introduced new urban features such as increasing the number of north-south streets dividing great part of the blocks in the center of the city into rectangles and an embankment surrounding the city (Odoi). Such changes helped to reconsolidate the city towards the Kamo River, moving the city center towards the east. The area inside the embankment was called "rakuchu" and the outer part "rakugai".

Kyoto had reached a stable form during the Edo period, growing proportionally from 1887 to 1921. But afterwards with the modernization, and especially after the Second World War, the city transforms rapidly.

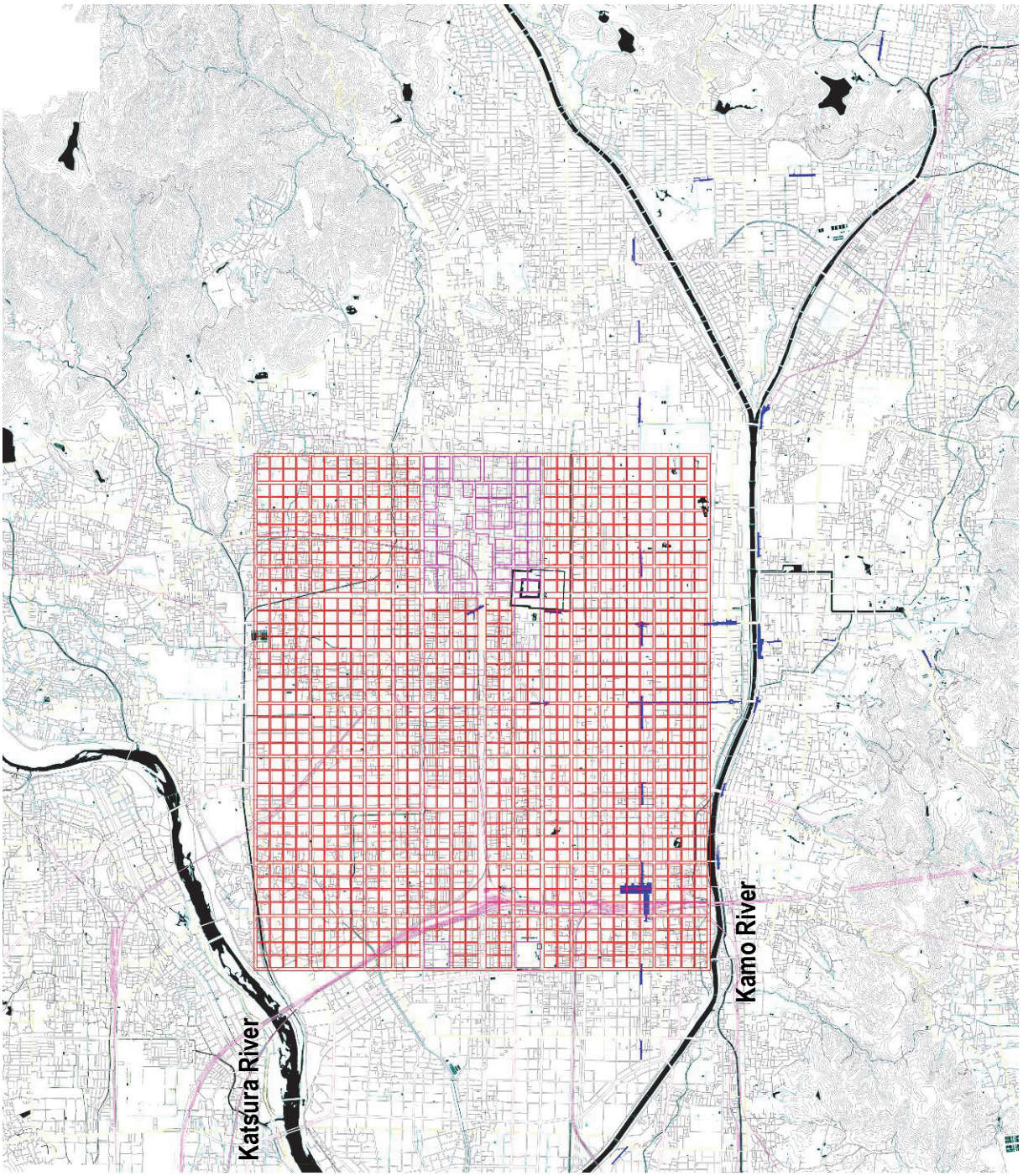


Fig. 1- 1 Original master plan of Kyoto in red (4.5 km from East to West and 5.2 km from North to South) superimposed over actual Kyoto.

Adaptation phase 2

After the modernization of the 20th century, the city has being growing fast to the west, in

opposite direction of its historical tendency of consolidated along the Kamo River. Also the drastic change in building style introducing more durable concrete buildings, is rapidly replacing wooden architecture, since the concrete buildings are designed according to the new urban density, establishing new standards where the traditional buildings cannot be conserved by the means of rebuilding, because newer type of buildings will be build instead, according to the actual necessities and regulations.

Especially in the case of Machiya, every time one house is destroyed the chances to rebuilt are very scarce and a newer type of building would be build instead. Nevertheless the way Kyoto historically had conserved its architectural heritage was not by conserving each building, but by the capacity of rebuild itself many times. After the modernization of the 20th century, this rebuilding has being reduced, and is being replaced by the replacement of buildings instead of rebuilding of buildings. Also the modification of the context of Machiya through the implantation of new type of buildings, especially high-rise buildings is affecting the conservation of traditional architecture.

1.3.2 Evolution of block structure and Machiya

As Kyoto developed its form, also Machiya evolved its form (Fig. 1- 2).

We should consider the block system (Fig. 1- 3), before explaining Machiya. Each block was initially called "Cho". But the most relevant urban unit regarding the neighborhood was later on composed by the houses facing each other on both sides of a street (Fig. 1- 3), in the later Muromachi period.



Fig. 1- 2 Sequence of images showing evolution of Machiya. From left to right: Fragment of "Machida-bon" 16th century, two fragment of "Ikeda-bon" from the 17th century, A Machiya as still can be seen in Kyoto. Source: Machiya, architecture and history of the Kyoto town house (Löfgren, 2003).

As the new evolving block unit, known in nowadays Kyoto as Cho or Machi (町) is not just a physical unit as the blocks, but a social structure, its shape might vary even if the block system is maintained. An example of such unit can be seen in Fig. 1- 4. The urban house mainly used by merchants and craftsmen developed in such pattern is Machiya.

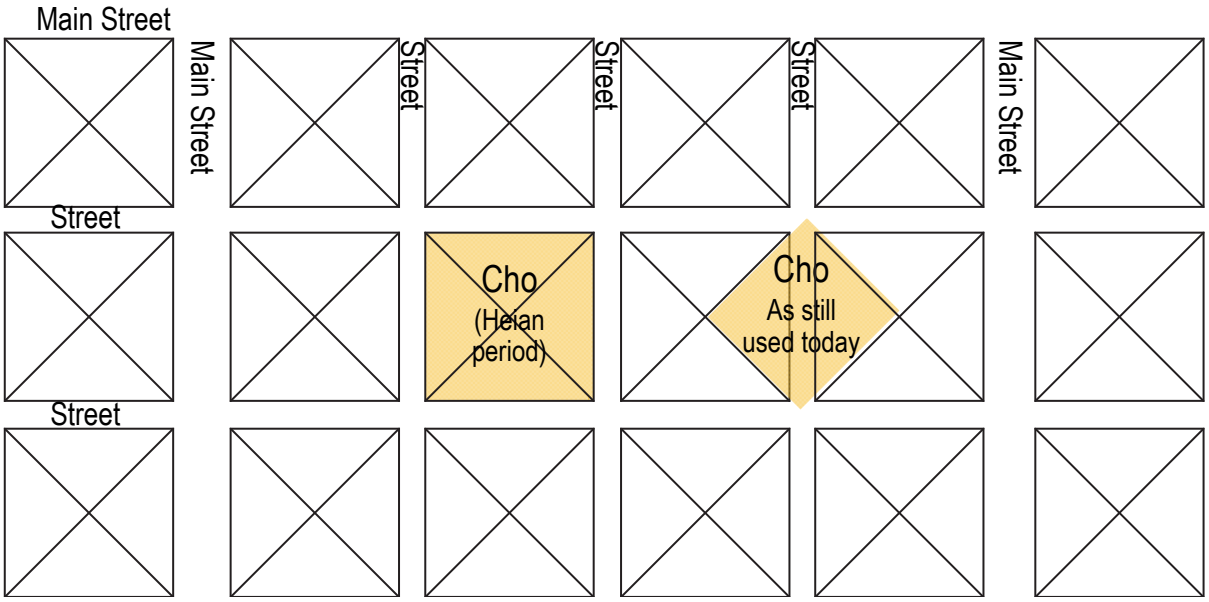


Fig. 1- 3 Detail of street and block structure; In Heian period the blocks where called "Cho", but later from the Muromachi period on, composed of the houses on each side of the street is used.



Fig. 1- 4 An example of urban unit: Sashimonoya-cho (ground plan). Source: (高橋, 1993)

As it can be seen in Fig. 1- 4 the shape of each plot is relatively long, this is because each property was taxed according to the width of its façade. As consequence of such long shape, Machiya houses had to incorporate inner gardens for light and ventilation to use the full length of the plots. With time Machiya developed into a complex system.

In a typical Machiya (Fig. 1- 5) we can recognize the influence of the long shape in the layout and the developed solutions for the arising problems, such as the already mentioned gardens, the eaves that helped to mitigate the sun radiation, the lattice windows allowing retaining privacy in the front spaces facing the street among others.

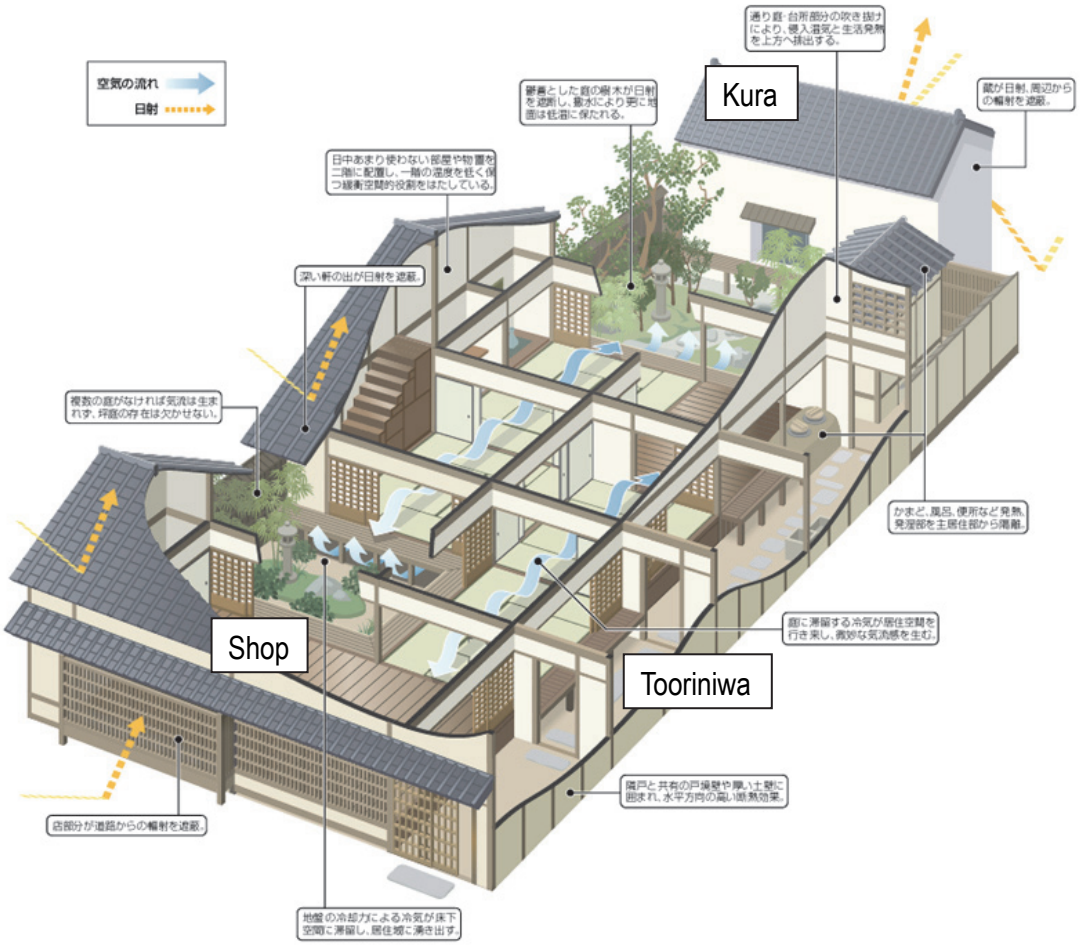


Fig. 1- 5 Machiya. Blue arrows indicate ventilation, yellow arrows indicate sun radiation.
Source: (TUBE GRAPHICS)

But not only issues of the physical environment helped to shape Machiya(Löfgren, 2003) (丸山, 2007) (松井, 2001), moreover we can say that Machiya evolved from Minka (今, 1989)[1]. As we can see in Fig. 1- 5 a long corridor (Tooriniwa) is located on one side of the house from the front to the back. Such corridor is in fact part of the traditional layout of Japanese dwelling corresponding to the doma, a rather informal space with earthen floor used as utility space and for activities such as cooking. In the same way the rooms with raised floor covered with tatami mats corresponds to the traditional takayuka, literally meaning raised floor.

Also the gardens, previously explained as being necessary for ventilation and light, are not merely implemented for such functions. As Machiya were used mainly by merchants and

craftsmen, Machiya had a shop (mise) in the front space, therefore the inner garden (tsuboniwa) is located behind the shop (Fig. 1- 5), separating the shop from the rest of the house which is considered more private.

Another important aspect of Machiya is the resulting streetscapes. In some areas of Kyoto we still can appreciate the streetscapes of Machiya (Fig. 1- 6).



Fig. 1- 6 Still conserved Machiya streetscape in Gion at night

The Machiya streetscapes are characterized by their continuity, wooden lattices and eaves. The houses of the merchants suffered from many restrictions, resulting in homogeneous facades, devoid from much opulence, conserving certain simplicity.

Machiya façade is as well product of the evolving process as in Fig. 1- 2; therefore the homogeneity is in fact not absolute but enriched with great variations. But with such variations it is also difficult at a certain time to interpret the elements. For example in the case of the space under the eaves, in some shops we can see a very public use of such space, but in other cases, inu yarai or other fences might be placed in a way that we cannot consider such space as public. Therefore some elements which might appear the same, depending on the case are in fact quite different if we consider the use given to each element; which means that the inhabitant takes

relevant decisions regarding the meaning of the streetscape.

Therefore we could say that the façade of Machiya is a dynamic system, intimately bound to its inhabitants; which means that the inhabitants have an important role of shaping each neighborhood according to how they use the variations of the Machiya façade. From this point of view we can recognize that the organization of the Cho considering both sides of the street is by no means a coincidence.

Example of Machiya development

As seen in Fig. 1- 7, we can distinguish different layouts of Machiya. According to "京町家塾 町家って何？" (松井, 2001), it is thought that from the beginning of Machiya existed houses with one earthen floor and two rooms (一列二室型) with one room for work towards the street (ミセ) and another for residence in the back.

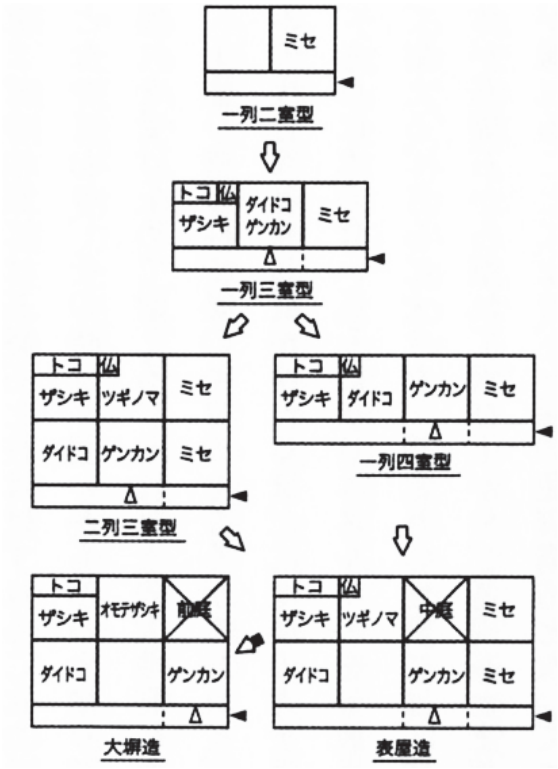


Fig. 1- 7 Development of Machiya layouts. Source: "京町家塾 町家って何？" (松井, 2001)

The next type called the one row-three rooms type (一列三室型), this type is considered as the basic Machiya layout from early modern times, where along the earthen floor corridor three rooms appeared from the street to the back: the shop (ミセ); the daidoko (ダイドコ), used as living and dining room as the nowadays DK space; and the zashiki (ザシキ), formal room for receiving guests. In this case the earthen floor area, corresponding to what we know nowadays as tooriniwa, would be divided into the part corresponding to the shop and the back, so the

entrance for customers would be in the shop, while the family members would access to the house through the daidoko, wich will serve as well as genkan (ゲンカン).

From this type we can distinguish two variations:

One row-four rooms type (一列四室型) is a type where the plot is longer, so that it is possible to divide the daidoko and genkan functions in two separated spaces, where sometimes the bustudan would be located in the daidoko space.

Two rows-three rooms type (二列三室型) is a type where the plot is wider so that two parallel rows of rooms can be allocated. In this case there is a double space for the shop (ミセ), followed by an entrance space (ゲンカン) and another living room (ツギノマ or ナカノマ), and finally at the back the daidoko and zashiki.tgv

From the one row-four rooms type and the two rows-three rooms type we can understand the omoteyadzukuri type (表屋造). This case corresponds to a wider and longer plot, where it is possible to allocate two parallel rows of four rooms, but as this may result in poor lighting and ventilation, an inner garden is incorporated in the layout behind the shop.

Finally we can recognize a type with a wall in the front instead of a shop, daibeizukuri type (大摒造). In this case in the front may be located a formal room (オモテザシキ) or in some cases no room and only a front garden (前栽).

As we can notice, this classification of developing layouts considers that from the origin existed three main spaces: the shop, the living space and the earthen floor. In the last type we see that the shop is omitted, but it remains a notion of back and front (オモテ and オク), understandable as well as the public and private side; as well we can in all cases distinguish the formal and informal side corresponding to the raised living rooms and the earthen floor respectively.

We should also notice that the living space corresponding to eating (ダイドコ) is identified by the author of "京町家塾 町家って何？" as corresponding to the DK in modern dwellings. But we have to notice, that the dinning kitchen system joined the kitchen and dining functions, and also tend to replace the formal reception function of the zashiki aiming towards a "family centered home" (Daniels, 2010). Therefore the DK or LDK has not the same distinction of formal and informal, as the rooms and earthen floored area in Machiya. In Machiya the cooking function corresponds to the informal side (earthen floor or tooriniwa) and the eating functions to the formal side (raised rooms). We can say that the semantic order of Machiya and the DK system must be different, concerning its formality. Considering this situation and the preponderance of DK system in modern dwelling in Kyoto and Japan, in chapter 6, we will focus on how such changes affected Machiya in its semantic order, and if we can find cases adapted to modern lifestyles that can still be considered as Machiya and what conditions do such cases have.

As explained in the previous section, Machiya, as vernacular architecture, was developed in a

complexes processes, where for instance all houses were supposed to be similar (Fig. 1- 8, left), composed basically of the same systems of inhabitation shared among the whole group of residents of Machiya. Therefore we can say that Machiya itself is an urban system part of the city in the same way as its composing systems were parts of one house. And that the development was in one or another way always related to its previous existence. Fig. 1- 8

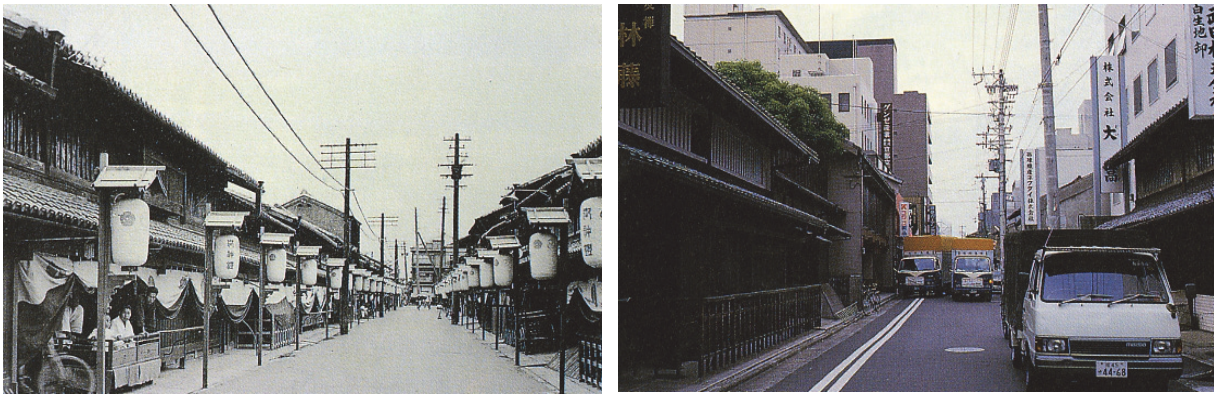


Fig. 1- 8 Example of modification of urban context of Machiya: Muromachi Anekoji sagaru in 1931 and in 1986. Source: Process Architecture 116, page 14 (Murotani, 1994).

These systems had as well their aesthetic regulations, including what we can see as physical elements composing the façade of Machiya. Such system evolved in time as well as new systems were integrated into the Machiya system, but of course affecting all respective houses built during such process by changing the elements used for each system, changing slowly the appearance of streetscapes. We could assume that such process could have continued for an indeterminate time, but certainly, it was replaced by a process where buildings and houses are being designed as independent objects in disregard with the existing systems and unclear relations to the others, resulting in an extremely fast change in streetscapes (Fig. 1- 8, right). From this point of view, we can define Machiya as the continuity of the previous system, which might be even more accurate than formal perceptions, as we ignore how Machiya system would look like if the vernacular process would have continued uninterrupted for, let's say five or ten thousand years; we could not even predict what materials could be used. Therefore we prefer to refer to Machiya as a vernacular system, instead of a physical typology, because it is defined better by the previously explained process based on the evolution of inhabiting systems than its form.

Machiya gardens

The gardens are one of the most important elements of Machiya, not only for light and ventilation, but also as representational element. The gardens in Machiya are derived from the tea gardens, and as it can be read in garden manuals(Löfgren, 2003), we can understand its representational nature: *"The tea garden… should look like the hermitage of a recluse found*

in the shadow of an old forest in the countryside. A thicket should be planted, a narrow path must be laid out, a gate of plaited bamboo or a garden wicket is built, in appearance it should be simple and calm…" (Kuitert, 1988, p 172)

The gardens are then, more than functional or in other words its function is integrated into cultural aspects, in a complex place making process (Fig. 1- 9).



Fig. 1- 9 Examples of Machiya gardens from Kyoto.

Machiya and the seasons

An important feature is the adaptation of Machiya to seasons. The reason to mention this particularity is because of the importance of how the building can in this case reflect a cultural behavior. In Japanese culture the seasons are important, many cultural expressions do make references to the seasons, whether Haiku poems, *Ikebana* flower arrangements or paper scrolls, the seasons are an important theme in Japanese traditional culture. Machiya even being a building is no exception (小島, 1998).

In the case of Machiya, the gardens play an important role in connecting the interior with nature, therefore in the case of seasons, the movable partitions; especially those in spaces next to the gardens are changed according to the seasons. The paper fusuma and shoji panels are

replaced in summer with woven wood frames, sudo, allowing the fresh breeze from the gardens to enter, as well sudare blinds are used to protect from the sun (Fig. 1- 10).



Fig. 1- 10 Machiya in summer (upper image) and in winter (lower image). Source: unknown (internet).

1.3.3 Machiya as a system

In this dissertation Machiya will be considered as a system, a set of connected parts. Such system will be analyzed from a semiotic point of view. In the second chapter of this dissertation we will explain how Machiya will be considered as architecture and as a sign, and how such signs are related to each other. But before describing the detailed function of Machiya as a system we will introduce the implication of Machiya being a system.

From the physical description of Machiya in the previous section, we can understand Machiya houses are parts of the Cho. Also Machiya are composed of parts such as the gardens, the shop (mise), daidoko, zashiki, tooriniwa, etc. The Cho corresponds to a community and each Machiya to a family, while the elements composing Machiya corresponds not only to functions, but to the expression of cultural elements regulating each of the activities in the family's and community's lives. In order to analyze Machiya in a coherent way, we will use an approach based on Machiya as a system revealing its cultural background in the form of syntactics, semantics and pragmatics as it will be described in the framework and analysis methods in chapter 2 and 3.

1.3.4 Machiya and esthetics

The esthetic of Machiya in Kyoto is deeply bound to the culture in which Machiya evolved. This means that historically what we see today, evolved not just according to certain "taste", but according to culturally well known esthetic principles. Such esthetic principles do not only correspond to a mere guideline to establish certain "beauty", but rather an understanding of the society of ancient Kyoto.

As for example of such principles we can mention *Omote* and *Ura*. Theese term referring to front and back face, have a deeper meaning considering the social life of ancient inhabitants of Machiya themselves. For instance *Omote* refers not only to what is on the front, but as well what is shown to the public, while Ura means not just rear or back, but as well implies a more private and informal behavior.

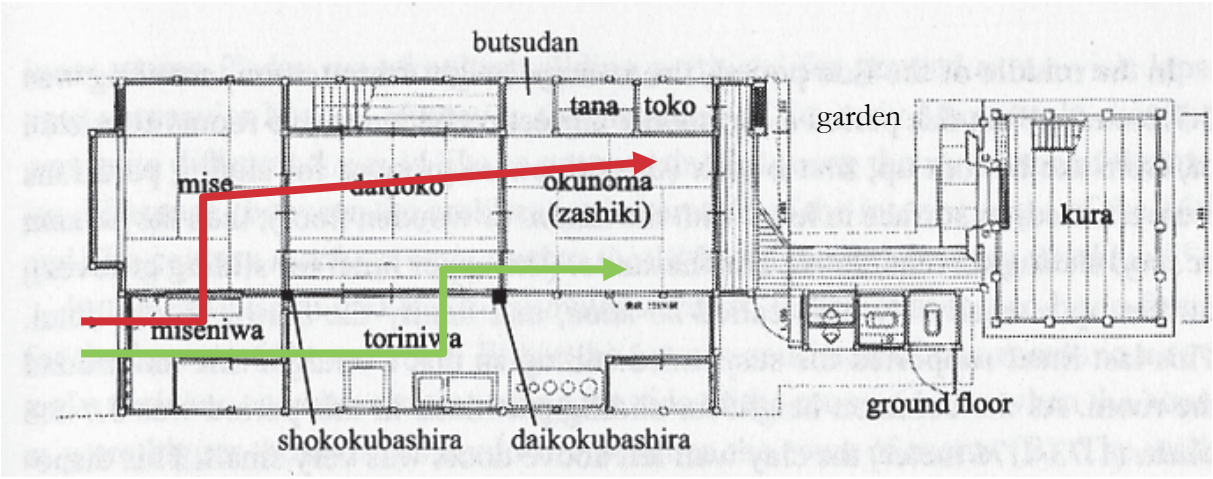
As well we can mention the terms *Uchi* and *Soto*, meaning inside and outside respectively. But as well such terms are important not just in such a literal way, but referring to inside the family or household, and outside of it. In the case of Machiya, as a merchants or artisans house, the household would not only include family members but as well members of the family's business, usually living in the same Machiya house. For such reason the space in Machiya has many "cultural thresholds" dividing the space for inside people and outside people or visitors, which can be recognized in different privacy levels of the spaces and how accessible spaces are from the outside, therefore affecting the inner layout of Machiya houses.

Other important concepts are *Hare* and *Ke*, referring to the ordinary or everyday conception of time and the extraordinary or non-everyday. These concepts have a great importance

concerning behavior; live is conceived as having a necessary balance of *Hare* and *Ke*, which means a balance of certain amount of special moments, and the mundane routine. Special holydays and festivals where considered *Hare*, and in such times special clothes are used and special food is being served; while during ordinary daily routine, work and moments for introspection corresponding to *Ke*, people would act in a more diligent, conscientious and frugal manner.

As we can notice, the described principles are bound to both, formal expression and an expected behavior or manners. Such principles are expressed in space in a symbolic way. In the case of Machiya, the formal expression of such principles is deeply tied to how such spaces are being inhabited. As example we could mention the reception of a guest in the zashiki of a Machiya.

If a guest comes to a traditional Machiya house, there would be several things where we can notice how the cultural principles influence the inhabitation as shown in Fig. 1- 11. First the guest would enter the Machiya through the entrance garden (*Genkan niwa*), but instead of following through the *Tooriniwa*, the guest would be guided to take off his shoes and go towards the rooms with risen tatami floors, while the host might go through the tooriniwa. Once in the *Zashiki*, the guest would most likely sit on the place with his back towards the *Tokonoma*, where some decorative arrangement such as *Ikebana* or paper scroll would be placed according to the season, in such a way that the *Tokonoma* would appear behind the guest, in some way decorating his place, from where he could as well have the best view towards the garden.



Route of host: the host would access the informal *Tooriniwa*, representing *Ura* (back face), connected to the *Ke* (mundane/informal) and *Uchi* (inside/private) side of the house, serving as service space for the *Zashiki*.

Route of the guest: Going through the spaces representing *Omote (front face)*, connected to the *Hare* (extraordinary/formal), and *Soto* (outside/public)

Fig. 1- 11 Layout of typical Machiya, showing the differences of guest and host according to cultural meaning of space (base image source: (Löfgren, 2003) (ill 143)).

In examples such as the previously described situation, we can clearly see how spatial elements and manners are arranged according to cultural principles. But even if such principles rule the esthetics of the space, such principles are not originated just as some esthetic "taste", but rather as moral requirements. It is not considered morally correct that the guest walks into the private areas of the house, but rather in space especially conditioned to be shown to a guest. For the same reason some guest would in fact be received only in the *Mise* space in front of the house and not in the back of the house.

But the previously explained situation (receiving a guest) is only one of the several activities done in a Machiya, and for each of such activities there are specific requirements bound to moral behavior of what is considered as correct or incorrect. But such moral behavior of course, depends not only on the culture of Kyoto but as well varies and evolves in time; therefore, Machiya has evolved according to such cultural development, and nowadays context might be different from the traditional context. Consequently, in the next chapters we will define semantic dimensions compatible with term of contemporary context based on the traditional principles.

1.3.5 Contemporary Machiya context

By understanding Machiya as an urban system, and architecture as the experience of inhabiting composed of systems of inhabitation. We can make a clearer approach to the Machiya problem: Kyoto, even as it was spared from bombings, it did not from superficial design methods. The vernacular processes of Machiya stopped abruptly being replaced by a system which will converge in a loss of identity with a high cost of cultural background; wish is being washed out under superficial iconic content. This situation is not only happening in Kyoto, it happens around the world, and not only in cities affected by wars. The solutions will not be reached by superficial architecture, because as explained before, the damage to the cultural background is being infringed by the disregard even in deeper levels such as the design processes, which tend to focus on banal formalistic or technical issues, and in some cases not even recognizing importance of architectural content but egocentric self expression of competitive schemes instead of cooperative schemes.

Perhaps one of the most threatening issues is that Machiya are actually considered as old buildings, and not part of an evolving system; therefore Machiya cannot compete with features of modern buildings such as the modern facilities or the density achieved with high-rise buildings made of steel and concrete. Such buildings do not only give a chance for more profit for the same plot area but as well keep the surrounding houses (including Machiya) in shadows[2], making it much more likely that the surrounding houses might be replaced as well with higher buildings. As building regulations allow buildings higher than the rest of the city on most of the main streets in Kyoto, we can easily appreciate the impact of higher buildings in such areas (Fig. 1- 12).

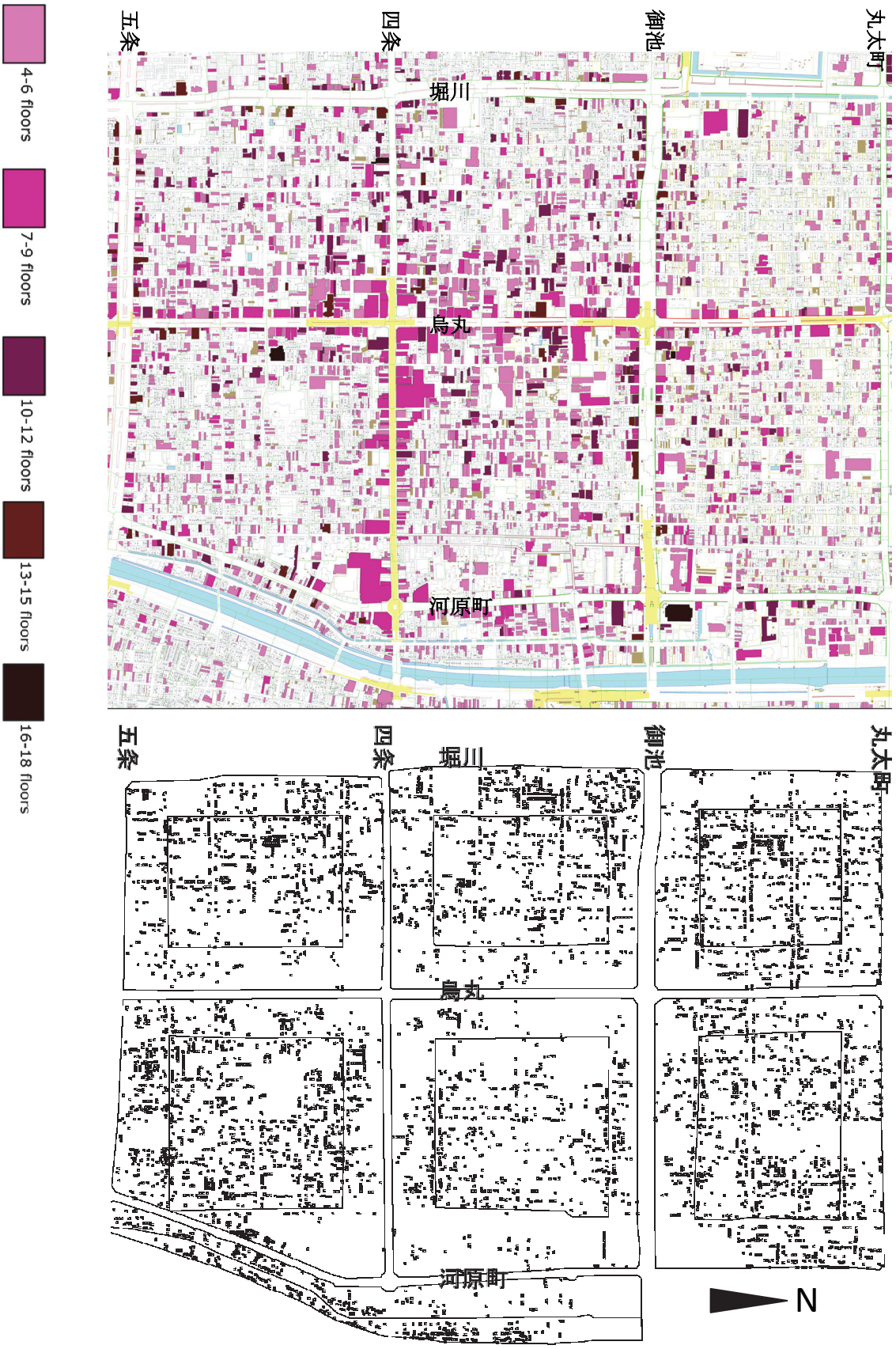


Fig. 1- 12 Area in downtown Kyoto: upper image, high-rise buildings distribution; lower image, the Machiya distribution for the same area. Street names: Marutamachi: 丸太町, Oike: 御池, Shijo: 四条, Gojo: 五条, Horikawa: 堀川, Karasuma: 烏丸, Kawaramachi: 河原町.

1.4 Objectives

This research is mainly aimed on a deeper understanding of not just Machiya context, but context of an architectural typology or system in general.

1.4.1 To improve design methods quality

To improve design methods quality concerning cultural and environmental backgrounds. Introducing cultural and environmental factors into the design methods will help to create a better understanding of the city and the relationship of architect and community. Our aim is to find ways how we can incorporate the analysis and design method.

In this dissertation we will focus on the dwelling process, the inhabitations itself, as part of the design process. Therefore, if we are able to establish such link, the design methods can be complemented.

This objective should be achieved by elaborating a framework integrating inhabitation and design process continuously and being able to use it in our Machiya research.

1.4.2 Favorable management of the context for existing Machiya.

A better understanding of the context of Machiya will help to a better urban planning and conservation of valuable streetscapes.

As for urban design, it is important to not only handle conventional measures such as constructed density, height of buildings or detailing the façade. Although this research will not focus on urban planning, but the Machiya itself, we would to complement urban planning information with the understanding of what is being created and who creates it in the case of Machiya design and context. Such understanding will also be useful for urban planners in order to understand meaningful characteristics of Machiya, which as well affect their neighborhoods.

1.4.3 To create new alternatives within the existing context of Machiya.

A deeper understanding the urban context makes it possible to create more creative ideas than only mimicking the appearance of the existing buildings. This way it is possible to evolve the existing values into new design strongly related and consistent with the urban and architectural context.

If we have an understanding of a more abstract level of Machiya, we can create more new alternatives without destroying its context. If we do not have an abstract understanding of Machiya, the only alternative we have to create new Machiya without eventually damaging its context is by imitating original Machiya without possibility to integrate any new system into it.

We consider that for accomplishing this goal we need to be able to analyze Machiya successfully with a level of high abstraction, such as the semantic level, or Peircian *secondness*.

1.5 Related research

This research is related to other researches focusing on Machiya, but also with architecture itself, semiotics and analysis of architecture.

1.5.1 Semiotics

In the case of Semiotics this research is mainly related to C. S Peirce. As the semiotic theory of Peirce is applicable not only in linguistics, but almost anything, since according to Peirce, anything can eventually be considered as a sign, it is also possible to apply such theories to architecture.

In this case we do not establish a new theory about semiotics, but refer to the definitions of sign given by Peirce and the sign classification defined by Peirce, concerning Firstness, Secondness and Thirdness.

As referential writings we consider mainly the collected papers of C. S. Peirce, and Floyd Merrel's "Semiosis in the Postmodern Age", deepening in some of the concepts described by Peirce such as infinite semiosis referred to in this case as "semiotic streams".

Additionally we will refer to the concepts Syntactics, Semantics, and Pragmatics such as used by Charles W. Morris.

1.5.2 Architecture

Nevertheless the research focuses on Machiya; architecture itself is one of the central topics of this dissertation. While reviewing bibliography for this research we found that most of the books related to architecture do, in fact, not have a clear definition of what architecture is or in some cases are not compatible with other texts. Moreover it seems that architecture considerably lacks of clear definitions even when compared to other artistic subjects such as music. We consider this lack of definition a severe problem since in this research we need analysis methods for certain architecture, therefore such methods should make a clear reference to what architecture is.

As for example of different scopes used to approach to architecture we can mention several technical and theoretical approaches. We can mention as for example of technical approaches the case of Guy Ankerl's book "Experimental Sociology of Architecture", he attempts to link architecture with sociology; while in another technical attempt by J. P. Steadman in his book "Architectural Morphology", he seems to take for granted that architecture is intrinsically linked to cell configuration, giving it a geometric approach. On the other hand we can see more theoretical approaches such as for example the case of Paul Shepheard essay "What is architecture?: an essay on landscapes, buildings, and machines" or the case of "The Aesthetic Townscape" by Yoshinobu Ashihara where we can see the following brief description of

architecture: *"Architectural space can be defined as an area physically demarcated by three boundary elements: a floor, a wall, and a ceiling […] Architecture is what we experience as "inside" as opposed by "outside…"*[3]

Additionally we can complement with some statements of renowned architects such as appointed by Norwegian architect Sverre Fehn: *"For me, there is no architecture without construction…"* or according to Bernard Tschumi: *"My own work in the 1970s constantly reiterated that there was no architecture without event, no architecture without action, without activities, without functions…"* (Six Concepts, Excerpt from Architecture and Disjunction).

From all such different approaches we can infer that it is necessary for architecture to be inhabited. Even if in the case of Shepheard we can just deduce some relation of human and space and Fehn just mentioned construction which is perhaps a previous state of inhabitation; all the geometric connections described by Steadman would have no meaning unless someone would, as using the words of Ashihara, *"experience"* the space.

But if we include semiosis into the different approaches to define architecture we can differentiate this research from the previously mentioned approaches because in the case of semiosis, the process of semiosis itself becomes more important than the physical act of creating a sign. In other words, the *"experience"*, in this case more precisely the interpretation of space will be considered as architectural process. And the *"event, action, activities and functions"* will be product of such interpretation, and called in this research inhabitation.

1.5.3 Machiya

We can find many different approaches to Machiya, but only a small fraction focusing on inhabitation or inhabitants' interpretation. Examples of other approaches might include structural approaches (丸山, August 2006), (大場, September 1989), or approaches regarding thermal performance comparing to modern context (石田 et al., February 1990), about the historical streetscapes (丸山, 2007), (丸山, October 2005) and historical urban context (高橋, 2003), (高橋, 1993). Additionally we can find researches on the development of Machiya as vernacular architecture (今, 1989), (Löfgren, 2003), (松井, 2001), some focusing on the importance of the meaning of Machiya in actual context (尹 et al., November 1993), (Salastie, 2001), new possibilities for Machiya (巽, 1999), the role of the community (宗田, 2009), and as well as guidelines for cases of Machiya modifications (河本 et al., November 2001). As well we can find syntactic analysis such as space syntax (Kigawa, 2003) and schema grammar (青木 et al., January 1994), but even in such cases focusing more on the physical space than the inhabitants' interpretation.

Nevertheless most of Machiya research focuses on the traditional Machiya. As for most

researchers Machiya are buildings constructed before the Second World War, the analyses focus as well on the physical, cultural and social contexts from the beginning of the 20th century or earlier. For such reasons the available research about Machiya in the contemporary context is not as much as about the traditional Machiya itself.

Still there is considerable research focused on Machiya in the contemporary context, but mainly focusing on the problem Machiya is facing regarding the deterioration of traditional cityscapes, such as for example "歴史的都心地区における町家・町並みの保存と継承の具体策(1), (2)" (チェントロ・ストリコ研究会（主査：三村浩史）, 1993), or "京町家の再生 (Machiya Revival in Kyoto)" (京都市景観・まちづくりセンター編, 2009). But even in such cases, efforts tend to focus on the visual aspects of cityscapes and the conservation of Machiya, as well as organization and financial aspects, while in this research we will focus more on the inhabitation in the contemporary context. Nevertheless we can find also cases of studies focusing on future development of Machiya associated with the community such as 町家再生の論理—創造的まちづくりへの方途 (宗田, 2009), or future developments of new Machiya posibilities such as 町家型集合住宅—成熟社会の都心居住へ (巽, 1999), still we would complement new possibilities for Machiya with a study on inhabitation, including syntactic, semantic and pragmatic approach.

Considering concepts such as syntactic, semantics and pragmatics, we should consider as well research focused on Machiya using space syntax, such as the work of Tsuyoshi Kigawa (Kigawa, 2003). In such case it is used "Space Syntax", but such method differs from the current research as it depends on interpreting the physical space by using Bill Hillier and Julienne Hanson's method, where it is not necessary that such space is inhabited or not or if it carries any other meaning. In other words, Space Syntax is a spatial analysis tool, complementary for architecture, but not focused directly the inhabitants' interpretation, therefore we would consider it more a geometric approach comparable to J. P. Steadman's work rather than essentially architectural approach. This means that in the case of the current dissertation, we will make an effort to use the inhabitants interpretation related to the traditional description of Machiya instead as relating the traditional description of Machiya to geometry.

1.5.4 Architecture and semiotics

As already explained in 1.4.1, the dissertation is mainly based on Peircian semiosis. As well we explained in 1.4.2, that the essential part of architecture is inhabitation, which differs from the more utilitarian concept of function.

Therefore it is worth to mention that this research will have a different approach to architecture as some important writings about such topic such as Umberto Eco's "Function and Sign: The Semiotics of Architecture" (Eco, 1997). Eco uses denotation and connotation in order

to separate what he considers as primary function of architecture consisting in its function, and a secondary function given by additional elements such as decorations connoting other meanings than the denoted function. We consider that Eco makes two assumptions: one is the use of function, perhaps influenced by modernism, and the other assumption is that he considers the physical objects such as buildings as works of architecture. In such case as Eco mentions a throne's primary function is to sit, but if we consider inhabitation instead of function as essential part of architecture, then a throne would be placing the king in front of an audience in a formal ceremony, where it would not matter that much if the king is sitting or not. On the other hand as we do not assume a physical object to be architecture, only according to the inhabitation elements will be architecture, therefore certain objects can be considered architecture, something else, or both architecture and something else at the same time. For this reasons this research is not focused on denotation and connotation, but rather in inhabitants' interpretation.

As for a research focused on interpretation of architecture we consider relevant the work of Juan Pablo Bonta. Especially as at the end of his book "Architecture and its interpretation: A Study of expressive systems in architecture" (Bonta, 1979) he concludes that the inhabitant will read his own meanings into space[4], indicating the importance of the role of the inhabitant and his interpretation. But while Bonta uses a sign classification based on the intentionality assumed by the emitter and the interpreter, in this dissertation it will be used the classification given by C. S. Peirce as mentioned in section 1.5.1, since our focus is oriented to the relation of object, sign and interpretant, and the level of abstraction we can recognize in the categories firstness, secondness and thirdness.

1.6 Dissertation structure

The dissertation is composed of three chapters, which can be grouped into the following parts (Fig. 1- 13):

Part 1: Scope and framework: Chapter 1, 2 and 3.

Part 2: Physical context analysis: Chapter 4.

Part 3: Cultural context analysis: Chapters 5 and 6.

Part 4: Evaluation and conclusion: Chapter 7.

In Chapter 1 it will be used as introduction, and will describe the outline and background of the research. As well in this chapter we can find an explanation of how this dissertation is related to related research, and the structure of the dissertation (in the current section).

Chapter 2 contains the theoretical framework.

First we will explain the basic definitions of the main topics used in this dissertation, which

may differ from other researches such as Machiya, Architecture, and works of architecture.

Secondly we will explain in detail the semiotic approach used in this dissertation, as semiotics is not necessarily considered as a common subject in architecture.

Finally in this chapter we will refer to the analytical problem to be solved before starting the analyses.

Chapter 3 is used to explain the research methods, for each approach the corresponding methods are explained.

In Chapter 4 we will start the analysis of Machiya in its contemporary context, but this first approach will be more focused on the physical environment of Machiya. Such physical environment considers examining Machiya from the outside and recognizing which elements are important for the urban physical context. Even if this approach is based on physical elements the importance of inhabitable elements is verified. These first findings will be used as argument to focus even more on inhabitation of Machiya.

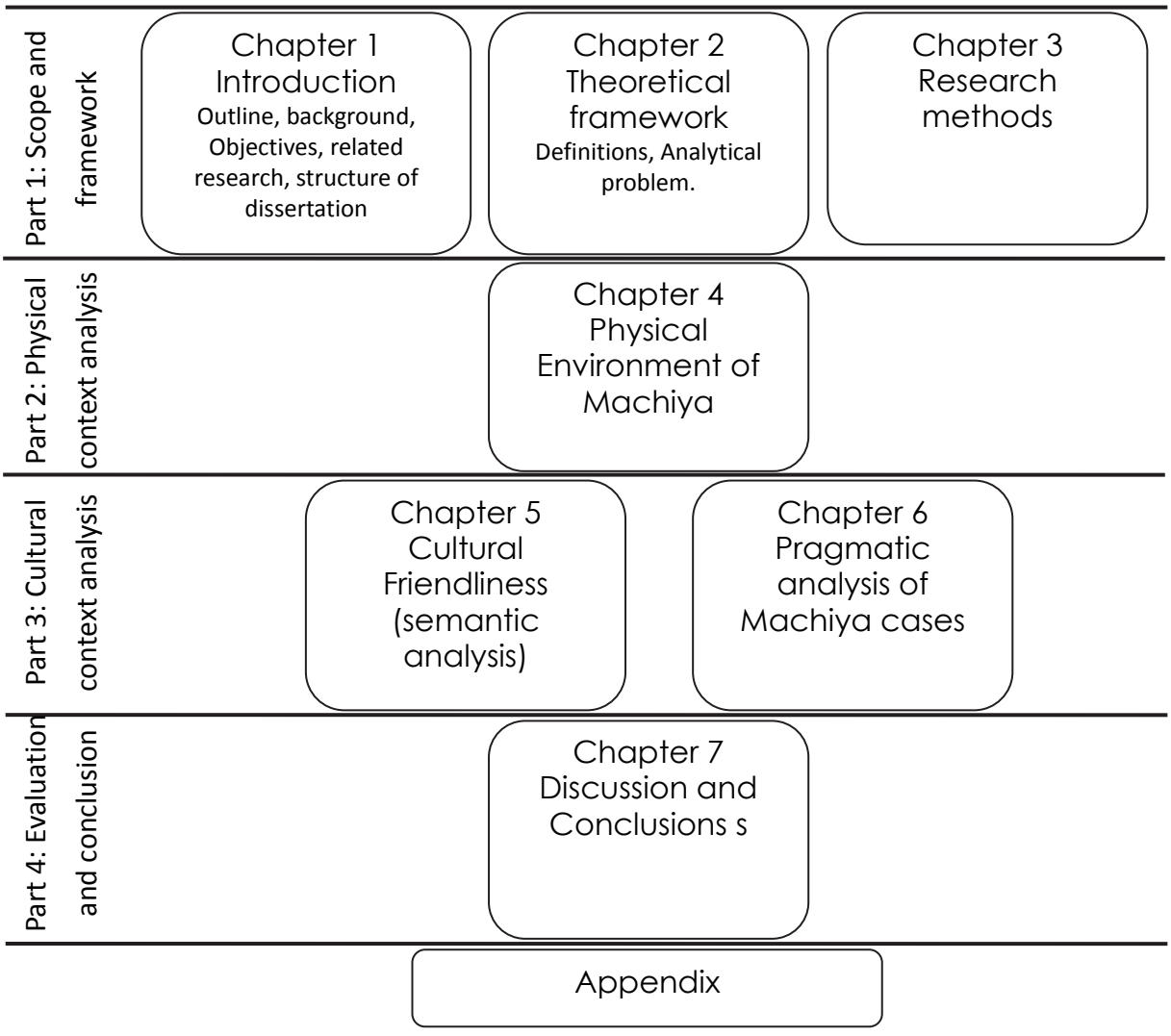


Fig. 1- 13 Dissertation structure.

Chapter 5 has a more cultural focus than Chapter 4 focusing even more on inhabitation; in this chapter Machiya will be analyzed using semantic information about how certain activities are related to the space of Machiya. In order to have a wider scope, Machiya is being compared with other dwelling typologies. In this chapter, we will be able to find a semantic definition of Machiya, and analyze the situation of Machiya in the contemporary context using information directly gathered from inhabitants.

In Chapter 6 the physical and cultural framework is used. The semantic context of Machiya defined in Chapter 5 will be used as reference for specific Machiya case studies. Each case can be compared with the data from a larger group of Machiya and other dwellings, and as well for each case the relation among its inhabitable structures is being analyzed. By analyzing a particular case compared with its context we can make a pragmatic analysis, where we can establish a relation of sign (syntactic level), meaning (semantic level), and interpreter (pragmatic level).

In the last Chapter, we will gather the conclusions of the previous analyses and make and evaluation of the results, aiming towards a general description of a design method based on this dissertation. In Chapter 7, results, conclusions, and as well the role of architect and works of architecture is being discussed, having in consideration the previously mentioned framework.

Notes of Chapter 1

[1] In the text 日本の民家 (今, 1989), it is explained how Minka has developed, but as well how such houses developed from villages into cities, explaining formal changes, but transmitting concepts and meanings from older generations. As example we can consider the development of “tooriniwa” (通り庭) from “doma” (土間), also explained by Löfgren (Löfgren, 2003).

[2] As detailed in 京都市景観・まちづくりセンター編, 2009 it is shown with over a 50% of the surveyed residents pointed out “Earthquake resistance and fire prevention” and “Cost for maintenance and renovation”, over a 40% “Living in Machiya surrounded by high-rise buildings is challenging”, followed by “Inheritance tax” with over a 20% among the major hardships of living in Machiya. Such text in particular (京都市景観・まちづくりセンター編, 2009), deals with funding for Machiya preservation, also we might see technical support for Machiya renovations such as in *なるほど!「京町家の改修」～住み続けるために～* (京都市景観・まちづくりセンター編, 2003). As well we can find extensive surveys about remaining Machiya (京都市景観・まちづくりセンター編, 2003), (京都市景観・まちづくりセンター編, 2009).

[3] “The Aesthetic Townscape” (Ashihara, 1983), Chapter 1, page 3.

[4] Bonta, 1979 in page 232 third paragraph explains: *“Architects are deluding themselves if they believe that they are addressing submissive audiences, eager to communicate; that their public wants by all means to understand (even decipher, if necessary) the meaning f architecture as seen by the designer. Nothing could be further from truth. What people want is to see their own meanings in the environment – with their own systems of values, from their own frames of reference, shaped by the expressive systems that they share with their community but not necessarily with the designer. And this is exactly what they do, whether designers like it or not.”*

2. Theorethical Framework

2.1 Definitions:

In order to analyze semiotic objects, it was necessary to choose an eloquent semiotic theory, in this case based on theories mainly of Charles Sanders Peirce (Hartshorne, 1978).

In the field of architecture many definitions are not clear, this problem in this case covers the most wide aspect as architecture is not clearly defined or at least it is possible to find several different points of view, in some cases whole books written with the only purpose of defining or redefining architecture, on the other hand the definition of Machiya is also an complicated issue, but fortunately at least specific definition of the parts of Machiya such as tooriniwa, tsuboniwa, daikokubashira and so on, are defined more precisely.

Finally it is important to define what a work of architecture is.

2.1.1 The sign:

It was used the definition of Peirce for sign as triadic system (Fig. 2- 1):

"The Sign: the form which the sign takes (not necessarily material);

An Interpretant: not an interpreter but rather the sense made of the Sign;

An Object: to which the sign refers."

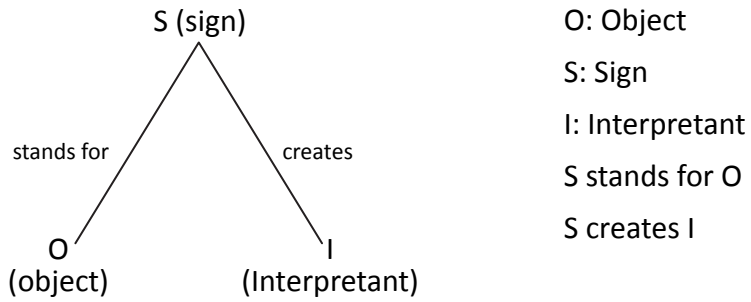


Fig. 2- 1 The sign according to C. S. Peirce

The theory of Peirce has the particularity that it uses a triadic definition of sign, different from dyadic definitions, where the most used would be the definition given by Ferdinand de Saussure, who defined the sign as composed by the a *"signifier"*, the form which the sign takes; and the *"signified"*, the concept it represents. The importance of such difference is that in the case of Peirce, Signs by being interpreted can generate an interpretant, which can be as well a new or more developed Sign.

By using this definition of Sign, we have to consider what in the case of this research would correspond to O, S and I. As we focus on architecture, we choose S as "some space", yet not defined, O as a concept or idea, or basically anything to what such space S can refer, or in other words anything a space S can stand for. Finally when someone interprets such space, the

connection of space S and object O, will make some sense, or in other words creates an interpretant, which could be a new space S2, perhaps an evolved version of S.

This system was chosen because of its suitability for evolving systems such as Machiya making use of the interpretant to connect new signs as in a sequence. It is also considered that each Machiya is constructed according to an existing cultural background, therefore such concept is considered to be the "object", the built space corresponding to Machiya system is considered to be a "sign" of such cultural concepts, and the "interpretant" is considered to be the sense made by the Machiya, as well as creating a new "sign" or new space.

2.1.2 Infinite semiosis or "semiotic stream":

As the Sign defined by Peirce, can create a new Sign, we can say that the Interpretant or new Sign S2, as well stands for the object O, and therefore a new Interpretant/Sign I2/S3 is created. Such process can go on forever; therefore it is denominated *"infinite semiosis"*, or as it is referred by Merrel (Merrel, 1995), *"semiosic stream"*. We will adopt the term "semiotic stream", similar to the one used by Merrel. In Fig. 2- 2 we can see schemes of concatenated signs in such "Semiotic streams", referring to one object or linking other objects.

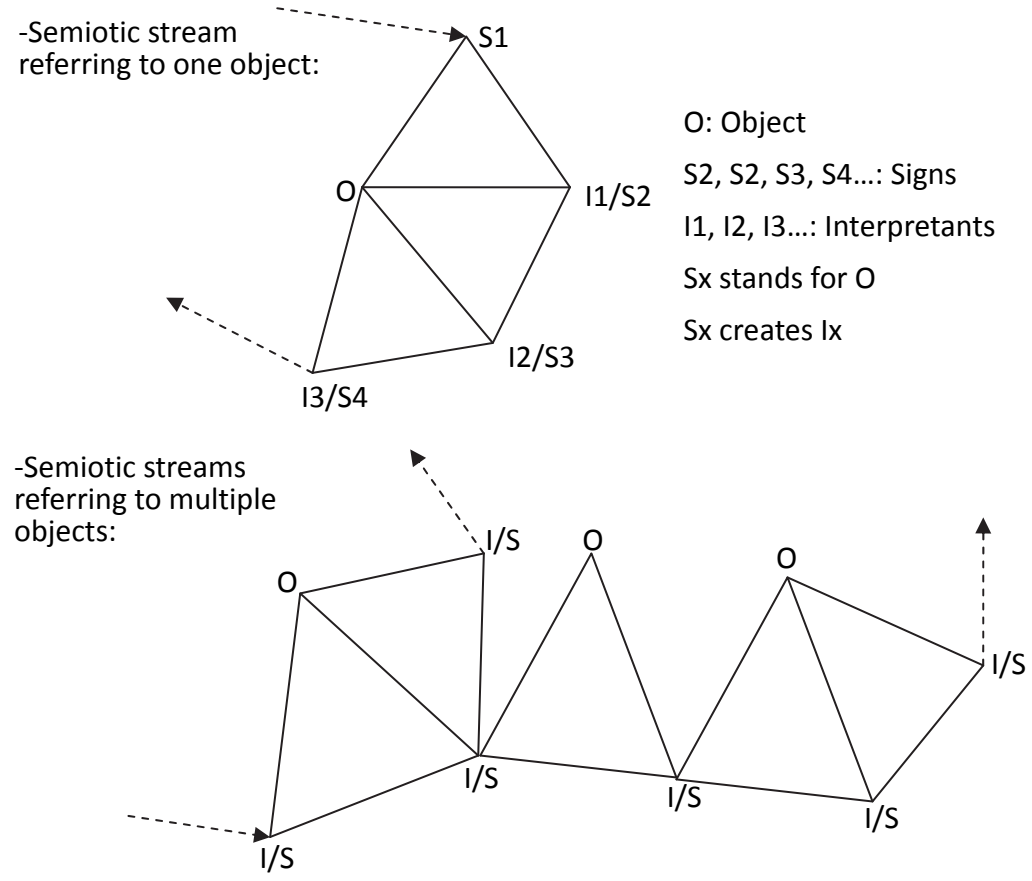


Fig. 2- 2 "Semiotic streams"

2.1.3 Sign classification:

It is considered as well the classification given by Charles Sanders Peirce:

According to Peirce, Signs are classified from the viewpoint of relation between Sign and its Object as follows: An Icon is a sign which refers to the Object that it denotes merely by virtue of characters of its own, and which it possesses, just the same, whether any such object actually exists or not. An Index is a sign which refers the Object that it denotes by virtue of being really affected by the Object. A Symbol is a sign which refers to the Object that it denotes by virtue of a law, usually an association of general ideas, which operates to cause the Symbol to be interpreted as referring to that Object. (Hartshorne, 1978) (CP2.247, 2.248, 2.249).

If in our case the Sign is a space, we could consider the following examples of Icon, Index and Symbol:

Example of Icon: a spatial object that as sign stands for something resembling physically to it, such as a statue resembling certain person.

Example of Index: a space such as a kitchen standing for cooking that can actually be used for cooking.

Example of symbol: a space such as triumphal arch standing for a specific event, only able to be interpreted as such by use of a convention.

According to Peirce we might find Symbols containing Indexes and Icons, as well Indexes containing Icons, but not the other way around.

2.1.4 Spatial language:

As it is being used Semiotic theories, it is important to clarify what are the involved languages. It is considered that space can be interpreted in several ways, such as for example in sculpture, painting and other arts, but in particular it is considered that inhabitation is also a spatial language.

In chapter six of his book "Semiosis in the Postmodern Age" (Merrel, 1995), Merrell refers to Charles S. Peirce's paper CP 5.449 (CP, 5.449), where firstness makes reference to icons, secondness to indexes and thirdness to symbols:

"…At one extreme, we have the vagueness of indeterminacy of firstness, and at the other, the generality and indeterminacy of thirdness. In between is the world of actualized semiotic "facts" (the secondness of sign), any given one of which, after being picked up in the mind, is relatively definite, though in the next moment it will have meandered on down the semiosic stream."

Concerning the categories of firstness, secondness, and thirdness, Peirce describes as follows.

"Firstness is the mode of being of that which is such as it is, positively and without reference to anything else. Secondness is the mode of being of that which is such as it is, with respect to a second but regardless of any third. Thirdness is the mode of being of that which is such as it is,

in bringing a second and third into relation to each other." (CP. 8.328)

If we would see in many examples in this dissertation, we can realize that inhabitation might tend to be represented by signs mainly corresponding to the Index category. As inhabitation tend to be affected by space, especially if the object is related to an activity, we will find several cases where inhabited space can be considered as Index of certain activity. On the other hand it might be difficult to find spatial Icon being able to be interpreted by doing an action, but rather looking at it would be more common to find. And in the case of a symbol, in order to be interpreted by someone by doing something it might as well contain an Index. Therefore we estimate that the Indexes related to inhabitation will play an important role in architecture.

2.1.5 Syntax, Semantics and Pragmatics:

Charles W. Morris defines Syntax, Semantics and Pragmatics in the following way(Morris, 1938):

Syntax refers to the relation between signs. Therefore in the case of syntax we can find pattern of relations of certain parts of something.

Semantics is about the relation of Sign and its meaning. Therefore with semantic analysis we could be able to understand how a sign is related to its meaning.

Pragmatics is about the relation of Sign and interpreter. Therefore on pragmatic level, al parts of the Sign as defined by Peirce are involved (Object, Sign and Interpretant).

If we consider inhabited signs we could for instance think syntax as relation of inhabited spaces, semantics as how the spaces relates to its inhabitation and pragmatics about how the inhabitant relates to the space, and the interpretant created by such inhabitation.

2.1.6 In the case of architecture:

In this section it will be explained what architecture is, at least regarding to this research.

Even if many different definitions of architecture might exist, we cannot take for granted to know what architecture is. Many definitions might even be misleading, or used out of context. Therefore we did first consider the irreducible elements of the reviewed bibliography. As mentioned in "1.5.2 Architecture", we considered bibliographic sources related to architecture such as case of Guy Ankerl's book "Experimental Sociology of Architecture" (Ankerl, 1981), J. P. Steadman's book "Architectural Morphology" (Steadman, 1983), Paul Shepheard essay "What is architecture?: an essay on landscapes, buildings, and machines" (Shepheard, 1994), "The Aesthetic Townscape" by Yoshinobu Ashihara (Ashihara, 1983), Juan Pablo Bonta's "Architecture and its interpretation" (Bonta, 1979), Additionally we complemented with some statements of renowned architects such as Sverre Fehn or Bernard Tschumi (Tschumi, 1996), we could eventually continue adding more texts and quotations, but at the end, what remains is certain

relation of human beings with space. Another example could be as mentioned by Heidegger in "Bauen Wohnen Denken" (Von Hermann, 2000), as he attributes to "Bauen" (construct) and "Wohnen" (to dwell) to have a etymologic connection, where Wohnen means Bauen, as we construct for dwelling, and later on becomes a way of thinking our world.

Now we can start to consider architecture as a relation of space and human being, but certainly such relation is a very wide definition. Despite the fact that we consider the many references to function, we might notice that Heidegger's term "wohnen" (to dwell) seems more accurate, as "function" excludes the less functional aspect of the relation of space and human.

In the case of function, we might face the following problem: in order to consider function as in the case of Eco, we will always have an implicit intentionality in design. We could not easily escape from the idea that whatever has being designed has its function expressed as a fixed meaning, contrasting with Bonta's conclusion that the inhabitant will read his own meanings into space. Perhaps we could say that Bonta was referring to what Eco defined as secondary functions, but let us consider the criticisms elaborated by Karsten Harries's book "The Ethical Function of Architecture" (Harries, 1997) in chapter "the language problem where he explains that in fact it is more complicated to distinguish what Eco describes as primary and secondary functions than it appears to be.

As for example when Harries explains the case of a house making reference to its denoted "primary function", he points out the following: *"Consider once more the example of a house. Eco would say it denotes a house, relying on a conventional code. Ando no doubt houses tend to look like houses, where the idea of what a house should look like, the house type, will vary with natural and social conditions. Still, the primary function of a house is by no means obvious. To be sure, houses serve the requirements of dwelling. But do we what it is to dwell and what its requirements are? They certainly cannot be reduced to being protected from a threatening outside: we need to be sheltered not only physically but psychologically. The soul, too, needs a house. With this Eco's distinction between primary and secondary function, between denotation and connotation, begins to blur."*

The example given by Harries, and the already mentioned case of the throne in 1.4.4, point towards the same direction: Eco's position has certain flaw that can be explained as using some inconsistent assumption. What we can learn from Harries criticism is that if we cannot find a clear distinction of Eco´s primary and secondary function, it is so because the whole idea of function in space is somewhat impossible to distinguish; basically we do not have an objective method to discern the function of certain space. Still from this point on, we might not necessarily take the same direction as Harries.

If we consider more in detail the whole process of great part of the constructed architecture we can find some additional clues: most of the built world corresponds to assignments given to

someone to do certain job. This means that for most of the built world the purpose of the building itself was known by those who gave the assignments to built. Therefore it is reasonable to think that the architect might have added a secondary function in his work, or in the case of Bonta's book, he might tried to add signs which intentional or unintentional nature. In any case it would be something depending on the circumstances. Before going further we should try to imagine what would happen if architect could build without an assignment in a similar way as painters can paint, musicians can compose without an assignment. But in this case, we do not think about an architect drawing plans or sketches without an assignment, but actually leaving built architecture in the cities. The point of such a preposterous idea is just to point out the following: In such unlikely case it would be more natural to think of architecture of an expressive art, but it seems not to be as other arts just because of its particular circumstances. In other words, the fact that architecture seems to be something functional with some aesthetic value added to it arises just because of the circumstantial situation that architecture might be connected to specific purposes given in many cases by assignment. This means that the whole flutter of function is more or less an incidental situation, but by no means essential to architecture.

On the other hand we might consider that in the case of any other arts, the interpreter is required in order to consider it art; if a painting has not been seen by anyone, no one can say if it is art or not, no matter the outcome of further judgments of the painting, it has to be seen and interpreted to be art.

Then again let us consider the rather absurd idea of architects filling the cities with their work without any given assignment. It would be necessary that such works are interpreted, that the *inhabitant reads his own meanings into space* in order to be considered any kind of art. But how do we interpret such "architecture"? If we just look at it, then perhaps it would just be a sculpture. We need more than just look at it: we have to inhabit it, dwell in it, till it gets a meaning. And of course we could find functions, but does not any other form of art eventually be judged by functions as well? We could, as for example consider a piece of music suitable for certain dance, or for relaxation, and so on, thus we do not necessarily define music by its function, as it eventually could be done, but we focus on what we can hear. We do not in the case of music or other arts assume that it has a function as essential part of it. Neither would we necessarily compose music for dancing, even by assignment, focusing on the mere function of dancing naively pretending to have achieved an emotionless dance devoid of any other meaning than its function. From this perspective, comparing the functionalistic approach of modern architecture with other arts might make architecture to appear fairly limited, if not even misleading.

If at this point we recall the words of Bernard Tschumi "*event, action, activities, functions…"* these words are certainly a wider scope than just functions. Moreover we can now refer as well to Bonta again (Bonta, 1979). We could mention the case of Buckminster Fuller´s

Dymaxion housing system as an example of "functional inhabitation", and Le Corbusier´s Villa Savoye as "functionality looking" expressed in terms of formal language[1]. In such case it is considered that the European approach was focused on appearance, and more successful, since according to Bonta *"Neither the architectural avant-garde nor society at large were seeking a true revolution, but only a change in values. The goal to be pursued was at the level of meanings, not at the level of reality."*

But, in the case of the Dymaxion, its functionality can be appreciated in its planned inhabitation, moreover we could write our own praise of functionality based on Fuller´s works. Therefore, Fuller was as well focused on an aesthetic value of functionality, expressed not only in form, but as well as a way of inhabiting space, we could call as "beautifully functional", but perhaps too functional. It is more likely that among inhabitants, the aesthetic principles of modernism just could not succeed for inhabitation, people do not wanted to inhabit space according to the beauty of functionality, but accepted the formal expression of it. Therefore truly modern architecture such as Fuller´s Dymaxion house was not a success among inhabitants, while even Le Corbusier just promised to the Savoye family to just profoundly modifying its sculptural aspects of the house, and eventually enhancing some of their ideas about inhabitation achieving more success despite his promise to the Savoye family was only accomplished in terms of formal expression.

But by reviewing Fuller´s work as well we can notice that someway the "beauty of functionality" would not work very well, while the machine like bathrooms and kitchens seems to be consistent in expression of functionality in both: as sculptural forms and the way they might have been inhabited; the living room and bedroom of the Dymaxion house is kind of an odd space (Fig. 2- 3), certainly the machine like functionality of the rest of the house did not match with the "nonfunctional" functions of leisure, appearing ordinary furniture instead of the machine like devices, in other words even in Fuller´s work the "beautiful functionality" could not cope with the complete program of a house, even less could inhabitants "follow function".

Nevertheless in the case of Fuller, if we can understand dwellings made of subsystems, we can then understand why modular bathrooms where more successful than the whole Dymaxion system: because only some subsystems could fit into such aesthetic ideals, while for living rooms and bedrooms it was not worth the effort to live "beautifully functional". On the other hand, the lack of consistency in assessment of modern values in the designs of the European modernists allowed them both success and failure: Success because as the modernity was in certain way limited in the inhabitation, it was easier to assimilate than as for example Fuller´s work, but at the same time a failure; because designs only keeping the sculptural expressions of modernity where considered equally modern architecture. Modern architects themselves did not clearly define it, by unclear definitions, such as for example putting limitations in ornament and other formal

constraints which were more focused on sculptural issues and not necessary for inhabitation.

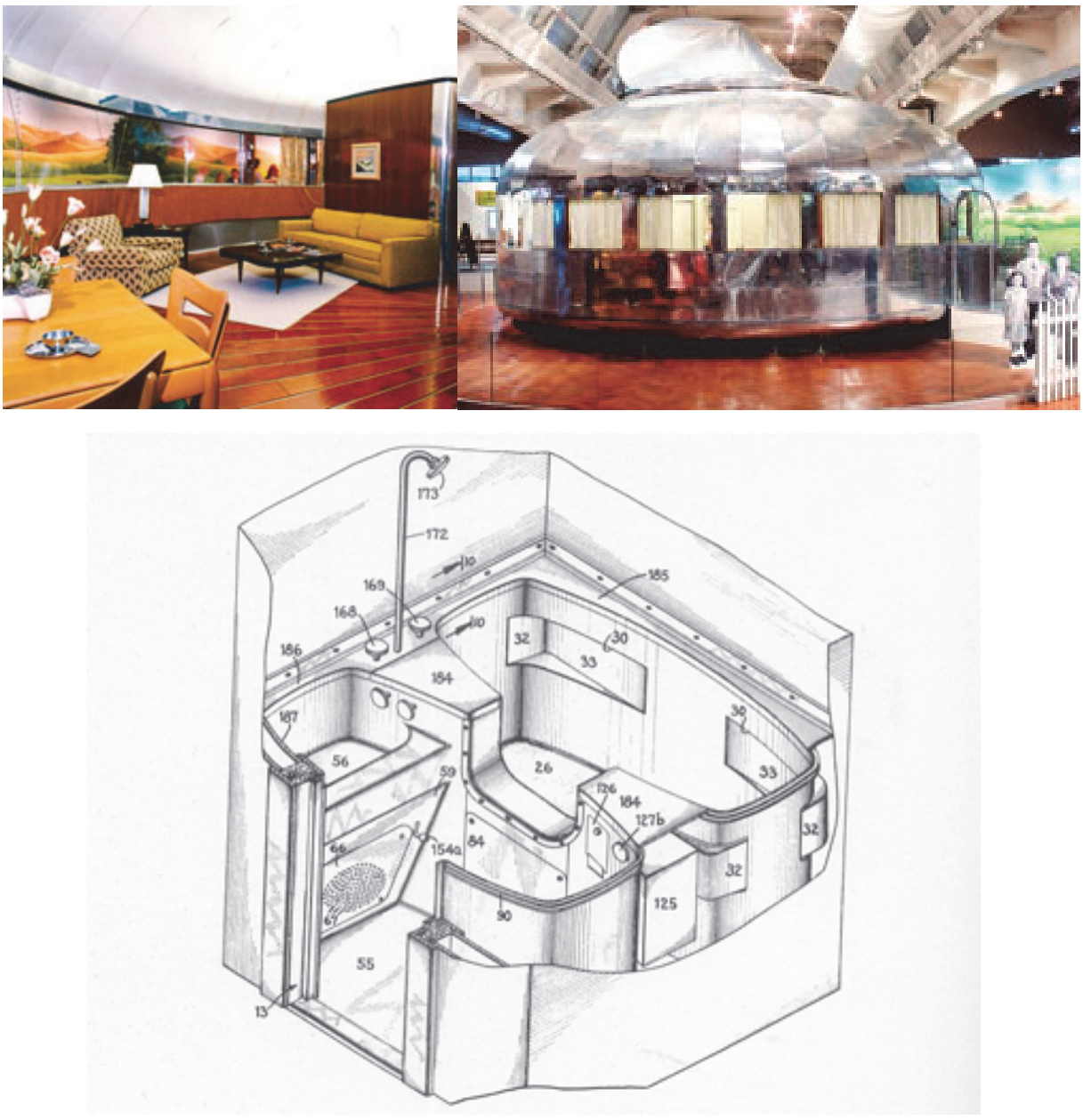


Fig. 2- 3 Contrast of the common living room and machine like bathroom in the Dymaxion house. Upper left: Living room. Upper right: exterior of the Dymaxion house. Lower image: isometric of the bath unit. Sources: Upper images (The Henry Ford, 2011) Lower image (UCLA, 2004).

Moreover we could say that the call against ornament is in fact not necessarily about architecture but a visual aspect of the objects interpreted as architecture. In fact we can give an example on how such approaches became eventually stronger than the special consideration for the inhabitants, as for example the design of Aalto´s "non splash" washbasins in Paimio sanatorium. Such washbasins where modern architecturally because of its consideration of inhabitation, but did not need to have no decoration to be part of modern architecture, they

could still eventually have been decorated contrary to the modern sculptural expression, let's say in a rococo style, but still have been part of modern expression in its inhabitation. It is to say, modern to inhabit, but with visual rococo style. Still modern architects preferred to limit their liberty putting too much effort in visual aspects, while still today a "modern building" might not necessarily mean modern way of inhabitation.

At the end it seems that paradoxically the successful modernism in architecture is more driven by visual appearance than it appears, as function is also just an aesthetic ideal, and in the end the aesthetic parameters of pre modern era, as social constructs might be more coherent with inhabitation than the functionality of modernity. As for example while Tanizaki (Tanizaki, 1977) explains that the appeal of darkness might have been forced by limitations, such development goes beyond the solution of the physical problem, as well darkness did not excluded brightness, but constructed a dark-bright dichotomy applicable to inhabitation. In contrast, modern functionalism aimed for no appreciable dichotomy but one single valid position, instead of a functional-nonfunctional dichotomy allowing us to appreciate functionality in our own context, it was put in terms of an imposition over our own context, or almost a moral condition such as in the case of Adolf Loos' formal proclamation *"ornament is sin"*.

At this point we can start to define architecture as an art related to inhabitation, in a similar way as music an art related to what we can hear. Now we need to clarify such preliminary definition.

As reference in other arts we can find some landmarks in their development, such as in the case of music John Cage's "4'33"", or in the case of painting works such as Kazimir Malevich's Suprematist Composition "White on White" or Robert Rauschenberg's "White painting". Such work do have in common the idea that they were interpreted as certain absence of substance presented by their authors, but being able to be complemented by the interpreters ideas or other elements in the environment such as ambient sounds in the case of music or shadows and lights in the case of painting. The purpose of mentioning such cases is to point out that, the works of art become works of art as long as their interpretation can become meaningful for the interpreter, being able to be identified as such or such "thing".

Therefore a space can be architecture as it is being inhabited, but in such a way that it is being interpreted by such inhabitation, in other words, when a space becomes a sign with its corresponding interpretant by means of inhabiting it, we can start considering it as architecture. From such moment on we can identify a space as certain place. And even if such place might be related to function in many cases, architecture as an interpreted sign carries the same complexity as other signs in other arts. As well architecture can share with the other arts its absence of substance as in the cases mentioned in the previous paragraph, because at this point there is no need any more physically constructing a work of architecture but to interpret it. This

differentiates the physical building process from architecture, becoming more as the way of thinking described by Heidegger is related in a way to how our mind dwells/constructs/thinks a world, because as we interpret space inhabiting it, we create a "place".

Summing up, architecture is the place we mentally construct out of a space by means of the inhabited interpretation of it.

Therefore a work of architecture should be a sign.

2.1.7 Work of architecture:

In this section we analyze works of architecture as signs, in order to understand the not only what a work of architecture is, but as well the implications of not having an existing definition of work of architecture, such as the pseudo architecture.

Pseudo architecture

Before we describe the work of architecture as Sign, we will clarify some implications certain categorizations have in identifying a work of architecture as architecture. As we explained in the previous section, in some cases we encounter certain ambiguity in definitions, and the case of the work of architecture is no exception. Moreover, if a space can be architecture by means of its interpretation, we may encounter cases in which the same space can be in fact interpreted as well as something different than architecture. Therefore when we describe a work of architecture we should clarify if we are discussing its architecture or its quality of being something else than architecture. As for example we could consider the case in the previous section, where we mentioned the difference of modern architecture defined as architecture by its inhabitation or cases where the space was described as modern only by means of visual or sculptural qualities.

We can therefore make the difference of architecture defined by its inhabitation and "pseudo architecture" as something that eventually could be architecture but we are not necessarily interpreting it by means of inhabitation.

Unfortunately as architecture corresponds to inhabited space, when architecture is being analyzed, we might rely only on pictures and graphic material, but not the actual experience of the real space, therefore it is very easy and usual that descriptions in books might be confusing architecture and pseudo architecture. Moreover academia is no exception of such phenomena, as we might find several cases where architectural theorist might do so. This means that, to our regret, much of architectural analysis might be in fact graphic analysis of something that might be as well architecture.

First we will consider an eventual work of architecture in (Fig. 2- 4).

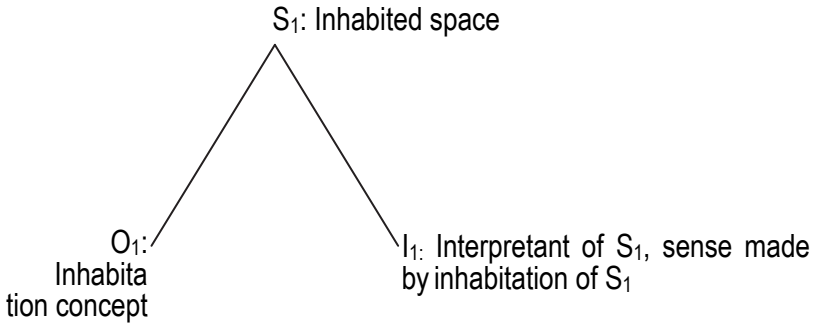


Fig. 2- 4 Work of architecture as a Sign.

Note that in this case O_1, S_1 and I_1 are defined by inhabitation, but in we can see what happened afterwards, when such Sign form part of the following "semiotic stream" (Fig. 2- 5):

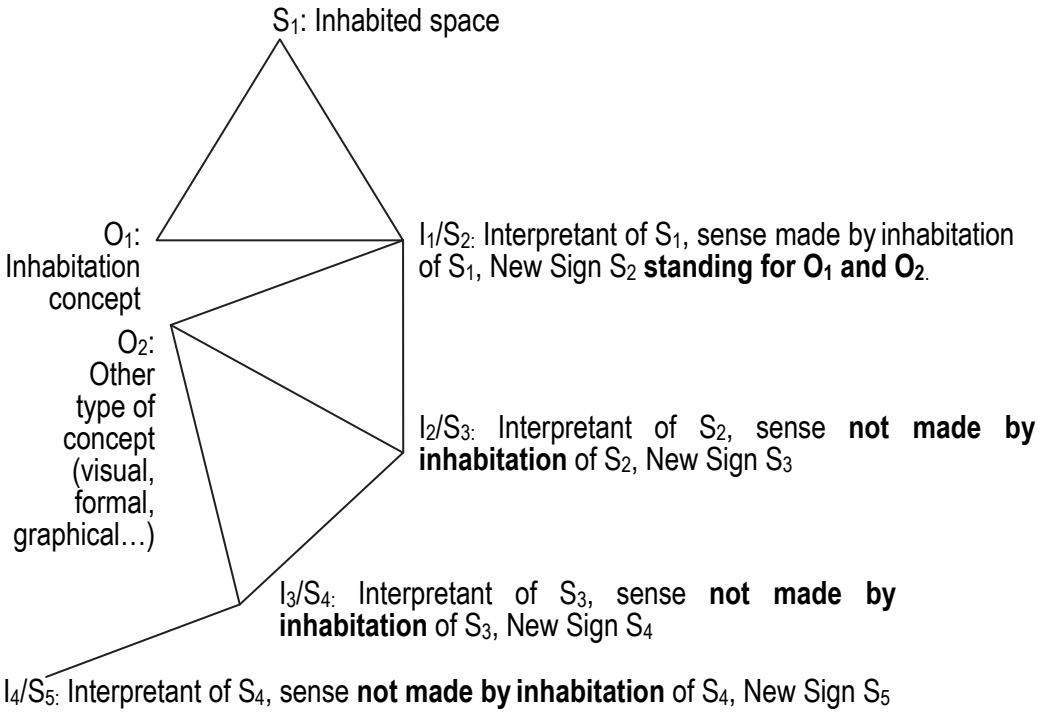


Fig. 2- 5 Semiotic stream from architecture to Pseudo architecture.

In Fig. 2- 5 we can notice that S_1 and S_2 are both defined by inhabitation and stand for O_1, also defined as inhabitation concept. Eventually the concept O_1 could be developed further in new works of architecture, but as any space, it is possible that a Sign corresponding to a work of architecture can be interpreted as something different, which means that instead of standing for an inhabitation concept, we consider that the same space can as well stand for any other type of concept, such as a visual concept, a formal concept, graphical concept, etc… For instance a space

could indeed be designed to carry a similar meaning by its inhabitation and visual expression, but the problem appears when we forget to differentiate, because if a space by means of its inhabitation means "X", and by means of its visual interpretation might as well mean X it does not imply that a space visually meaning "X" will by means of its inhabitation as well mean "X".

It might seem just a slight change but the implications are much more severe: it means that the relation in between of the "work of architecture" and its object might have degenerated from an indexical relation to an iconic relation as a metaphor of architecture (see sign classification in 2.1.3). This is extremely severe because it means that every "work of architecture" following such mechanism will look similar as O_2, but as an object defined be similarity, reducing the potential of creativity to iconicity. But what is even more severe is that architectural design has become devoid of architecture. This is because, at such point as the process of inhabitation and interpretation continues the inhabitant creates automatically a parallel "real" architecture; when the inhabitant inhabits any of S_2, S_3, S_4, S_5, and so on, he creates interpretants based on such inhabitation, part of the real architectural objects of S_2, S_3, S_4, S_5, and so on. This means that the architect's works defers drastically from the architecture it creates through the inhabitants' generated interpretants.

In the following scheme (Fig. 2- 6) are represented in red dashed lines some eventual real architecture defined by the inhabitation of S_2, S_3 and S_4, overlapped with a design process based on a non inhabitational object O_2. In the case of S_2 we can find O_3 as its architectural concept according to its inhabitation generating a new interpretant I_x; in the case of S_3 we can find its architectural object O_4 generating an interpretant which "by chance" matches I_3/S_4 but inhabitation of I_3/S_4 eventually creates interpretant I_y.

In the case when architecture is created by reinterpreting a sign of a non architectural concept as a sign of an architectural concept a new semiotic stream appeared by such inhabitants action as he/she inhabited any of the potential architectural works (S_2, S_3, S_4…) represented in the previous scheme (Fig. 2- 6) the resulting interpretants, are again defined by inhabitation, therefore are fertile path for new architecture based on O_3 and O_4. This means that no matter what architects design, they might eventually generate something, which can be interpreted into architecture by the inhabitants.

We can notice that in any case inhabitants can and will create infinite different interpretants out of the spaces (Signs) designed by architects, such as explained by Bonta. As long as the space is inhabited, the inhabitants will be able to create architectural semiosis based on such space. The conflict will be that the designer's intentions and those of the inhabitant might drift apart, in such way that we could consider them as parallel perceptions of the spatial world, and eventually the architect's side of such world might become alienated from the inhabitants' real necessities, wishes and ideals…

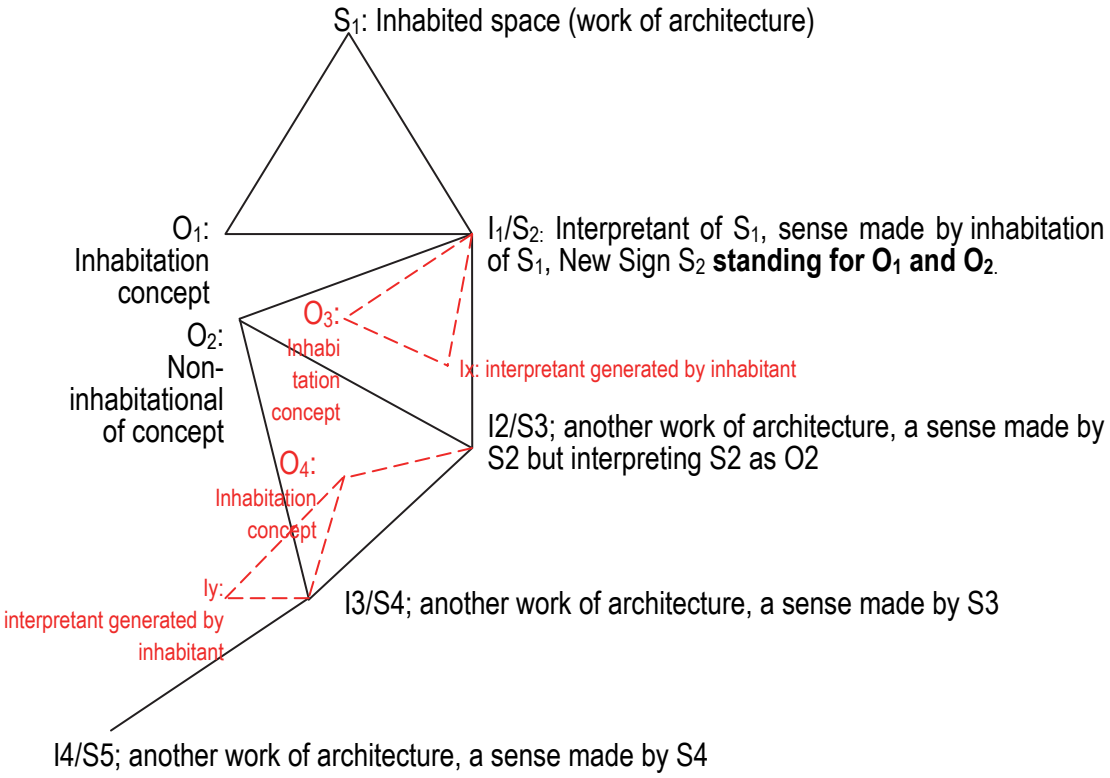


Fig. 2- 6 Architecture overlapping Pseudo architecture.

Indirect creation of architecture

This is the case in which the design process used by the "architect" is not based on architectural ideas or concepts of inhabitation, but other types of ideas, such as sculptural concepts, in order to create a project which will later filled with architecture by the inhabitant when inhabited, such as can be seen in Fig. 2- 6. This type of creation is quite common even if it seems contradictory; nevertheless it has proven that other type of concepts can be included in architecture. Still it should be noted that it is important to recognize what type of concepts are being used, since many misunderstandings might occur as mentioned before even in architectural criticism or academic writing. An example of confusing architectural writing can be found cited and explained by Bonta where Pevsner (1967) makes reference to the buildings at Sheffield University designed by Gollins, Melvin, Wards and partners (Fig. 2- 7): *"They are so much more neutral in expression, without thereby in my opinion losing anything in aesthetic value. Their calm outlines, their beautiful grouping, and their precise detail reveal the excellence of their designer just as unmistakably as Stirling and Gowan´s violent self-expression, and university buildings should perhaps rather convey calm and precision than violence.*

One thing in this case is certain. University buildings should be designed with a view to the user rather than the architect."

If we would consider this as an architectural critic, it would certainly be possible to lead to contradictions, as if we analyze in detail the paragraph, almost nothing in it makes reference to architecture, it seems more about sculpture or any other art, but nothing related to how such space is being inhabited, nor we can see references to architectural concepts, or how they are represented. Moreover, as cited by Bonta we can read Mr. Broadbends experience of the same building (1975):

"I was suffering from thoroughly inadequate vertical circulation – there were two 40-seater lecture rooms in the roof served by one 10-person lift – from solar heat gain (97°F in my room one day with snow on the ground outside), glare, noise transmission through floors and partitions, a wind vortex at the base which sometimes made it impossible to enter the front door and so on."



Fig. 2- 7 Sheffield University designed by Gollins, Melvin, Wards and partners.
Source: (Wikipedia, 2010)

We clearly can notice that the inhabitation experience does not match the "calm outlines", "beautiful grouping" or "precise detail". Certainly the sculptural concepts we might interpret into the building differ from the architectural concepts we might interpret into it. This situation explains that buildings can be sculpturally (or according to any other category) something and something different according to its architecture, showing once more that "a building" I not necessarily "a work of architecture" unless it is interpreted as such, and in such case it can be part of various "works of architecture" at the same time, and as well it can be in part sculpture or something else. This multiple existence is not a problem by itself, but the lack of clarifying what type of concept is being evaluated or designed, can easily create trouble or at least can be misleading. In this particular case if Pevsner and many more critics and academics would have clarified that he was judging the buildings as sculpture or something else and not architecture it would have been much easier to avoid disasters such as what occurred with modern architecture transformed into a plastic expression sometimes opposing to human inhabitation. Unfortunately such differentiation was not even clear for many of the so called modern architects, leading to unnecessary limitations of plastic expression converting the architectural ideas into a plastic movement easily classified into "styles" contrary to what modernists intended, while modern architecture could have focused on the inhabitation experiences of its ideals and keeping a complete free plastic expression. Moreover, "postmodern architecture" also will be confusing if considered as a negation of modern plastic expression, without involving inhabitation, since modern plastic expression is not modern architecture, no matter if critics such as Pevsner do not clarify the difference. It would be like teaching future architects to design architecture by any means but not necessarily architecture, but somehow it actually happens. As result we can see many sculptures creating architecture as by product, but certainly it will be difficult to criticize or analyze such works without making a difference in the context of the judgment.

Semiotic network of architecture

As it can be understood from the previous cases, architecture becomes real by means of its inhabitation, but it might become into different realities for each inhabitant, according to the different interpretants generated and their respective objects (architectural concepts) in the same way as a painting or work of other arts becomes a different interpretation for each one who interprets it. Therefore we can consider that each work of architecture can create or be part of infinite semiotic streams, being part of a semiotic network. But at the same time each can be as well generate interpretants of other type, as for example sculpture, defined by sculptural concepts. This is similar as if the soundtrack of a film is being interpreted as music by its own and as soundtrack of a film at the same or different time. Nevertheless two different people, if they agree upon the context, and explain each other which interpretant and concept they think they

are considering in their interpretation, they can agree or disagree in their interpretations with solid arguments based on the background both use for their interpretation. For this reason we might consider architecture rather extremely complex than extremely subjective. In we can see examples of different possibilities for one single space (Sign S in Fig. 2- 8).

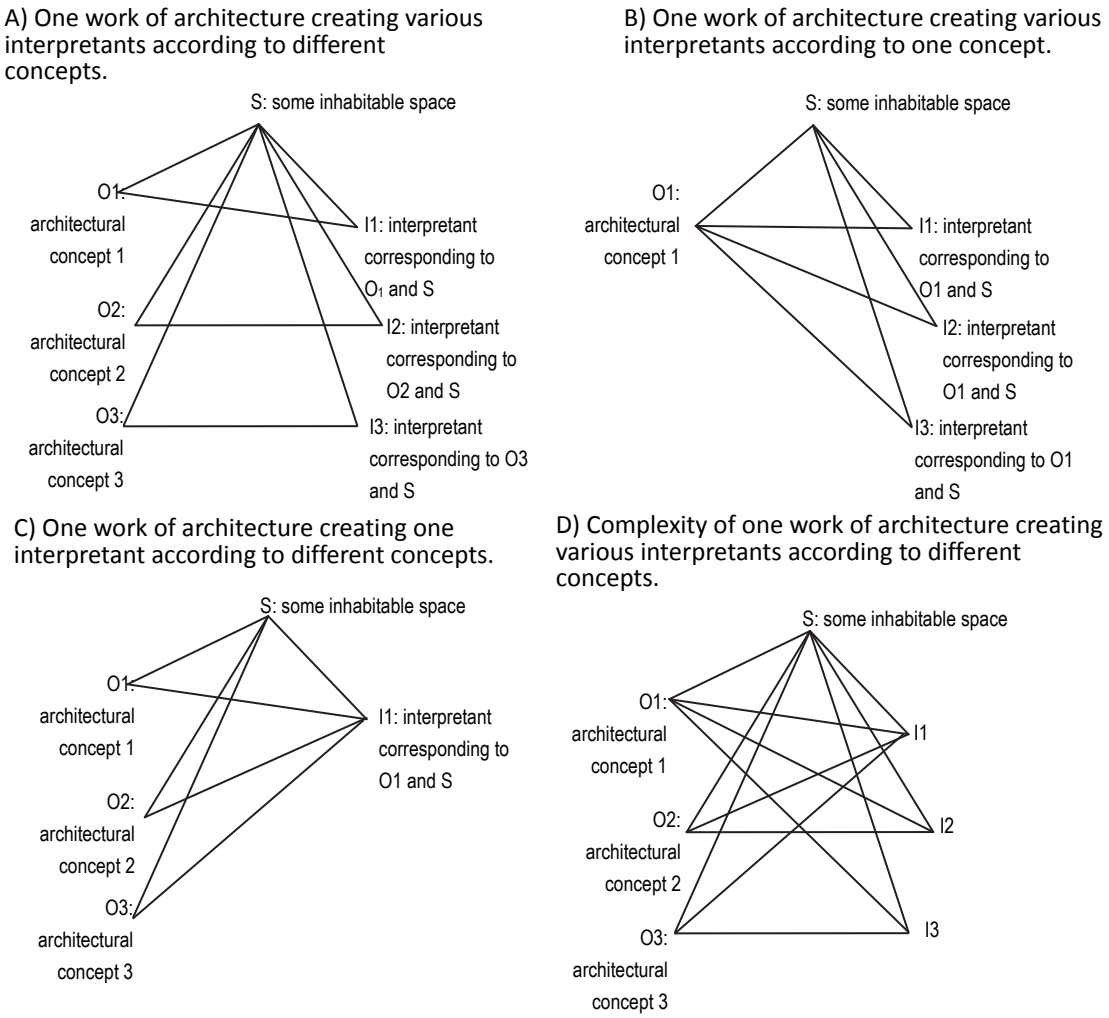


Fig. 2- 8 examples of different semiosis for an inhabitalbe space (Sign S).

The unknown and innovation

What happens if something unknown appears in space, can it be architecture? Could everything be architecture? In theory we might be able to consider anything as architecture, if we can inhabit it, but as well we should be able to interpret it as inhabited. This is not inconsequential, since it means that architecture in such way is able to match the concepts in other arts such as silence and whiteness of music and painting according to the ideas of John Cage and Rauschenberg respectively, where the substance of art is conceived as nothing but its perception, or in this case interpretation. In the case of John Cage musical performance become not necessary as even the sound of traffic might be music, but certainly it is only if we interpret it as such. Architecture referring to inhabitation can be very eloquent in that sense, as many

inhabitants can interpret space using all their creativity, without any need of construction. A simple example of such phenomena is "free running" (a form of urban acrobatics), while free runners use urban space they fit movements inhabiting space in new ways, creating as by products new interpretants, and their corresponding concepts associated to several jumps, flips and vaults are interpreted into existing space which might have been designed using completely different concepts. In such case a hand rail might be interpreted using the concept of "Monkey Vault" resulting by the experience of inhabiting it as such in a sense way different as the same handrail, used as conventional handrail. In other words the handrail instead as representing "support or safety", is then a sign of "Monkey Vault", and as sign of "Monkey Vault", the handrail creates a sense in particular, and we actually could design, construct or find a new sign in existing space standing for "Monkey Vault", which shows us the existence of its interpretant created by the "Monkey Vault" experience. Still in this case we have just "interpreted as something existent", we did not know the spatial sign but we had the concept.

Can "Free runners" be considered architects? Certainly we can take in consideration the contribution made by "free runners" to the way we understand our public space. But we have to notice that a concept such as "Mokey Vault" will not necessarily integrate into the public space.

We should consider three aspects: first, the possibility of sharing such concept with a community; secondly the possibility to relate such concept with other concepts and thirdly if such interpretation originates a place. This way it is possible to associate various types of acrobatic movements and develop the required language. Still it might not be clear if such inhabitation concept, is really architecture. From one point of view we could consider the relation of the concept and the place. Was the hand rail inhabited as it was supposed to be by its designer architect in the first place? It seems that there is still something missing in defining the work of architecture, which is the relation to the place. A hand rail no matter if it was designed based on how it might be inhabited or rather "used", could still be an object and not architecture. The difference in between an object and architecture in this case is necessarily to be defined more accurately.

By choosing inhabitation as interpretation concept, we can differentiate architecture from most objects, but not all of them, there are in fact inhabitable objects. In some cases we might think about the difference of being movable or not movable, where architecture deals with the unmovable (immobile) and objects with the movable (mobile), but such distinction is still not accurate enough, it is more about space, even if space might have a too wide meaning, it can be more accurately described perhaps as "place". It means that instead of referring to space in a generic way, architecture refers to space regarding its connections of certain place and other places. Therefore the concept "Monkey Vault" by its own cannot be architecture, unless it becomes into a place, this means that it becomes integrated into an existing network. Therefore

we can say, "Free runners" add complexity to existing places, participate therefore in the place making process but do not necessarily generate them. Perhaps we could say the same for John Cage and his silence, as he is adding complexity to the silence be means of new interpretation of it, but not creating a complete new work as silence existed before, still it might be attributed to him the idea of considering such a thing possible, which indeed could be considered as a previously unknown concept to be considered as a new musical object.

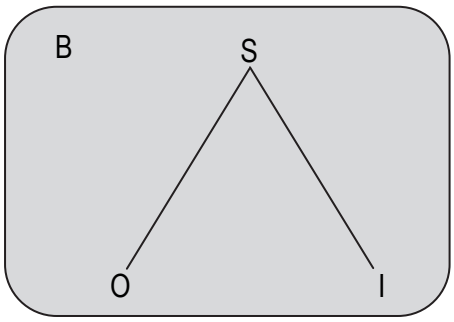
How to create new architectural concepts? This seems to be another complex question, as we might think that by now we can only find new signs of existing concepts, or instead of creating concepts, rather give a new name to more or less existing inhabitation experiences. This means that in order to create new architectural concepts, we might need to create new experiences, therefore we might realize that truly innovative architecture will be found in experimentation rather than rationalizations. Also it seems that most of the methods or processes used by architects do not pretend to create new experiences of inhabitation, because as they focus on objects such as most of the buildings found in architectural magazines, the innovation of such objects might be mainly visual, and depend most likely on the effort of the inhabitant to fill such objects with architecture. We see paradigms as in Fig. 2- 6, where the designer seemed to live in a parallel world (black lines), while the inhabitant makes architecture in it by his own (in dashed red lines). Even most of the architects who studied human inhabitation, might focus more on how to optimize existing experiences, reducing paradoxically the richness of inhabitation to a minimum. Certainly many so called architects are reducing architectural richness as they believe that buildings and houses are architecture. Fortunately inhabitants are still finding their way to experience of space, filling architectural emptiness with their own concepts.

We could say innovation can happen by the development of the object of a sign, but also as development of the sign or interpretant of a sign. In the case of architecture we can create new interpretations of existing concepts, new works of architecture representing existing concepts, or create new concepts, but still in each case it is not about constructing a physical object, but to contribute in making a place.

The background (B) and agreement: the context

The background (B) will be defined as all the information we have before we interpret something. The importance of the background is that it will affect our knowledge of which concepts exist, and also affect how we can represent or interpret them afterwards. If we add the background to the definition of sign, we might add it as the reflection of the interpretant, as two or more people with the same background, when interpreting the same sign according to the same object, might tend to come up to the same interpretant, which means that they would interpret something in the same way (Fig. 2- 9). This means that for interpretation if we want to

agree something, we should clarify, the object, sign, background information and interpretant, and then it might be possible to have an agreement. The same happens in architecture interpretation: it is very different to interpret the same work of architecture with different background information. Paradoxically we might find out that for agreement it is better to negate the existence of the possibility of 100% of agreement, and rather try to define the context of what we pretend to agree in order to get closer to such eventual agreement.



B: Background (context)
O: Object
S: Sign
I: Interpretant
S stands for O
S creates I
B identifies/classifies S and O, framing I.

Fig. 2- 9 The Sign with Background.

The scheme in Fig. 2- 9 will be called as "Sign in Context", as it includes not only the form the sign might take (Sign), but also the context of such sign, which will be the object, its interpretant and the background on which such interpretant is based.

Is interpretation free? We could say that everyone can interpret something different, and we could have infinite different interpretations as well, but at the end it is not, the problem is that in most interpretations we simply ignore the context, and therefore end up in unending discussions without possible or at least difficult agreement. "Objectivity" will be therefore nothing more than a shared knowledge of the context (object, sign, interpretant and background), allowing that two or more interpreters can agree and "subjectivity" will be just the case when part of the context is not known, or well ignored. Nevertheless because of the lack of shared background and complexity which makes it even more difficult to get such shared background, architecture might tend to be considered as "subjective", as many other arts.

At this point it is convenient to remember musical theory, which is quite developed in such aspect, to certain point that theoreticians can match their interpretations especially concerning in the context of classical music where we can find detailed composition rules determining correct and wrong compositions, but of course if we take a "wrong" composition out of the classical context it might be not wrong anymore. If on the other hand we consider the interpretations of architecture criticized by Bonta, we can immediately realize that the conflictive point is that it is Bonta himself who needs to explain the given context for each interpretation made by the theoreticians he cites, since the authors of the interpretations in most cases did not clarify the context, allowing radical disagreement as interpretations without context are in the end nothing

but ambiguous; but once the context is known it becomes clear to understand.

For example of a clarified context, we can consider mathematics. In the case of "2+2=4" we can agree that it is true, not because it is "objective" by its own, but because we made it "objective" by clarifying what "2", "+", "=", and "4" is, using the same objects represented by the same signs, with a shared background information. By the same way we can make "2+2=4" "subjective" if we ignore part of the context, as for example, not specifying if "2" is standing for a number or something else, or if we do not agree if it is about mathematics or something else (in this case, selecting the subject is to select background information to be used) and so on.

In order to explain mire in detail the work of architecture we will refer to the case of Machiya.

2.1.8 In the case of Machiya:

It is considered that it does not correspond to a physical typology, as it had been changing in time, and it is considered that new changes in the future could have been possible, if the involved process would not have stopped, similar to a semiotic stream of vernacular architecture.

The vernacular process of design can be described straight forward using the same type of scheme (Fig. 2- 10), in this case referring to an object "O_1" corresponding to the idea of "Japanese dwelling", standing for such idea is build a sign "S_1" which corresponds to "some Japanese house", as the vernacular process is a collective process with shared ideas about what a "Japanese dwelling" is, it can be said that the sense made by "S_1", can generate "another Japanese house", "I_1/S_2", which can be an improvement of "S_1" as interpretant (I_1) and also stand for "O_1" being a sign (S_2). The same continues for "I_2/S_3", "I_3/S_4" and so on in an infinite semiotic stream as can be seen in Fig. 2- 10.

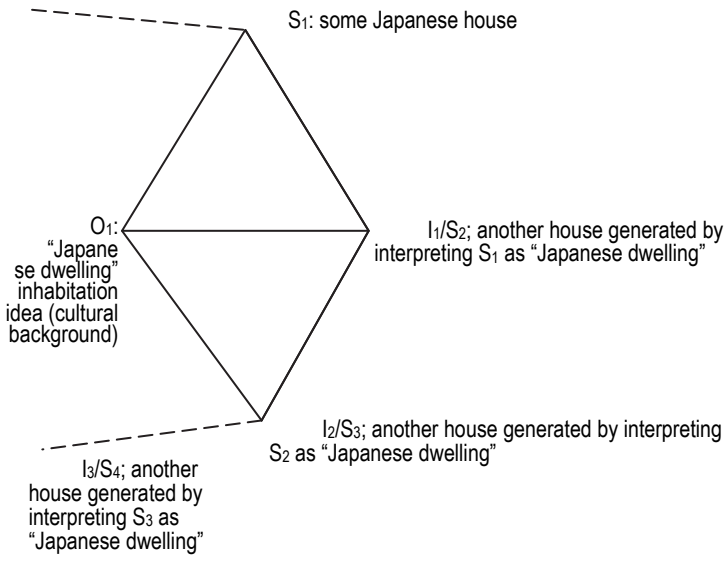


Fig. 2- 10 The vernacular process of design explained.

Machiya as an "Japanese dwelling", can be understood as "O_2"(Fig. 2- 11), and object which implies being as well a Japanese dwelling, represented in the following scheme with an segmented arrow, where $O_2 \supset O_1$. Still we can say that $O_1 \neq O_2$, therefore it is important to understand the relations represented by the lines, this lines are the basic constructs of Architecture. As we can infer from texts (Löfgren, 2003) (丸山, 2007) (チェントロ・ストリコ研究会（主査：三村浩史）, 1993) (今, 1989), we can understand how Machiya evolved from Minka, by understanding how it is inhabited. As well we can understand that such inhabitation, as the relation of human and space is architecture (Shepheard, 1994). Therefore the relation represented by the line O_1S_X is defined by inhabitation, how the inhabitant of S_X relates to space is as given by the idea of O_1. This means that S_X stands for O_1 by means of causal relation defined by inhabitation, or as in the paper (Jander, June 2012) a semiotic indicator based on an index of inhabitation. Then, Ix, as interpretant of Sx is as well defined by inhabitation, as the inhabitation of S_X generates Ix and finally I_X becomes S_{X+1} being interpreted as well as index of inhabitation of O_1. Now in order to talk about Machiya (O_2) as a concept contained in "Japanese dwellings", it is strictly necessary that the relation $S_{X+1}O_2$ is as well defined by inhabitation, otherwise we could not verify such link as O_1 and O_2 are both architectural concepts defined by inhabitation. In the next section I will explain what happens if the design is made standing for other type of concept.

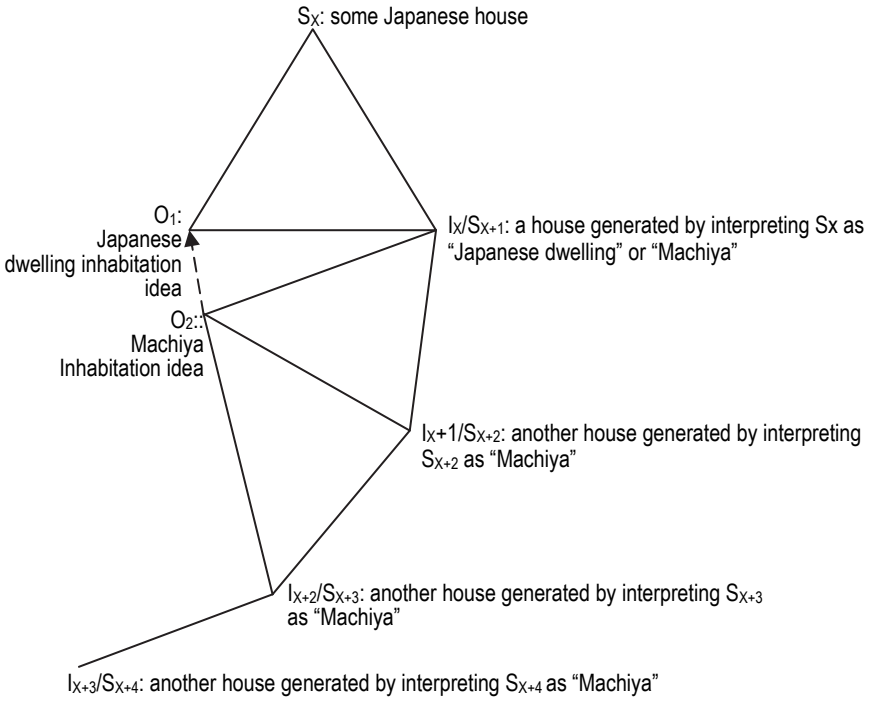


Fig. 2- 11 Differentiation of Machiya from other Japanese Dwellings.

This means that if $O_2 \supset O_1$, then signs $O_1S_XI_X$, $O_2S_{X+1}I_{X+1}$, $O_2S_{X+2}I_{X+2}$, $O_2S_{X+3}I_{X+3}$, and so on

should all be defined by inhabitation Index. Moreover all signs of architectural concepts (concepts defined by inhabitation) are architecture.

Note that in this case (Fig. 2- 11), O_1 and O_2 are both inhabitation concepts. If the second concept, O_2 would be not an inhabitation concept but a physical description, such as in a physical or geometric typology, it might seem just a slight change but the implications are much more severe: it means that the relation in between of the "work of architecture" and its object might have degenerated from an indexical relation to an iconic relation as a metaphor of architecture. This is extremely severe because it means that every "work of architecture" following such mechanism will look similar as O_2 is an object defined be similarity, reducing the potential of creativity to iconicity. But what is even more severe is that architectural design has become devoid of architecture. This is because, at such point as the process of inhabitation and interpretation continues the inhabitant creates automatically a parallel "real" architecture; when the inhabitant inhabits any of S_2, S_3, S_4, S_5, and so on, he creates interpretants based on such inhabitation, part of the real architectural objects of S_2, S_3, S_4, S_5, and so on. This means that the architect's works defers drastically from the architecture it creates through the inhabitants' generated interpretants.

We can find also different degrees of detail in architecture. As for example let's consider the case of Machiya in its vernacular semiotic design stream:

We can as well consider such stream as composed of many "sub streams", corresponding each one to a system present in Machiya system, represented as parallel semiotic streams (Fig. 2-12).

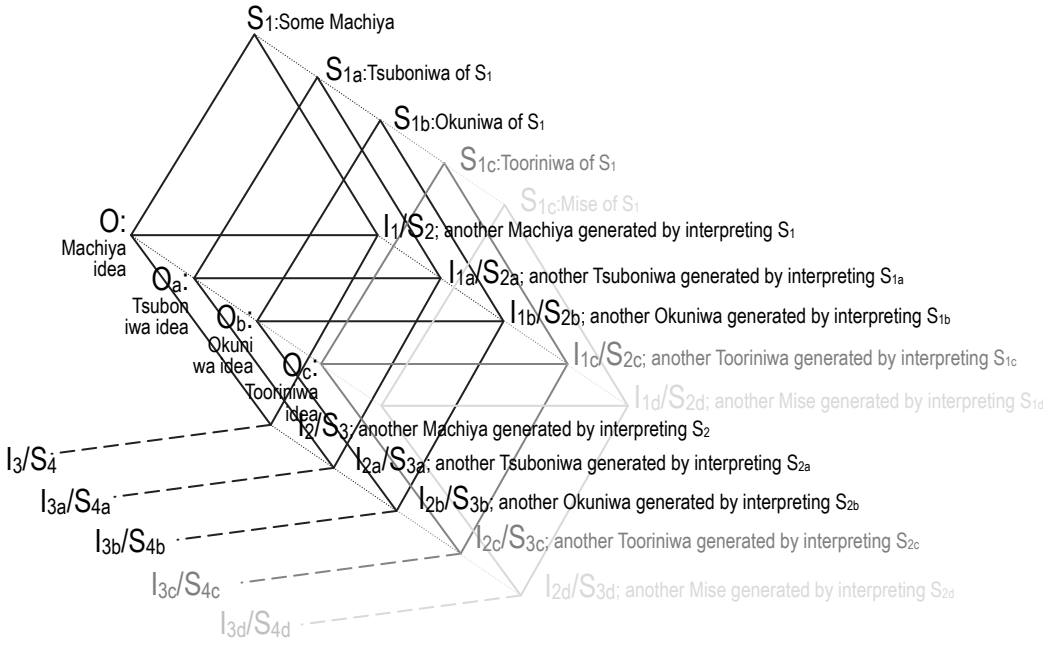


Fig. 2- 12 Parallel semiotic streams of Machiya.

As well design can have complexity in its detail, this means that not all subsystems of a

certain sign might come from parallel streams. In such case it means that at least one subsystem is part of another semiotic stream or might generate a divergent stream. In both case the scheme might show alteration. In this case we might find altered Machiya, where nontraditional elements have been introduced, or as well atypical Machiya, where traditional elements where generated by different concept or coming from different previous signs (Fig. 2- 13).

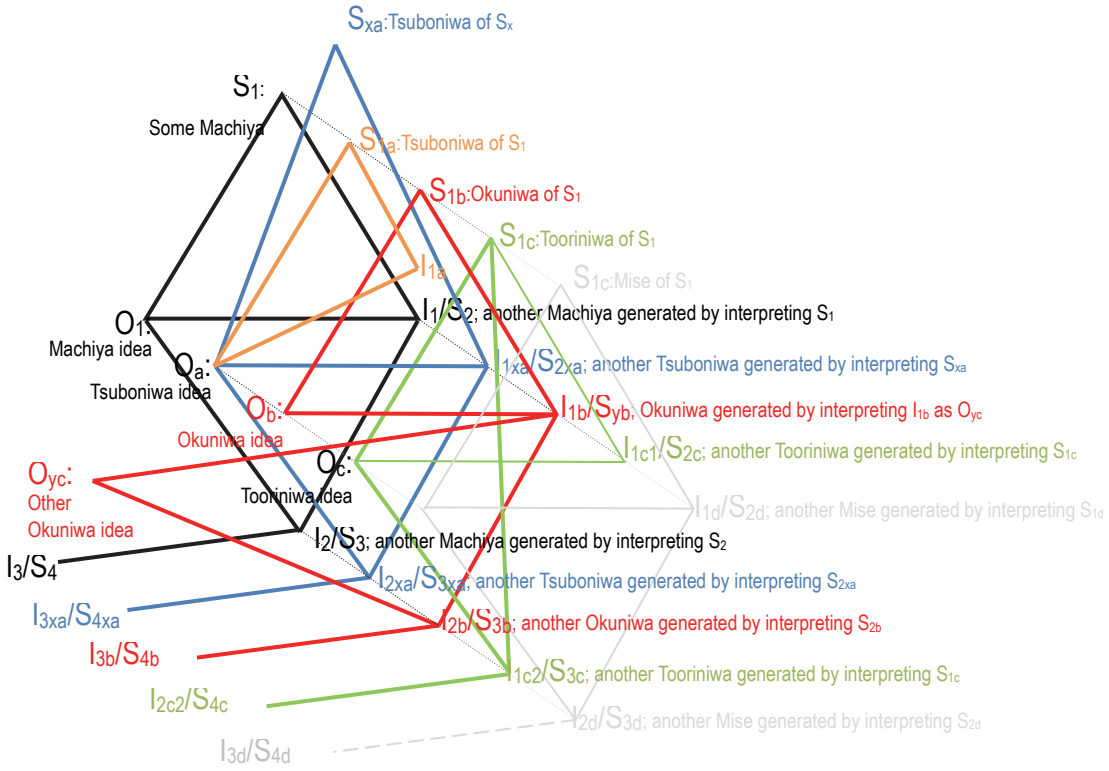


Fig. 2- 13 More "realistic" chaotic semiotic streams.

In the case of Fig. 2- 13, we can see that even if there seems to be a general semiotic stream defined by Machiya S_1, I_1/S_2, I_2/S_3, I_3/S_4, and so on, and as well we might estimate that the element of the resulting S_2, S_3, S_4… might have as well influenced by other Machiya. Therefore we could say as for example that Tsuboniwa of S_2 (blue stream), is not generated as interpretant of Tsuboniwa of S_1 (S_{1a}), corresponding to I_{1a}/S_{2a}, but generated as interpretant of a Tsuboniwa of another Machiya S_{xa} being denoted as I_{1xa}/S_{2xa}, resulting therefore an divergent stream from I_{1a} (orange lines). Another irregularity could be found in the Okuniwa stream (red), where the Okuniwa of S_3 is generated by integrating another idea of Okuniwa (O_{yc}). Finally in this example case, the Tooriniwa of S_3 (S_{3c}) resulted as interpretant of the previous S_{1c} denoted as I_{1c2} (green lines).

Finally we can conclude that if we might be able to analyze in detail each Machiya that each of its subsystems might have been developed from several different interpretants, and that in reality, the scheme of one house being part of a semiotic stream of several house is likely to be

nothing more than an extreme simplification (Fig. 2- 11 and Fig. 2- 12), that seen in detail each house actually corresponds to a complex network of sub systems corresponding to different semiotic streams (Fig. 2- 13) which might not go as parallel as in Fig. 2- 12. Therefore it is much more adequate to refer as "work of architecture" to systems instead as buildings.

"Works of architecture" are defined then as systems, defined by an inhabitation concept which can be connected to other systems, which are intersected in buildings such as Machiya. This means that one Machiya is an intersection point of several works of architecture or semiotic streams making a building, and a city is the superposition of the networks made by the works of architecture. This means that Tsuboniwa, Okuniwa, Tooriniwa and so on, are each one work of architecture, which might intersect in each Machiya, but are part of their own semiotic streams, even if for practical reasons we might omit such detail. This can be verified by the fact that we know how is each of Tsuboniwa, Okuniwa, Tooriniwa and so on, inhabited, which means that we have inhabitation concepts for each of them, but still we also have concepts of how they come together, moreover, we know as for example Tooriniwa by its semantic character regarding informal activities as opposition of more formal which might occur in a tatami room, showing that we also have inhabitation concepts capable of linking others.

After conceiving space again made up of larger units, we might think that maybe we should still consider individual houses and buildings as individual works of architecture, but still we are ignoring that such linking concept does not link other systems in one house or building, but eventually in any building connected in its semiotic stream. Therefore we might refer to works of architecture to more or less detailed systems, but operating in the same nature of the networks and not as the objects. Therefore each architect does nothing more than collaborate in one work of architecture, but can never own it completely or have special rights over it.

Object and system oriented approach

From the previous section we can conclude that Machiya can be understood as a system, and that such system does not necessarily match with the boundaries of buildings.

If we consider a scheme of systems within Machiya system (Fig. 2- 14): In this case the colors are based on references to elements composing these group of Machiya, but as explained previously, the boundaries of physical elements do not necessarily coincide with systems, therefore in this case it is made as an assumption of correlation of certain elements and architectural systems with the purpose of illustrating some systems only. In this case the green color will indicate the "hisashi no shita" in the front of the buildings; blue indicates a "tooriniwa system"; yellow indicates a "garden system"; magenta indicates a system of interior rooms; orange indicates a system of kura storehouses.

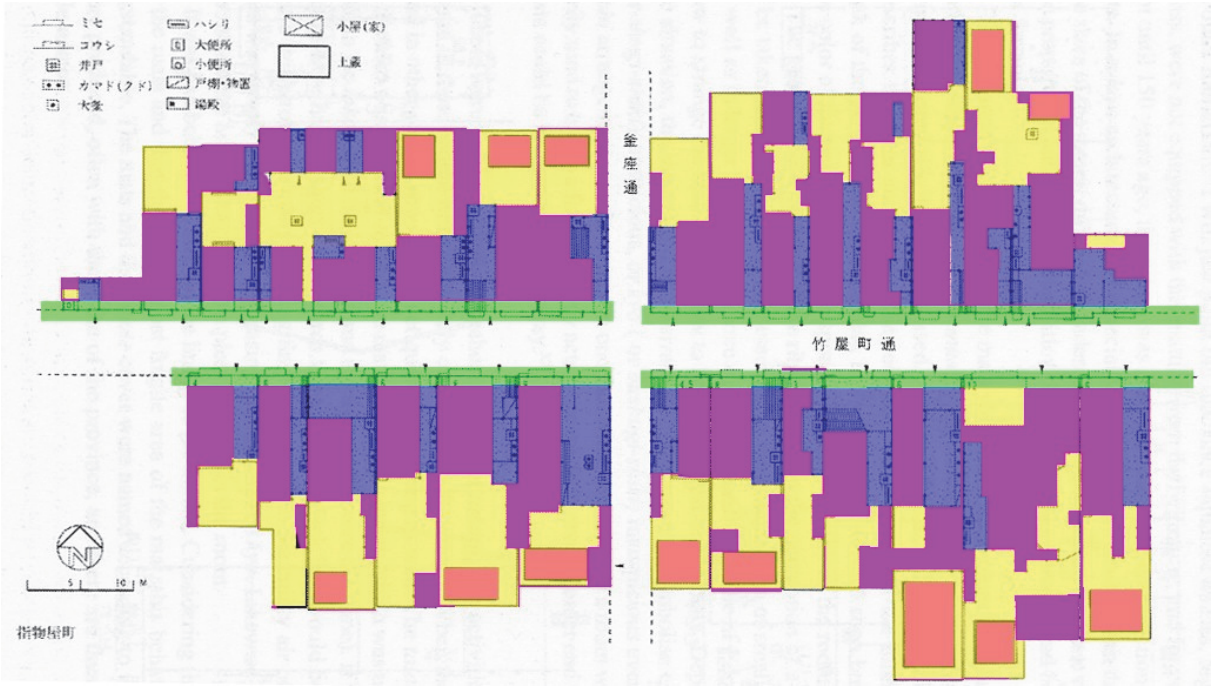


Fig. 2- 14 System oriented approach (ground plan); colors correspond to hypothetic systems corresponding to Sashimonoya-cho when it was still occupied only by Machiya (Based on Fig. 1- 4).

This division might not accurately correspond to systems of inhabiting experience of Machiya, but illustrates the continuity of such hypothetic systems throughout the urban streetscape, suggesting that even if we eventually replace one building, the new building without resembling the previous should handle the continuity of the existing systems constructing continuity beyond the appearances and iconic content, even if in the new building we might include new systems as in this case the of the "kura system" in orange is not yet disseminated as the other systems. If a new potential system appears, we can refer to it as a germ of a new system, as it may not be clearly known in advance if such inaugural system might have continuity in other constructions. In this case it is critical to differentiate icons from continuity of an existing system, since icons which are not indexes capable of achieving continuity of an existing might be seeds of new systems and eventually create a new system independent from the previous, which might replace the previously existing system resulting in a significant loss of architectural heritage. Therefore it is critical to follow closely to the community what systems are necessary to have in consideration as special concern. The interaction with the community as well can eventually afford the creation of new symbols.

Contrasting with this approach, in the actual situation we can see that the same group of Machiya as in Fig. 2- 14 is usually considered a collection of individual houses, where each plot corresponds to one house, which corresponds to one independent unit. To represent this situation we can use a different color for each plot, ignoring the systems of inhabitation, resulting in the following scheme (Fig. 2- 15):

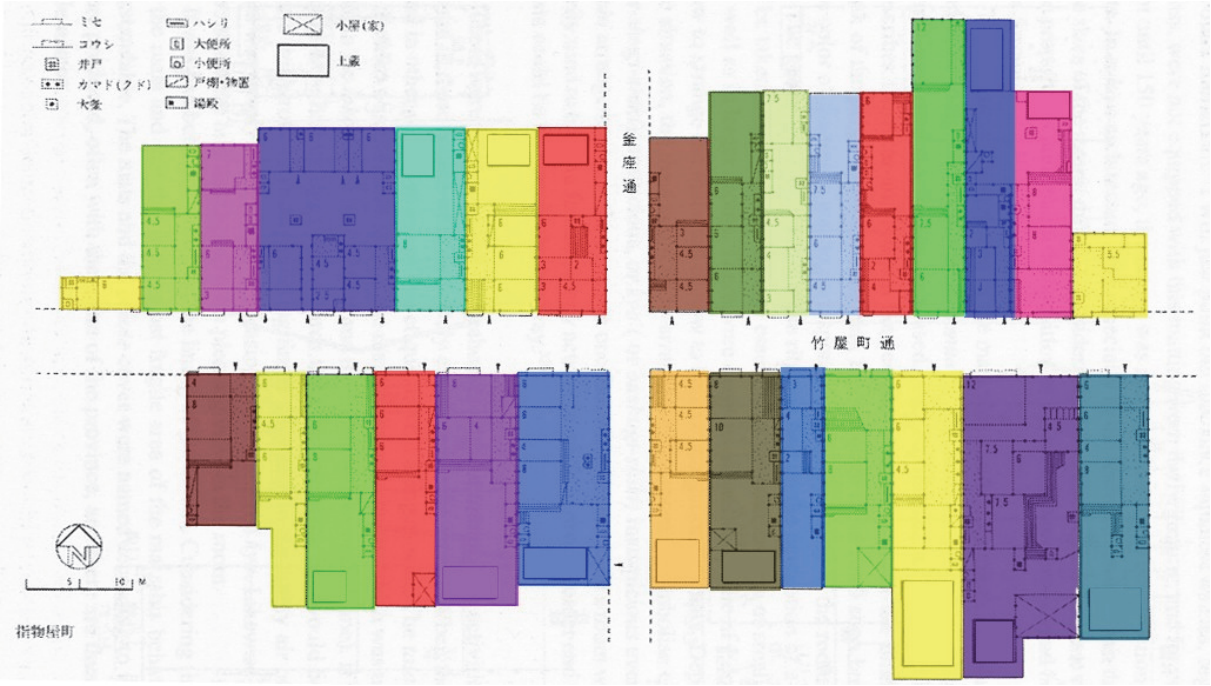


Fig. 2- 15 Object oriented approach: each building as one work of architecture. Colors correspond to hypothetic example of division into individual buildings (Based on Fig. 1- 4).

If we ignore the architectural systems of the townscape, and start approaching projects thinking only in plots as units, the result will be the fragmentation of the previous existing systems, even if new projected buildings corresponding to certain period of time might have similar characteristics. If we represent the same area corresponding to the group of Machiya of Fig. 2- 14 and Fig. 2- 15 again, but now redrawing the systems as in Fig. 2- 14 and inserting new color spots representing the new buildings in the area we will have the following result:

In Fig. 2- 16 we can see the same area represented in Fig. 2- 14 and Fig. 2- 15, in this case the colors represents the systems as in Fig. 2- 14, but introducing open parking areas in light green, mid and high rise buildings in brown and balconies in dark brown. In this case as well the colors of the new systems are only an approximate representation of hypothetic new systems, as it has not been confirmed if all the balconies have similar inhabitation qualities, as well as all the parking areas and new buildings. Even in such an approximate estimation without getting into the details of which are all the new systems introduced, we can see that the systems are much more fragmented than in Fig. 2- 14, but the fragmentation alone is not the important issue; the problem is that the systems represented in Fig. 2- 14 had a consistent cultural and environmental background, and the new systems introduced in Fig. 2- 16 don't. Therefore the new streetscapes lose their cultural identity, and consistency with existing systems, resulting in cities without character regardless of if the resulting streetscape might have aesthetic considerations or not.

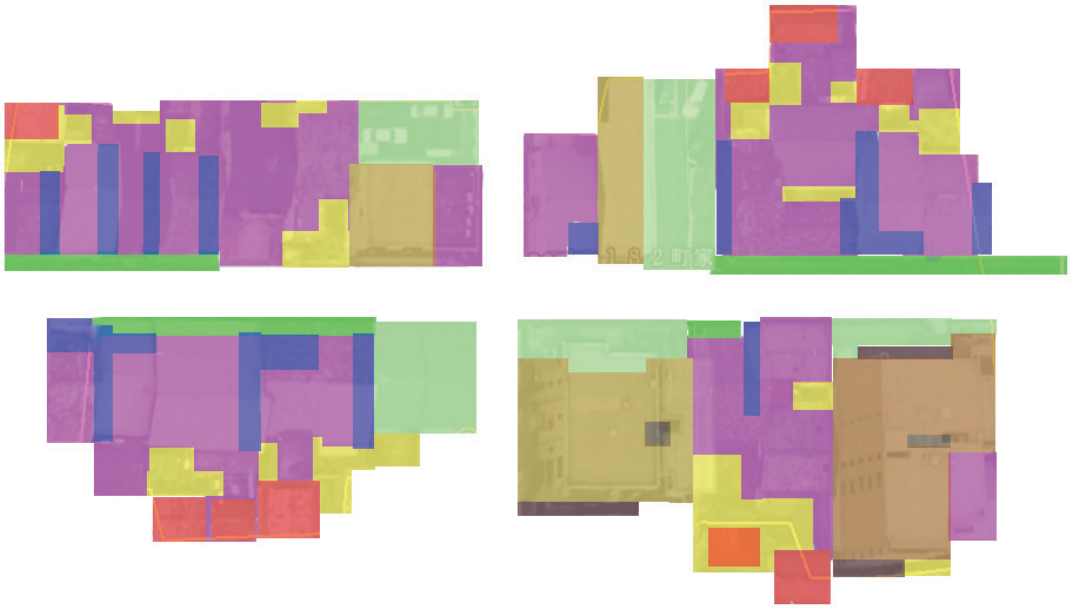


Fig. 2- 16 Sashimonoya-cho as today: the systems became fragmented. Colors correspond to hypothetic systems (Based on Fig. 1- 4 and Google earth).

To understand the phenomenon of inconsistency with existing systems we could consider a more simple example directly related to inhabitation: If we discover in a city a specific architectural system, which means a inhabitation experience, as it might be the relation of an inhabitant of Machiya sitting on a tatami matt in the zashiki facing the inner garden. In this case the architecture is not the perception of the space by the architect, but the experience of such person. If we ignore such inhabitation experiences, such systems will be lost, and even if it is done an effort to keep physical resemblances to the existing Machiya, the resulting architecture will lose such experience, it does not matter if the new buildings will imitate the appearance of Machiya, it will not bring back the experience of the person inhabiting Machiya, and all the efforts in creating physical resemblance will result in an unnecessary waste of resources, since the resulting streetscape might look like Machiya, but if it is a copy, it will at the end be experienced as a copy of something, converting the city in a theme park, which is not a real city.

Another approach to the Machiya problem could be found considering "Machiya" (Löfgren, 2003), where it is explained that to understand vernacular architecture such as Machiya it is necessary to understand the developing process in a historical context. According to such thesis, Machiya evolved in time in a process involving formal changes introduced consistently with the inhabitation experiences intended in such changes. Therefore again, we can conclude that Machiya is a process in time, and while both, form and inhabitation have evolved in time, the changes introduced are slowly melted into such process, even as some influences came from other social classes or from foreign countries such as China, the resulting process consisted in an

accumulation of experiences rather than replacing old by new. In such process new experiences were added to the Machiya system, introducing new systems or increasing the complexity of the existing by adding new variations, but as well all new ideas might not have integrated in Machiya system, or just in some local systems, differentiating Machiya system in different areas. Also some systems have been left out in such process; still some can be traced back to the earliest versions of Machiya system in Kyoto as continuity of a system.

Therefore Machiya is a dynamic system; a system in a process of continuity.

2.1.9 Interpretation as design (creative interpretation)

We can differentiate mainly two types of designs processes from a semiotic point of view based on this framework: the first as continuity of a semiotic stream as in the vernacular process and the second as the intention of starting a new semiotic stream as in the modern case. Nevertheless both cases end up being contradictory, as in the vernacular each sign might generate an undefined number of new semiotic streams and as apparently new concepts might generate signs associated with other concepts when interpreted by others (Fig. 2- 5). Therefore we might not be surprised that successful designs are not necessarily be as original as expected, moreover such "originality" will not be defined by the designer(s) but by others interpreting the work.

The first type will be called "Continuation of architectural systems", and the second, "seeds of new architectural systems"

Continuation of architectural systems

As explained previously this mechanism consists basically in generating new signs, for existing inhabitation concepts. The difficulties of this method is that in first place it is necessary to be sure that we are using inhabitation concepts related to places, otherwise we might not working in architecture, but rather inspired by something similar. We need also to consider that such concepts might not create a whole work of architecture, as in the case of Machiya, we might find several sub systems, such as Tsuboniwa, Okuniwa and so on. Finally we need to establish the architectural concepts for such subjects as Machiya, Tsuboniwa, Okuniwa and so on, and proceed with the elaboration of the sign. In the elaboration of such sign, we might find several steps in design process, consisting in sketches, models, plans, drawings and so on (Fig. 2- 17). This means that we are working in an innovation of the sign, but not the concept.

In Fig. 2- 17, under the architectural subject "Machiya" we define an object O_1 as concept of inhabitation of Machiya, considering the needed research about how Machiya are inhabited, then by the interpretation of S_1, which can be an existing Machiya, several Machiya or any other sign of Machiya inhabitation, even O_1 if there is no other available (note that eventually the background information, object and sign can overlap or be the same information). Later as we

interpret S_x it creates one or more interpretants which can be as well signs of O_1, such as I_{x1}/S_{x1+1}, I_{x2}/S_{x2+1}, I_{x1}/S_{x1+1}… and finally I_x/S_{x+1} the resulting new design of Machiya[2].

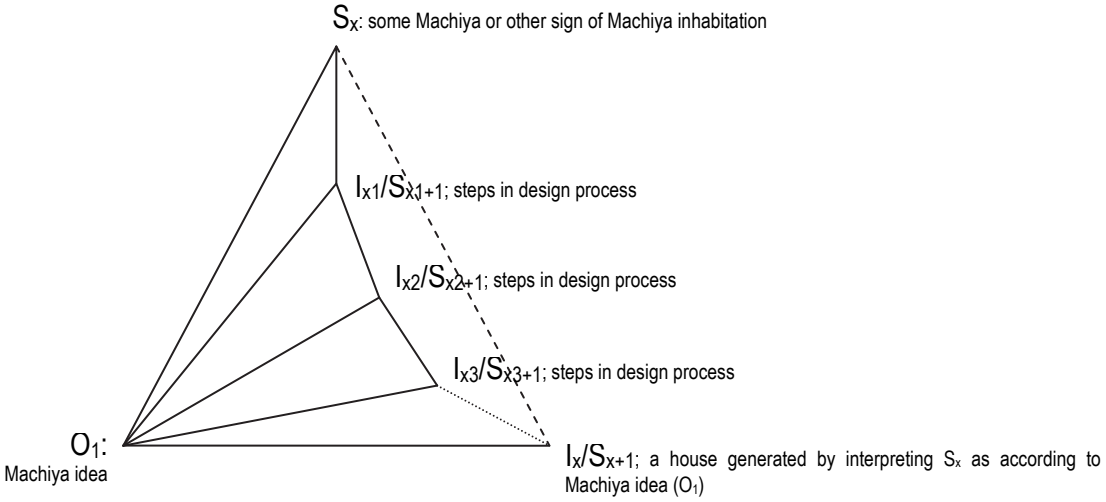


Fig. 2- 17 Design steps in creating a new space.

Seeds of new architectural systems

In this case we might pursue an innovation of in the concept, which means, we intend to create a new architectural object. Therefore it is necessary to deal with inhabitation of space-place trying to invent a new experience of such inhabitation, conceptualize such experience, and then work in the elaboration of a sign of such concept. Such process will not be generating architecture until such sign creates an interpretant as being inhabited.

Mixing existing and new architectural systems

In this case it will be mixed both, creating new systems and continuing existing systems, this can be done in case of works of architecture which are composed by various subsystems, some of which can be continuations of existing systems and others which can be seeds of new systems. It is even quite common to see that new projects may include several existing systems and as well add some new ones.

2.1.10 About ethics and esthetics

This dissertation is based in great part on the semiotic theory of C. S. Peirce, but in the case of ethics and esthetics it is necessary to clarify some similarities and differences.

Peirce considers logic, ethics and esthetics as part of normative science, as mentioned by Parker (Parker, 1998): *normative science "investigates the universal an necessary laws of the*

relation of Phenomena to Ends, that is, perhaps, to Truth, Right, and Beauty" (CP 5.121). At that point we could still understand esthetics as the study of beauty, but in fact, in the case of Peirce it corresponds to the good, as *"to analyze the summum bonum, the absolutely ideal state of things which is desirable in and for itself regardless of any other consideration whatsoever."* (Parker, 1998)

According to Parker, Peirce might be influenced by Kant, considering an *End* as *absolutely good will*, a *highest good*.

As for this dissertation, even in the case of esthetics we still consider that there is a context governing it, in a way that even the most abstract End might be subject to the interpreter. Therefore we define the relation of ethics and esthetics in a somewhat different way.

Ethics will be considered in a similar way as by Peirce, *"the conformity of action to an ideal"* (CP 1.573), describing an ideal conduct. In the case of Machiya, we could mention as example the moral codes which regulate inhabitation in Machiya, such as the correct or incorrect conditions of doing certain activity in the Machiya; while esthetics will correspond to the symbolic expression of such moral code. Therefore the esthetics will correspond to an expression of ethics, which can only be understood consciously if the cultural code is known by the interpreter, it is to say it becomes a symbol of an ethic value. This explanation is chosen in order to keep consistency with the previously explained in section "1.3.4 Machiya and esthetics".

Summarizing we can consider that if we are confronted to situation and understand its consequences (logical process), we can in a more abstract way make a moral judgment of correctness and finally represent it in a even more abstract form to be grasped as beauty. From this perspective we can identify ethics as an abstract linking element connecting logic with esthetic (Fig. 2- 18).

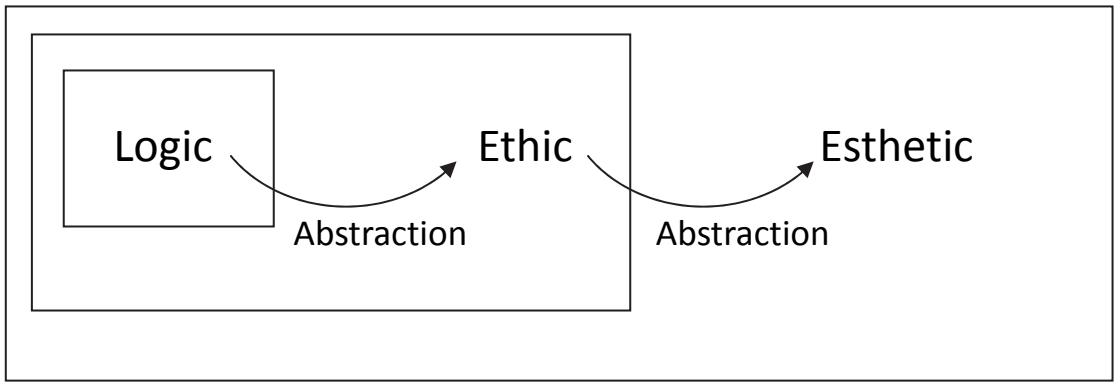


Fig. 2- 18 Cultural process of connecting logic with esthetic.

But as can be seen in Fig. 2- 18, logic is contained in ethic, and ethic is as well contained in esthetic. This means that for each ethic statement there is a logical process and for each esthetic

symbol interpreted as beauty there is an underlying ethic value, with its logical process. Nevertheless we might not consciously know what ethic value we are appreciating when we confront beauty, nor might we understand the logic behind an ethic statement.

In the case of this dissertation the inclusion of the conscious/unconscious and the relativity to context will mark some differences. In the case of Machiya for example, its beauty might be appreciated by Japanese and foreigners, but in no way we would even suggest that there is a certain universality of its beauty. Instead we consider that such appraisal might be rather unconscious, even if there are *"canonical interpretations"* as Bonta[3] would say, each individual subject may in fact react to a complete different complex social construct identified as beauty in the Machiya, but as not having a conscious understanding of it might be forced into a canonical interpretation suggesting a apparent universality of beauty. Nevertheless most of human beings might share certain moral background, strengthen the illusion of universality. But if we consider that we unconsciously process an incredible number of interpretations every day, we can realize that such claims of universality are more likely to be an oversimplification to make our appraisal of beauty possible to rationalize.

Therefore, in order to be able to make a rational analysis of Machiya, we still need a simplified approach of reality, but instead of claiming existing universality we will consider the esthetic terms mentioned in section "1.3.4 Machiya and esthetics" as reasonable *canonical interpretations*, where great part of it might be processed by the inhabitants in an unconscious way. Therefore we might assume the cultural knowledge about Machiya as real, but knowing as well that it depends on a changing context, which in fact already changed, so we need to evaluate the perception of such context in the contemporary context. In other words we could say that in this dissertation we might test the actual condition of the canonical interpretation corresponding to the traditional description of space in Machiya, where each concept such as *hare*, *ke*, *omote*, *oku* and so on, corresponds to canonical interpretations.

Finally we have to consider that in this case as canonical interpretations exist, and they can be processed by interpreters unconsciously, we don't need to separate the ethical and esthetical values. As we will see in the experimentation in the upcoming chapters, analyzing the relation of activities and spatial parameters is possible without a complete understanding of each interpretation if we conduct a survey of a wide population, but particularities of the understanding of each subject become more relevant for individual cases. As for example in chapter 5 surveying 223 cases we can get results consistent with the canonical or traditional interpretation of Machiya only by relating activities with "semantic dimensions" corresponding to esthetic expression of ethic values associated to Machiya, without knowing if the inhabitants in fact are conscious of such values. But as we will see in chapter 6, for particular cases, each subject is in fact creating his own particularities within such context, suggesting that new values

will soon or later enter in the system of canonical interpretations.

2.2 Cultural friendliness

As anticipated in "1.2 Culturally friendly design method", we will approach Machiya with a framework, where Machiya will be interpreted by the inhabitant. Therefore, we will need to consider in the further chapters, that the definition of Machiya itself is still in the form of a method rather than a concrete definition, and will take the definitive form according to the data we can collect from the inhabitants.

As well in this framework we consider that the all methods are influenced by all the interpreters, therefore we can consider this framework appropriated for a cultural friendly design method; a collective oriented design method, where we aim for findings made up of certain degree of variations as those represented in Fig. 2- 13.

Notes of Chapter 2

[1] In "Architecture and its interpretation" (Bonta, 1979), Chapter 1, the section referring to "the modern movement" explains differences in Le Corbusier's Villa Savoye and Buckminster Fuller's Dymaxion House, stating that while in the first still had "kitchen", "laundry", "music room" and so on, with its respective equipment, but in the later, every component was redesigned as a housing system.

[2] In this case the intermediary steps might not be inhabited, therefore not counting as works of architecture, but representations such as sketches, plans and drawings, which are mainly icons of the intended architecture.

[3] Bonta uses as example the Barcelona Pavilion designed by Van der Rohe, as a case to explain the process of interpretation of architecture. In such case he explains various interpretations, given by different authors, finally concluding that only one explanation considered as "canonical", remains as a widely accepted interpretation, .even if such canonical interpretation might not last forever either (Bonta, 1979).

3. Methods of Research

3.1 Analytical problem:

Machiya are particular spaces, which are not necessarily easy to understand using any conventional methods of analysis, for this research it is necessary to find an appropriate method of analysis for syntactic and semantic levels:

3.1.1 In the case of syntactic level

The standard is focused on analysis of spatial units, such as rooms; but as such approach is more suitable for western architecture than Machiya, as the latter has a more dynamic spatial structure than the rooms divided y walls as in the west, therefore it is used activities as unit instead of rooms.

If for instance we would consider a layout as in Fig. 3- 1, we could eventually guess that each of the "rooms" might correspond to certain activity or purpose, and that D might be a corridor connecting such spaces. This type of approach is based on what Ashihara would describe as wall based architecture, which means not only that it is mainly defined by the walls, but as well that there are eventually other possible approaches, such as for example space defined by the floor. For our interest in inhabitation, such differences are important since we cannot assume that a spatial "cell" or "room" might be equivalent to the actual use of a space. Therefore a conventional approach to syntactic analysis using spatial "cells" or "rooms" as basis would be insufficient and eventually inefficient as well.

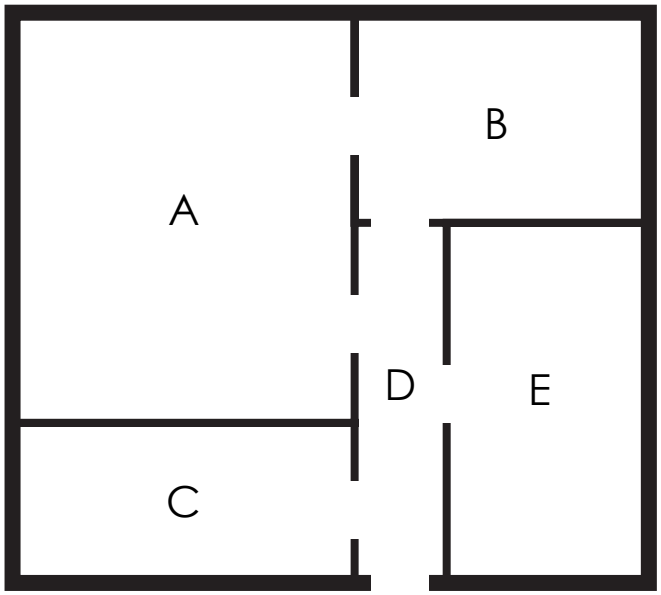


Fig. 3- 1 Western type of layout of wall based space configuration generating "rooms" A, B, C and E, and "corridor" D.

If we would consider a conventional approach to spatial syntactic analysis for a layout such as in Fig. 3- 1 the result would be something similar as in Fig. 3- 2.

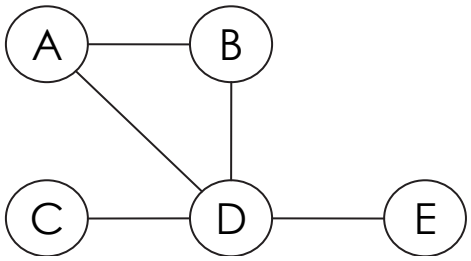


Fig. 3- 2 Syntactic graph corresponding to the previous layout.

The graph in Fig. 3- 2 would be significant for inhabitation in the context of a wall based construction where A = activity A, B = activity B, C = activity C and so on. We could eventually develop a significant amount of knowledge in an efficient way using such approach as long as the correspondence of spatial units and activities is present. However if such correspondence is not present we will need to use much more complex methods of analysis in order to get relevant knowledge.

As an example of a layout where such conventional approach would be less significant we can consider for instance the typical one room apartment used in Kyoto (Fig. 3- 3).

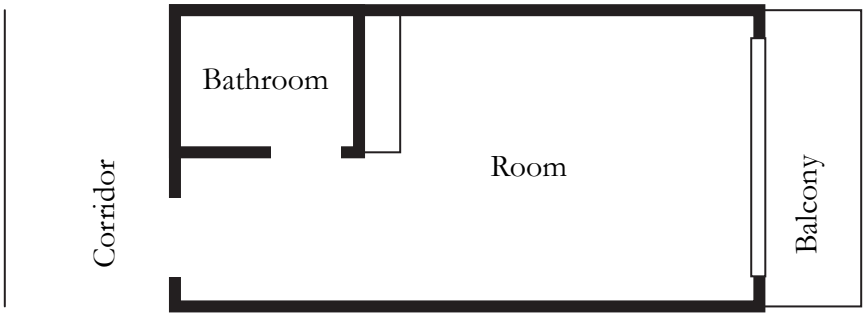


Fig. 3- 3 Layout of a one room apartment.

The graph corresponding to the layout in Fig. 3- 3 would be more or less as the in Fig. 3- 4.

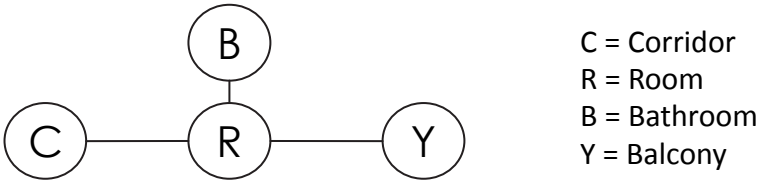


Fig. 3- 4 Graph corresponding to the one room apartment.

If we consider the graph in Fig. 3- 4 without the labels we can hardly guess much about the space as we have only four nodes in the graph, however if we consider the labels, we could

eventually guess how the "corridor", "bathroom" or "balcony" is being used, still the "room" would be more or less ambiguous, since we could not necessarily know that this is an apartment where someone sleeps, cooks, eats, reads a book, watches TV to just mention some of the possibilities. Of course considering the presence of a balcony might give us a clue, still the graph in Fig. 3- 4, it would not make much difference if we would deal with an apartment or hotel room, moreover in the case of absence of a balcony if we remove node Y from the graph, we could consider it as an office among other possibilities, hence the analysis would become more inefficient if we are interested in inhabitation.

In order to improve the efficiency of the graph to represent the inhabitation of the one room apartment we will use the activities as nodes instead of "rooms", and use the labels of the edges in order to indicate if activities are in the same space or linked with another element such as doors, windows and so on as in Fig. 3- 5.

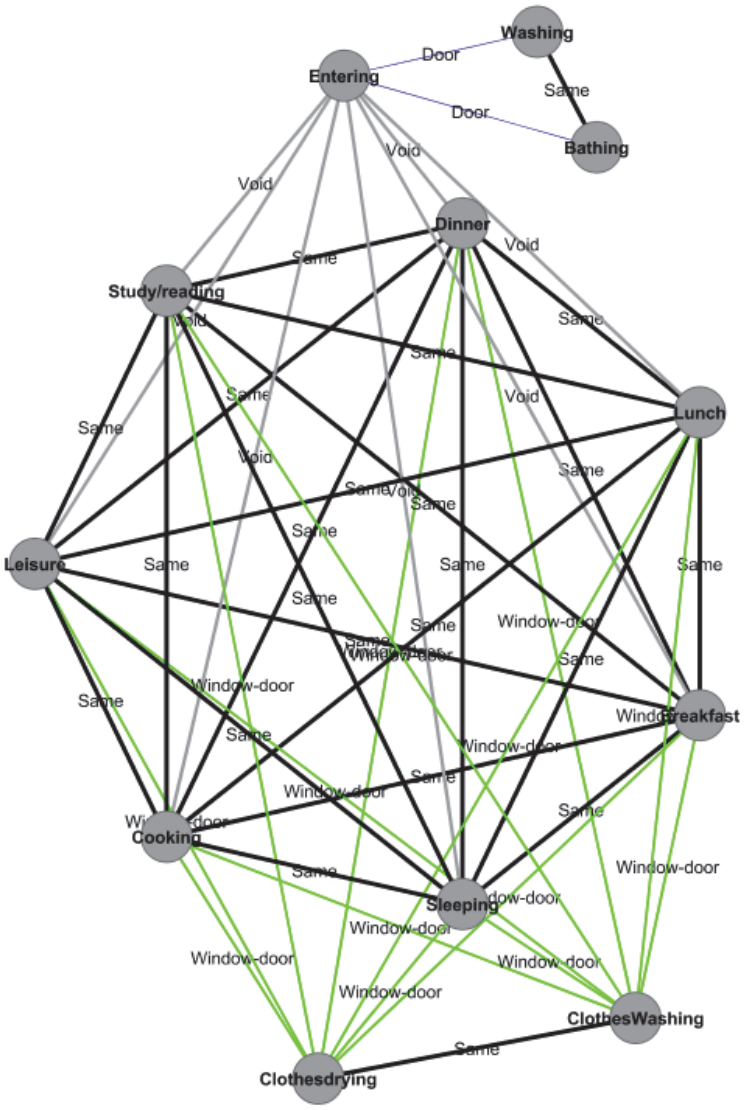


Fig. 3- 5 Graph showing activities corresponding to the one room apartment. Black lines indicate when activities occur in the same space, green lines indicate windows able to be used as door, blue lines indicate doors and grey lines indicate void thresholds.

Perhaps we could consider that the complex graph as in Fig. 3- 5 is less understandable and therefore less efficient when we want to use it for other analysis. But in fact, much of the knowledge we can get with such analysis is already visible in the graph. We can for example recognize how many activities concentrate in one space are such as in this case cooking, breakfast, lunch, dinner, sleeping, leisure, study/reading, or we can recognize the importance of the entering node regarding circulation and so on. Moreover we can immediately know that the space is destined for dwelling.

But what is the most important in the case of the graph as in Fig. 3- 5 when compared with Fig. 3- 4, is that when focusing on activities and understanding their connections, we can immediately think about how to design such spaces and get a sense of the inhabitants' perspective. In such case we are directly involved in the implications the space has on the inhabitant, while in the case of Fig. 3- 4 we still do not know precisely what is happening in such space unless we can rely on the conventional labeling of space such as "bathroom", "corridor", "balcony" and so on; in other words in such case we depend on the conventional, while in the case of focusing on activities the graph is immediately open to unconventional design without requiring special analysis.

Summarizing the comparison of Fig. 3- 4 and Fig. 3- 5 we could say that in the former case the graph is easier to draw and perhaps to analyze with sophisticated methods, while in the latter case the graph would be more complex but relevant information about inhabitation is directly visible.

Finally we can add what we will later on discuss in the section referring to the pragmatic level; in the case of Fig. 3- 5 we can represent how the space is used not only as hypothesis but in a practical way. If we consider as an example the case of "clothes washing" and "clothes drying" in Fig. 3- 5, we can assume for instance that such activities are done in the balcony as connections for washing machine is usually provided on the balcony of such apartments; hence such activities are connected by a window-door to other activities. But if eventually the balcony is not being used for such activities we can locate such activities in the graph with other connections or remove such nodes from the graph if such activities are not done in the corresponding case; we can draw a different graph for each inhabitant. While in the case of Fig. 3- 4 we cannot make any difference from the assumed inhabitation and what actually is happening in the space.

In the case of Machiya

If we consider the previously explained situation in the case of Machiya we can find similar issues.

According to Kigawa Tsuyoshi, after explaining which spaces of Machiya are being used for certain ceremonies he compares such data with a convex analysis using space syntax:

"Comparing this to the results of convex analysis, it is reasonable to suppose the daily path and paths of internal ceremonies are found to be economical with the reason that kitchen is more integrated than the guest reception room." (Kigawa, 2003)

While space syntax can give a coherent result evaluating the optimization of the inner distribution of space in Machiya, soon two problems will arise: first problem is that in the case of Machiya we usually know already that the inner circulations are optimized through the kitchen since the layout is quite simple; the second problem is that we do not know much about which of such ceremonies are still realized in the actual remaining Machiya, therefore we know little about if the layout of Machiya is in fact optimized for whatever use it really has.

On the other hand if we would draw a graph representing the activities done in Machiya we could verify the spatial integration of the rooms but we can see the optimization need for the activities which are really necessary in the used space (Fig. 3- 6).

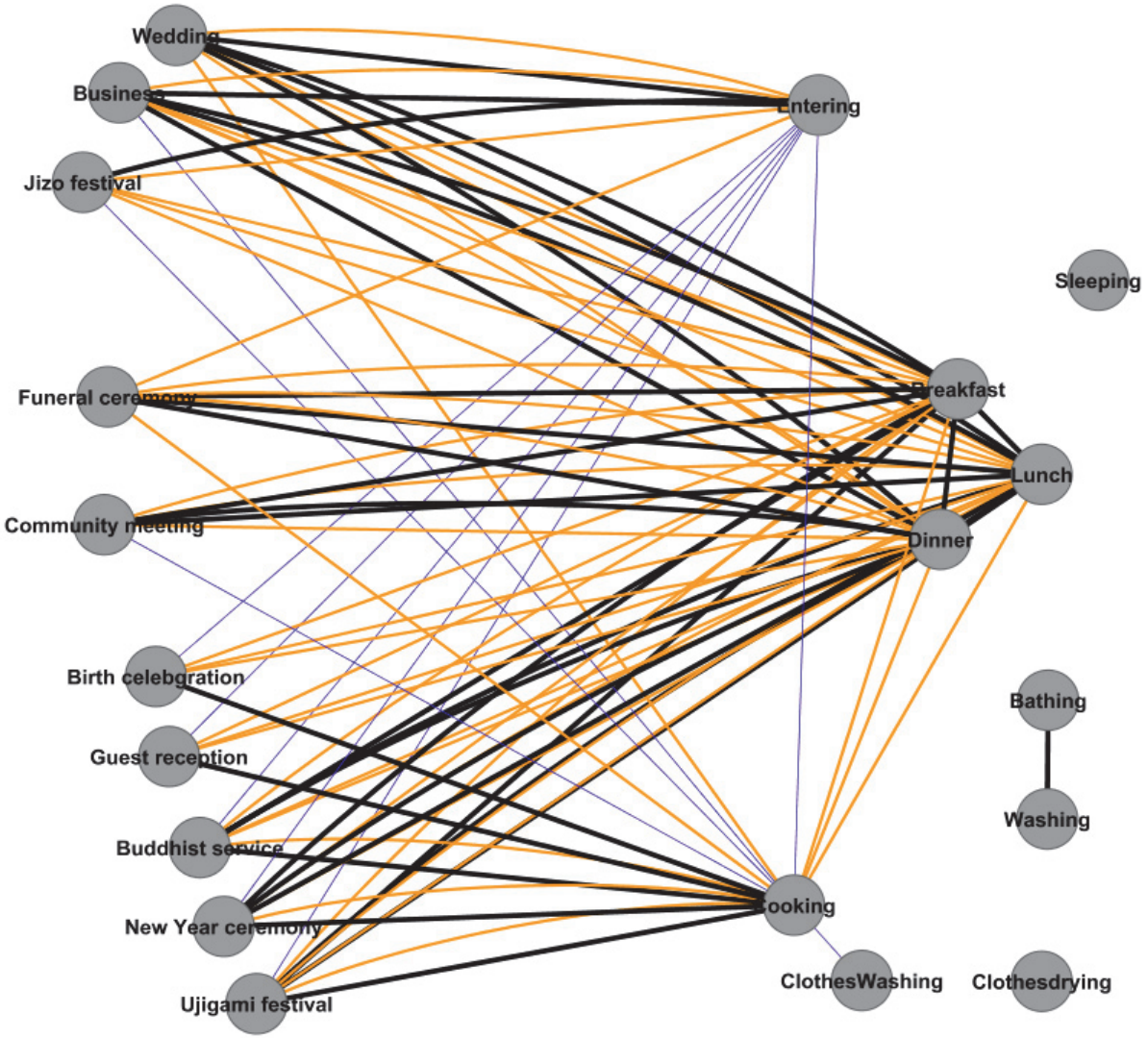


Fig. 3- 6 Activity graph for Machiya, mapping ceremonies (left) on daily activities (right). Black lines indicate when activities occur in the same space, orange lines indicate sliding panels and blue lines indicate doors. Relations in between different ceremonies are omitted.

In Fig. 3- 6 we can see the actual connection used for each activity (Relations in between different ceremonies are omitted, since we consider that such ceremonies do not occur at the same time). We can appreciate what ceremonies use in part the cooking space (more private), and what ceremonies are located in the entering space (less private). We can also the importance the space where cooking is located regarding the circulation connected to other daily activities and how important can become the space where eating activities (breakfast, lunch and dinner) are located during ceremonies. Also we can notice that activities such sleeping (if located in the second floor as usual), bathing, washing (referring to body washing) and clothes drying are in fact disconnected from other activities as it is necessary to use corridors or stairs (spaces not used for any special activity) to access to such activities.

Summarizing the comparison of Space Syntax and the syntactical graph of activities we could say that Space Syntax is based on rooms and resulted as a useful tool to estimate circulation optimization. While the syntactical graph of activities shows more directly what happens in space, and allows us to easily estimate future requirements, therefore it is more design oriented, instead of evaluation. However considering that Machiya is regulated by many important cultural codes (as to be explained in the following section), and not just optimal circulation, and moreover we focus on a further design method, in our case the syntactical graph of activities is more suitable.

3.1.2 In the case of the semantic level

As mentioned at the end of the previous section the existing codes in Machiya and parameters compatible with the cultural background strongly influenced by terms such as *Hare* (ハレ), *Ke* (ケ), *Oku* (奥), and other important semantic concepts are very important.

We can find many types of parameters according to which a space can be judged, and considered as appropriate for one or another way to inhabit it. We can realize then that such dwelling concepts taken in consideration by inhabitants or architects vary in time and context, and can be classified in two different types: the absolutist type, which is intended as ideal for everything and always, as for example the functionalism in modern architecture where nonfunctional spaces or elements such as ornaments where considered not appropriated in any case and for all activities; the other type is the context-relative type, as for example *Hare* and *Ke* type of gardens in traditional Japanese architecture (Nyunt, 1978)[1], where the preferred type is related to the activities corresponding to each context. Note that modernists who tend to be absolutists, when coming to Japan tended to prefer only one of each pair of relative dwelling concepts, as for example the case of Bruno Taut who described the Katsura Imperial Villa as positive and Nikko Toshogu as negative (Taut, 1937), (Ponciroli, 2005)[2], instead of interpreting them as a residence and a temple; as a related duality according to their purpose (context) (Fig. 3-7), where the dwelling space is to be considered restrained while the space for ceremony can be

exuberant.



Fig. 3- 7 Katsura Imperial Villa on the left, Nikko Toshogu on the right: more than opposites both are complements representing respectively domestic and ceremonial moments in life.
Sources: Left: (Ishimoto, 1982). Right: (Japan Information Web, 2012).

In the case of this research the absolutist point of view is considered useless, as it might be potentially destructive, as for example if we consider light and bright spaces as an ideal, we can eventually destroy the emerging beauty described by Tanizaki (Tanizaki, 1977)[3], by instead of allowing a relative graduation of light it would be imposed only one value over the rest. Therefore the semantic parameters selected for this research will be considered as context-relative values without one positive or negative side, and separated for each activity, instead of general values for each building. In the particular case of Machiya, we have selected four semantic dimensions: formality, privacy, brightness and naturalness.

Formality is an adaption to the concepts used in the traditional space of Machiya to distinguish ordinary activities represented in space mainly by the doma, and extraordinary activities, represented mainly by tatami rooms. Elements such as doma or tatami, have a meaning according to how formal the activity realized in such space might be, and will be disposed in a formal order in Machiya, resulting as well in symbolic elements such as for example the daikokubashira[4].

Privacy is an adaptation of the traditional meanings of uchi and soto, which in the case of Machiya as well had an special spatial hierarchy, where we can distinguish different degrees from the street towards the back of the Machiya, having a spatial meaning for the activities realized in the front or the back of the house (Löfgren, 2003).

Brightness is related to the internal order of bright and dark inside of Machiya, and has also an important meaning for orientation, as for example in dark spaces from which inhabitants can appreciate the light received by the garden. Also it is an important topic in Japanese esthetics (Tanizaki, 1977).

Naturalness is related to the characteristic sense of nature present in Machiya (京都市, 2011)[5] represented mainly by gardens, which as well have an important meaning for the activities realized in the spaces connected to the gardens, such as the zashiki.

The layout of Machiya has the particularity that it shows the main semantic parameters (formality and privacy) in an orthogonal way as in Fig. 3- 8, where private side is towards the back, the public in the front, the informal side towards the left and the formal side towards the right, the center of such division is symbolically represented by the Daikokubashira. Note that the space inside a house such as Machiya might be considered at times completely private and completely informal. Still we can see even more evidently in Machiya the duality of semantic parameters of Japanese traditional space as Machiya can be transformed according to the occasion for different festivals, so that it becomes more exuberantly decorated during festivals.

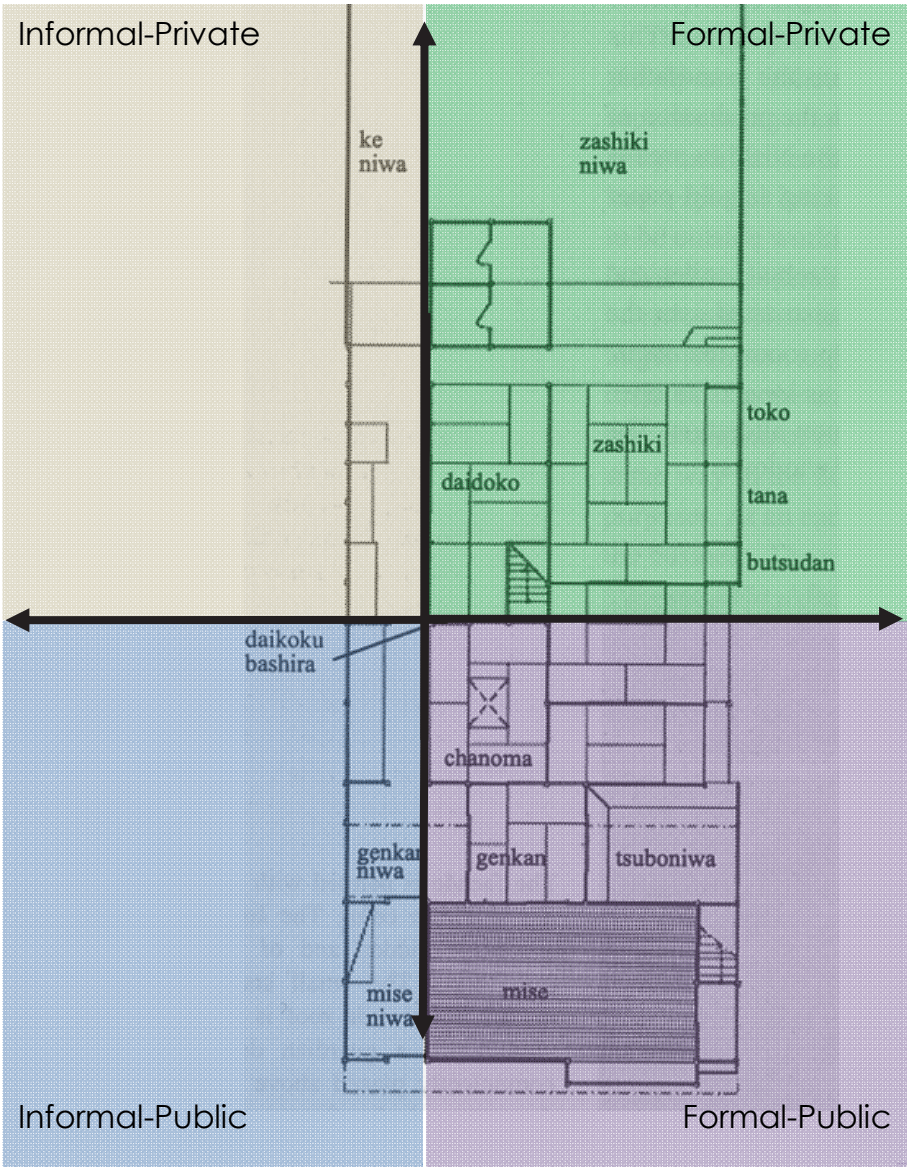


Fig. 3- 8 Semantic division of Machiya layout, directions are symbolic and do not always fit equally in all Machiya. Background image source (Machiya layout): (Löfgren, 2003).

3.1.3 In the case of the pragmatic level

As anticipated in section "3.1.1 In the case of syntactic level", using activities in the syntactic activity graphs we can not only represent the estimated or hypothetic situation, but as well how space is actually being used. This means that we are starting to focus then on the relation of the sign (space) and the user. Moreover we stressed out in the section "3.1.2 In the case of the semantic level" that we would focus on semantic dimensions seeking for relative values instead of absolute values, the reason of that is as well the importance of how the user of the sign, or in other words the inhabitant of space is related to such space.

Additionally we can combine both the syntactic and semantic approach by semantically defining the same activities we use as nodes in the syntactic activity graph. If used such combination we can do case study analysis of real cases based on the inhabitants' perception and not only on hypothetic use of a "room" depending on its conventional use. It is important to notice that the data from each such case study can be linked to its semantic context by acquiring the semantic dimensions for the same activities from the inhabitant.

Also this way we can semantically define the case; as for example, if a subject that she/he lives in a Machiya, all the semantic information about the activities she/he answers can be compared to all the other data corresponding to Machiya gathered using the same method.

With the semantic data it is already possible to find out what activities are semantically related or not. With the syntactic analysis we can see if activities semantically related are spatially linked or correspond to spatial structures of the house. The relation of inhabitants' interpretation and context corresponds to pragmatic dimension.

3.2 Methods of research

Based on the previously framework and analytical problems we consider the following methods, concerning the physical environment, cultural aspects and data analysis.

3.2.1 Environmentally

The methods focus mainly on the physical environment of Machiya, and Machiya itself including bibliographic sources and fieldwork aiming to the understanding of Machiya and its physical context, covering GIS, descriptions, photography, plans, schemes…

3.2.2 Culturally

The implication that culture has on Machiya will be gathered aiming mainly towards the semantic aspects of Machiya system covering bibliographic sources and fieldwork such as the Inhabitation Questionnaire.

The data collection is done with a written questionnaire in paper and online format. The questionnaire has 13 questions:

1- Which type of dwelling the person lives in (Machiya, other type of house or row house, apartment building or others), if the person is owner or is borrowing/renting the dwelling, and what dwelling he would prefer to live in.

2- The number and type of rooms in the dwelling and the preference among them.

3- Indicate if the laundry space is inside the dwelling, in a common area of the building or outside of the building.

4- Indicate the existing and preferred views from the dwelling.

5- Indicate the preference among pairs of items (futon or bed, tatami or flooring, unit bath or separated toilet and bath, balcony or garden).

6- To rate Machiya elements according to its importance for the urban context.

7- Personal information such as gender, age, type of occupation, type of family constitution, number of people living in the same household, nationality and location of the dwelling (市, 区, 町).

8- Indicate the use or intention to use of the dwelling in activities such as Gion festival, Hina Matsuri, Byoubu Matsuri, or others.

9- Indicate the presence or intention to use in the dwelling elements such as tokonoma, butsudan, ojizōsan, or other.

10- To rate 13 activities[6] (1-entering, 2-breakfast, 3-lunch, 4-dinner, 5-cooking, 6-sleeping, 7-washing (shower), 8-bathing, 9-clothes washing, 10-clothes drying, 11-leisure, 12-study/reading and 13-work); for each activity it is rated its formality, privacy, brightness, naturalness, and additionally the suitability of the space for such activity using a scale of 5 different levels according to their existing dwelling.

11- To rate the same activities as in question 10 again for formality, privacy, brightness and naturalness; but this time according to their preference, and additionally mentioning other activities they would like to do in their dwellings.

12- Indicate the existing views from each of the 13 activities selecting garden, other than garden or no view outside.

13- Indicate the preferred view for each activity as well selecting from garden, other than garden or no view outside.

The data used for the current dissertation focuses mainly (not only) on questions 1, 10 and 11. Formality, privacy, brightness and naturalness are the semantic parameters used in the research collected in questions 10 (current situation) and 11 (expected preference), while question 1 links the data from question 10 and 11 to the dwelling typologies including Machiya. The answers are collected mainly from Kyoto inhabitants (the questionnaire is distributed in Kyoto,

ensuring that all subjects are at least familiar with the city in some way, but some of the subjects who replied the questionnaire are not living in Kyoto).

3.2.3 Data analysis

The data analysis is done using a database where all data is collected sorted and processed. Additionally it is used data mining software KNIME[7] in order to make graphs and clustering analysis.

In order to get valid conclusion it is first analyzed separately the Environmental and cultural factors, and then analyzed which are the relation in between of both at pragmatic level. For analysis of data is being used mainly data spreadsheets, graphs and schemes.

Notes of Chapter 3

[1] In the case of Study on Japanese Traditional Living Space and Landscaping (Nyunt, 1978) several examples of "hare", "ke" and "suki" type of gardens are being analyzed in Machiya case studies. "Ke" is associated with domestic purpose, "hare" with ceremonial purpose or formal gardens, while "suki" is being related to aesthetical designed gardens related to sukiya style.

[2] Bruno Taut in his text Fundamentals of Japanese Architecture (Taut, 1937), describes modern architecture in Japan as "quality" influenced by Katsura Imperial Villa and "kitsch" influenced by Nikko Toshogu. His conception is highly biased by his own theory, so that he considers one as good (Katsura), and the other rather negative (Nikko). According to Ponciroli (Ponciroli, 2005), Taut did indeed recognize certain dependence of context in Katsura Imperial Villa as "a refined life style that transcended the mere principle of utility" (Ponciroli, 2005 p. 319)). He indeed describes a ceremonial dimension, but rather as spiritual instead of exuberant, somehow his theoretical frame was closed to accept anything outside restrained and simple architecture devoid of exuberant ornament. Moreover Walter Gropius, after Taut, also saw Katsura and Nikko as positive and negative, and he, even more framed than Taut, considered that some of the ornament in Katsura that Taut accepted as functional was in effect formal weakness (Ponciroli, 2005 p. 328). As we can see in such case, the tendency to become absolutists of the modern architects played an unfavorable role in the interpretation of Architecture as positions can become more and more limited. But still everyone has his own limited frames.

[3] In the essay In Praise of Shadows (Tanizaki, 1977), it is described how the darkness inside traditional Japanese dwellings is used esthetically, but in such case it does not consist in an argument for establishing a determined value for light, but rather to appreciate the subtle shades that can be found in the Japanese dwellings, as result of the shade built for the hot summers. The context of the shadows and the relation with the elements and people present in such shaded places is an important issue in such essay.

[4] The Daikokubashira is a column present in Machiya and other traditional Japanese dwellings. It is considered the most important and large column and is located usually in between the earthen floor doma and the raised living rooms. It has symbolic meaning and in fact, during the research it was common that the inhabitants of visited Machiya showed such column to us.

[5] See 京町家まちづくり調査 (京都市, 2011), answers to question 8.

[6] 8 The list of activities is based on 図説 日本人生活時間 (NHK 世論調査部, 1992), with some changes, focusing more on spaces within a dwelling.

[7] KNIME is an open-source platform for data mining, initially developed at the University of Konstanz, Germany.

4. Physical Environment of Machiya

4.1 Introduction

This chapter deals with the problem of conserving Machiya focusing on its context for later use in the culturally friendly design method. It consists in a study of the actual context of Machiya using physical parameters based on the framework considering Machiya as an inhabitation system already explained in chapter 2. Within the framework of this dissertation this chapter focuses on the sign classification of C. S. Peirce in order to distinguish semiotic indicators for parametric analysis corresponding to "Icons" "Indexes" and "Symbols" for testing such categories. An area of historical districts in Kyoto is analyzed using a set of indicators applied to each building in order to represent how such context of Machiya is present in each building by calculating a "contextual score". It is found that the given theoretical framework is consistent with the results of analysis, showing that when focusing on indexes of systems of inhabitation as indicator instead of physical description (icons), it is possible to address the architectural context of an architectural typology such as Machiya, which can be complemented with clustering or other techniques.

4.2 Use of Semiotic Indicators

In this chapter it will be considered semiotics in order to build a criteria for analysis of architecture, making it possible to classify interpretations more clearly and less arbitrarily of what is described before as systems of architecture.

In the case of this chapter, it will be considered the semiotic theory of C. S. Peirce (Hartshorne, 1978), referring to Icon, Index and Symbol[1], in order to classify the information extracted from architecture as interpretation of signs (hereinafter "index" or "indexes" will refer to the type of sign according to Peirce). The parameters used for analysis, will then be classified signs into *Iconic Indicators*, *Indexical Indicators* and *Symbolic Indicators*. Therefore *Iconic Indicators* will correspond to resemblances of Machiya such as something with similar shape, color or texture than Machiya, while *Indexical Indicators* will refer to something making a reference to Machiya by means of a causal relation. In this case, as dealing with architecture, and considering architecture as experience of space, the causal relation will be defined by physical experience of the space of Machiya as for example inner gardens which can be experienced similar as those in Machiya. In the example of the garden we can estimate that such garden might (even if not necessarily) have as well physical resemblance to the garden of Machiya, in other words, as well as in Peirce's theory "indexes" can contain "icons" or have "iconic content". Nevertheless the importance of indexes already explained in Chapter 2. Finally *Symbolic Indicators* are those we can recognize by the use of conventions, but as not all symbols in Machiya might be understood as such by common inhabitants, its use might be limited.

We could say that a continuation of a system such as Machiya (understanding in this case the continuation regarding its existence, not physical quality of continuous or continuity) has characteristics of an *Indexical indicator*, as it embodies a causal relation referring to the system, given by spatial qualities, which do not necessarily resemble to the system, therefore Iconic content in such continuation is not necessary, but eventually can be found. Consequently an attempt of continuing a system based only on iconic content may fail, as it is not relevant how much the new construction resembles to the rest of the system but to have a causal relation given by experience of inhabitation, such as an Index, which as well might be contained in a Symbol, but not as Icon only. As hypothesis it will be considered that *Indexical Indicators* of Machiya will be more relevant than *Iconic Indicators* of Machiya.

4.3 The surveyed area

The area selected for the experiment corresponding to this chapter is located in Meirin district (明倫元学区). This area is located in the downtown area of Kyoto in Nakagyou ku (Fig. 4- 1), surrounded by the streets Shijo, Karasuma, Sanjo and Nishinotoin. This area has a long tradition participating in the Gion Matsuri among other traditional events. Shijo and Karasuma are both main streets surrounded by newer high rise buildings, but the area behind such buildings and the area towards Sanjo and Nishinotoin streets still has many lower buildings including several Machiya, some of them considered of important cultural value, related in part to events such as the Gion Matsuri, where many Machiya houses in this distrct participate.

Within Meirin disctirct we have selected two "Cho"[2]: Komusubidana-cho and Mukadeya-cho. Both are located in Shinmachi Street. This street has the particularity that in this area no cables of the public lighting cross the street allowing the high floats used in the Gion Matsuri to move along the street without hitting the cables (Fig. 4- 2).

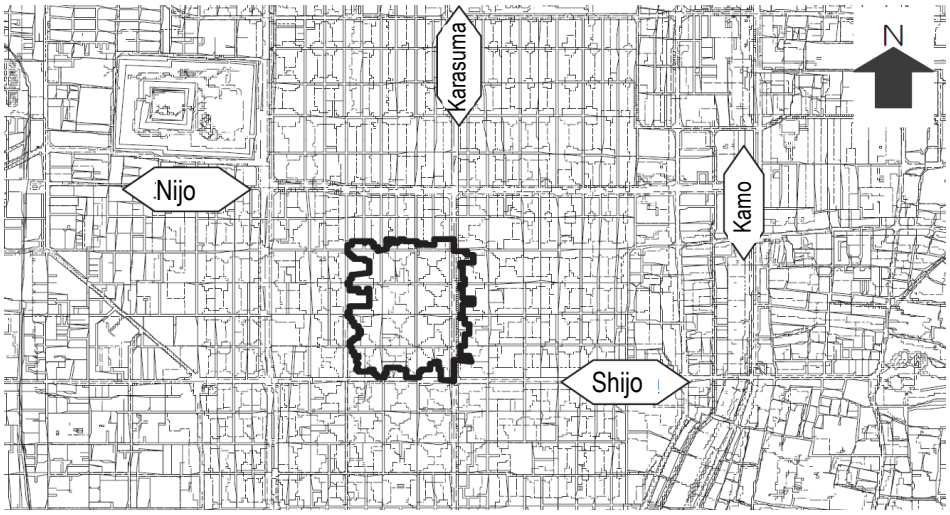


Fig. 4- 1 Location of Meirin district in Kyoto.



Fig. 4- 2 Shijo-Shinmachi crossing during the floats' procesion in Gion festival: in foreground is Hoka boko float (放下鉾) and in the background Minamikannon yama float (南観音山), both from Meirin district.

4.4 The contextual score

The contextual score is a value created to show how much of certain architectural context is present in a certain area, reflected in physical parameters (Semiotic Indicators (see section "4.2 Use of Semiotic Indicators") signifying in this case Machiya as context) shown by the buildings that constitute such area. Therefore the components of the contextual score are the parameters

being considered and a "weight factor" which is a value specified for each parameter.

Semiotic Indicators of each building can be determined by physical inspection, as existing or not existing. Among all such Indicators, it is selected a reduced number to be considered as relevant for the context, emphasizing those related to inhabitation or being an *Indexical Indicator* of an system of inhabitation (architecture). The intention is to represent the architectural context of, in this case, Machiya. Therefore the parameters will be a group of Indicators of buildings considered mainly *Indexical Indicators* of inhabitation systems of Machiya; still, some other *Indicators* are included and tried out[3].

The value of each parameter can be "1" or "0", where "1" means that the parameter "exists" in each building. Parameters can also be a combination of other parameters, but always corresponds to a value of "1" or "0". Therefore characteristics such as area and number of floors are not directly processed as parameters, but included as conditions or combination with other parameters, as for example having an area higher than certain value, or having a number of floors higher than certain number in combination with another parameter.

Finally all buildings can be processed as a string of data composed exclusively of values "1" and "0".

As each of such parameters has a different importance, each parameter is multiplied by a "weight factor" such weight factor will correspond to a positive number if the parameter is considered as positive, and a negative value if the parameter is considered as negative. As well a weight factor of value "0" will correspond to a neutral point equivalent to an empty plot. For all weight factors, the value will be higher for the parameters considered most important, and lower for the less important parameters. For the negative weight factors the value will be lower for the parameters considered the most severe.

The value of the contextual score is calculated by adding the values corresponding to all the parameters multiplied by their respective weight factor:

-If all parameters "P_x" are numbered from 1 to n as P_1, P_2, P_3, P_4、 P_5,… P_n

-To each P_x will correspond a "weight factor" W_x

-The contextual score "CS" will be defined as:

-$CS = P_1*W_1 + P_2*W_2 + P_3*W_3 + P_4*W_4 + \ldots + P_n*W_n$

Therefore the buildings where most of positive parameters are present, and less negative parameters are present will have higher scores. The importance of each parameter in the outcome of the score can be adjusted with use of the "weight factor".

4.5 Determining parameters and weight factors

The values for weight factors and the used parameters (Semiotic Indicators) are arrayed in a scheme (Fig. 4- 3) and later gathered in an excel data (Table 1). Selection criteria is based on section "4.2 Use of Semiotic Indicators", and explained as follows in section "4.5.1 Determining parameters" and "4.5.2 Determining weight factors".

General Attributes		**Possible Value**	**"Weight Factor"**
-"Building id number"		positive integer	not applicable
-"N° of Floors"		positive integer	not applicable
-"Area"		positive decimal	not applicable
Parameters (Semiotic Indicators)		**P_X**	**W_X**
- Facade Continuous row systems:			
-"Has continuous eaves"	-Exists	"1" or "0"	+1
-"Connected Continuous façade system"	-Continuous eaves	"1" or "0"	+0.8
	-Other	"1" or "0"	+0.5
- Gardens: -Tsuboniwa*	-Covered	"1" or "0"	+0.4
	-Uncovered	"1" or "0"	+0.6
-Okuniwa**	-Covered	"1" or "0"	+0.5
	-Uncovered	"1" or "0"	+1
-Streets system:			
-"Main Street"	-Exists	"1" or "0"	+0
-"Secondary Street"	-Asphalt	"1" or "0"	+0
	-Stone or blocks	"1" or "0"	+0.5
-"Alley"	-Asphalt	"1" or "0"	+0.1
	-Stone or blocks	"1" or "0"	+0.5
-Façade:	-Kanban	"1" or "0"	-0.3
	-Other (not Machiya)	"1" or "0"	-0.1
	-Traditional***	disabled	not applicable
	-Traditional imitation***	disabled	not applicable
-Combined factors:			
-Has no eaves but is connected to eaves.		"1" or "0"	-1
-No Okuniwa and area over 100m^2		"1" or "0"	-0.45
-No Tsuboiwa and area over 70m^2		"1" or "0"	-0.2
-Area over 500m^2 and floors over 5.		"1" or "0"	-0.15
-Floors over 5		"1" or "0"	-1
-Participation in Gion Matsuri or similar****		"1" or "0"	+0.6

* To make it compatible for diverse cases it is considered as "inner garden", not necessarily traditional type.
** To make it compatible for diverse cases it is considered as "garden space at the back of a building", not necessarily traditional type.
*** Disabled parameters are not used in the calculation; other parameters as well had been considered in previous tryouts.
**** Is not necessarily possible to recognize without additional information than physical inspection.

Fig. 4- 3 Scheme of Semiotic Indicators as parameters.

Table 1 Gathering of data in Fig. 4- 3 into excel spreadsheet (partial image).

Parameters			Continuous row system			Tsuboniwa		Okuniwa		Streets
weight factors			1	0.8	0.5	0.4	0.6	0.5	1	0
Building Number	N° of Floors	Area	Has continues	connected Continuous syst. Continues eaves	other	Covered	Uncovered	Covered	Uncovered	Main
1	2	45.358	0	0	0	0	0	1	0	1
2	2	75.1634	1	0	0	0	0	1	0	0
3	3	84.4363	0	0	0	0	0	0	0	0
4	3	96.4986	0	0	0	0	0	0	0	0
5	3	136.8788	0	0	0	0	1	0	0	0
6	2	124.2457	0	0	0	0	0	0	0	0
7	3	59.3959	0	0	0	0	0	0	0	0
8	2	178.6613	1	0	1	0	0	0	1	0
9	2	178.6613	1	0	1	0	0	0	1	0
10	1	46.73	1	0	1	0	0	0	0	0
11	3	46.73	0	0	1	0	0	0	0	0
12	3	46.73	0	0	1	0	0	0	0	0
13	3	46.73	0	0	1	0	0	0	0	0
14	3	46.73	0	0	1	0	0	0	0	0
15	3	46.73	0	0	1	0	0	0	0	0
16	2	111.375	1	1	0	0	0	0	1	0
17	2	274.2479	1	1	0	1	0	0	1	0
18	3	298.0005	0	1	0	0	0	0	1	0
19	2	128.4122	1	1	0	0	1	0	1	0
20	1	75.8665	1	1	0	0	0	0	1	0
21	3	81.201	1	1	0	0	0	0	1	0
22	5	81.1845	1	1	0	0	0	0	0	0
23	2	88.6276	0	1	0	0	1	0	1	0
24	2	83.5149	1	0	0	0	0	0	1	0
25	2	31.556	0	1	0	0	0	0	0	
26	5	101.8508	0	1	0	0	0	0	0	

4.5.1 Determining parameters

Various elements of Machiya to be considered as Semiotic Indicators where gathered from texts, such as tsuboniwa, eaves, and elements of traditional façades, materials, etc (Löfgren, 2003), (丸山, 2007), (京都府教育庁, 1977), (大場, 2005).

After starting the recollection of parameters, some had to be left out, because it was not possible to determinate clearly if such elements were present or not in most buildings, and also the mixture of traditional and imitations of traditional made it difficult to tell in detail about the existence of the original elements. Therefore all elements which were not possible to determinate clearly were left out of the selection, as well as elements which were not found in the surveyed population of buildings. Most physical details were left out giving more importance to elements associated with systems of inhabitation, note that such physical details may correspond mainly to *Iconic Indicators* and that elements associated with systems of inhabitation correspond to *Indexical Indicators*.

It was considered the presence of the eaves, indicator of (or sign of) the "noki-shita" or "space under the eaves" (parameter "has continuous eaves", Fig. 4- 3), in such case, it was considered as well if the neighbor buildings had also such eaves as part of a continuous system

for involving streetscape continuity (parameter "connected to continuous façade system", Fig. 4- 3) and if in case such continuous system exists if the surveyed building interrupts such system ("Has no eaves but is connected to eaves", Fig. 4- 3). Also it was considered that the existence of okuniwa and tsuboniwa in buildings of certain size was additionally relevant, as in case of Machiya such gardens are more relevant in bigger houses[4] (parameters "Tsuboniwa", "Okuniwa", "No Okuniwa and area over 100m^2" and "No Tsuboiwa and area over 70m^2", Fig. 4- 3). The parameters related to the streets, where not suggested only by the referenced texts but as well by the Machiya distribution, as the area around the main streets is destined in great part to high-rise buildings (parameters "Main Street" and "Secondary Street", Fig. 4- 3). Also it was considered the importance of Roji lanes, and the material of the pavement (parameters "Alley" and sub parameters "asphalt" and "stone or blocks" Fig. 4- 3), making a difference in between stone blocks and asphalt, where stone blocks are continuity with the old contexts of Machiya related to pedestrians, while asphalt is perceived as a material from other type not continuous with Machiya, related to other type of transportation. It is as well considered the participation in cultural activities such as Gion Matsuri in one parameter. Different tryouts showed that adding more physical detail was not necessary (the remaining physical parameters correspond to the Façade parameter group referring to systems different to traditional Machiya, and general size (parameters "Area over 500m^2 and floors over 5" and "Foors over 5", Fig. 4- 3).

4.5.2 Determining weight factors

The weight factors are being set in two steps:

First, we set a value of 1 or -1; the values are positive or negative depending on the case if the indicator corresponds to Machiya or not respectively[5] getting rough contextual scores as result. Second step we can fine tune each weight factor, and generates finer results, but without affecting scores in such a severe degree. This step consists in changing the value in between 1 and 0 or in between -1 and 0 as it may correspond, it should be noted that as the value comes closer to 0, the relevance of the parameter is less. This process is intended as an instance for the user to fine tuning his results or allowing interaction with more people or community, but with reduced effect on the results.

Example of CS calculation can be seen in Fig. 4- 4; using the formula previously explained for calculating CS (the sequence of parameters is as in Fig. 4- 3 (see columns P_x and W_x) or Table 1):

CS building 87:

1*1+1*0.8+0*0.5+1*0.4+0*0.6+0*0.5+0*1+0*0+1*0+0*0.5+0*0.1+0*0.5+0*-0.3+0*-0.1+0*-1+1*-0.45+0*-0.2+1*-0.15+0*-1+0*0.6 = **1.6**

CS building 83:

1*1+1*0.8+0*0.5+0*0.4+0*0.6+1*0+0*0.5+0*1+0*0+1*0+0*0.5+0*0.1+0*0.5+0*-0.3+0*-0.1+0*-1+1*-0.45+0*-0.2+1*-0.15+0*-1+0*0.6 = **1.2**

CS building 68:

1*1+1*0.8+0*0.5+0*0.4+1*0.6+0*0+0*0.5+1*1+0*0+1*0+0*0.5+0*0.1+1*0.5+0*-0.3+0*-0.1+0*-1+0*-0.45+0*-0.2+0*-0.15+0*-1+0*0.6 = **3.9**

In this case even if contextual parameters are found on the outside of the buildings, the result is more complex than what can be said from the façade at first impression. This means that it's possible to distinguish from buildings which feature Machiya elements integrated in their whole formation (Building N° 068) and buildings which feature Machiya elements only on the façade (Buildings N° 083 and N° 087), even when all three buildings are new constructions.



Building N° 087
Score: 1.6

Building N° 083
Score: 1.2

Building N° 068
Score: 3.9

Fig. 4- 4 Buildings N° 087, 083 and 068 with contextual scores.

In order to get feedback for recursive fine tuning of weight factors or parameter selection, at any tryout the consistency of the calculation can be verified by different means. In first instance, after mapping the contextual scores as in Fig. 4- 5 it was possible to appreciate that the dark red spots representing higher context coincides with Machiya concentrations as in Fig. 4- 6, excepting those buildings described as Machiya in other data bases (磯田, 2003), but without conserving its original context as the case in Fig. 4- 7, revealing the impact of the area populated with high-rise buildings towards the south of the surveyed area. Also it can be appreciated correspondence of scores and appearance using photography of samples of cases using simple random sampling of at least 20, in Fig. 4- 8 we can see the highest scores and in Fig. 4- 9 some random samples.

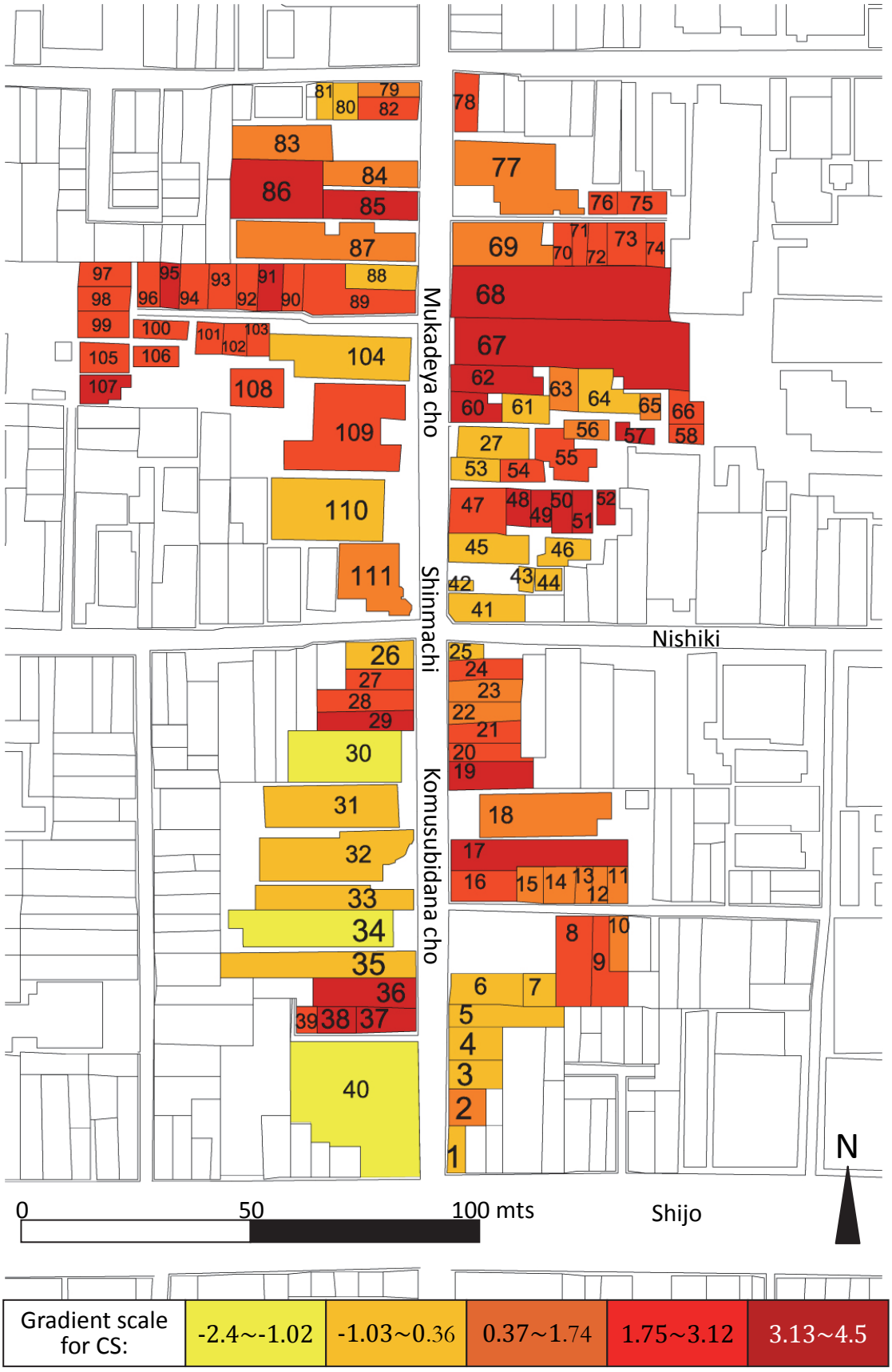


Fig. 4- 5 Mapping of contextual scores (CS) in analyzed area using colors; from lowest in yellow to highest dark red.

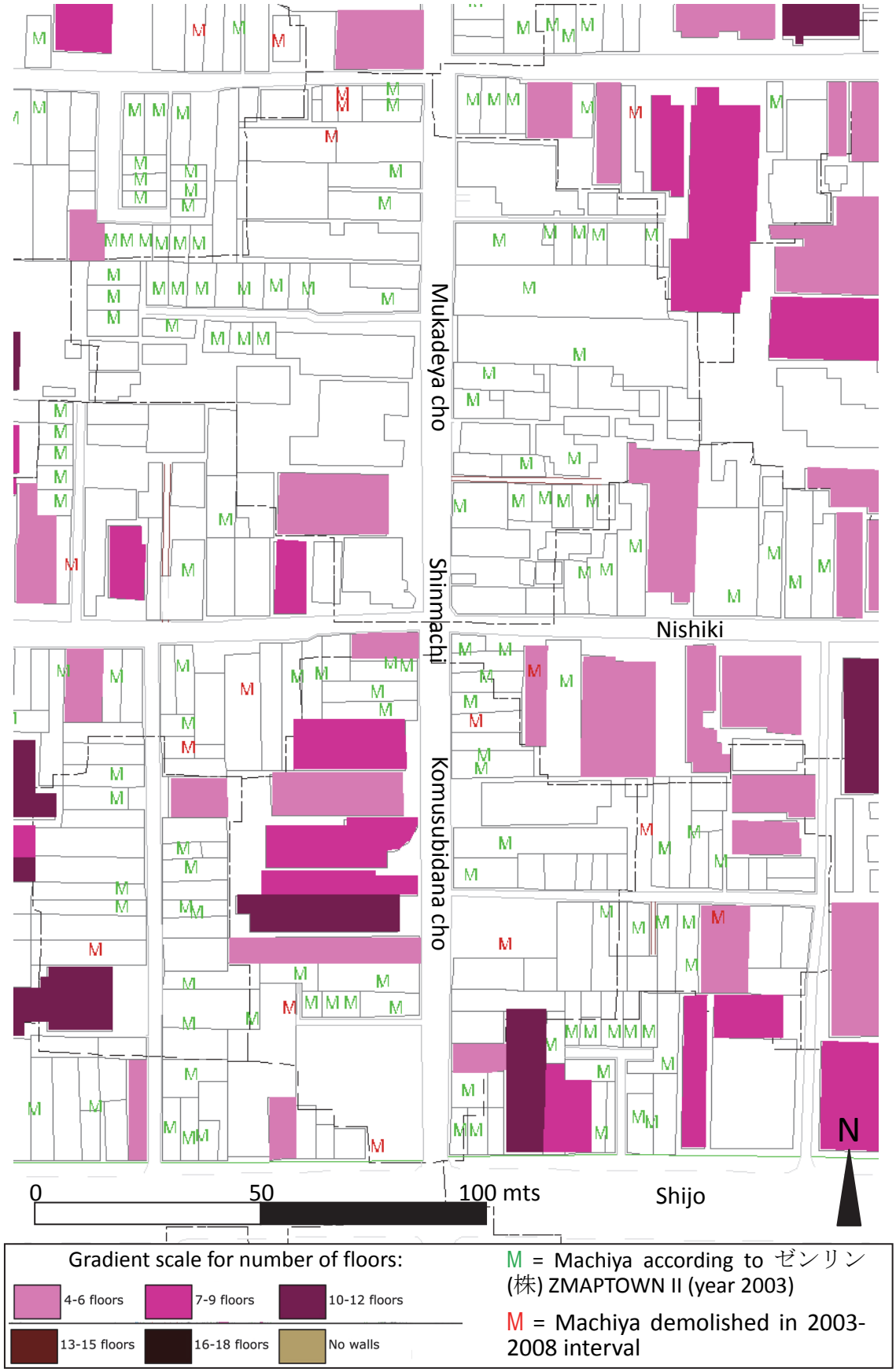


Fig. 4- 6 Surveyed area showing high-rise buildings and Machiya according to GIS data from ゼンリン (株) ZMAPTOWN II (year 2003) (磯田, 2003), updated using Google earth data from 2008.



Building N° 001

Score: 0.2

This building was formerly described as Machiya in other data bases, but does not conserve Machiya character anymore.



Building N° 005

Score: -0.1



Building N° 053

Score: -0.1



Building N° 104

Score: -0.2

Fig. 4- 7 As a physical value oriented to be used in combination of further architectural data of inhabitation, the classes corresponding to a group of similar scores does not necessarily look alike, but reflect same degree of architectural context.



Building N° 017

Score: 3.8



Building N° 067

Score: 4.3



Building N° 060

Score: 3.9



Building N° 068

Score: 3.9

Fig. 4- 8 Examples corresponding to cases among ths highest contextual scores.


Building N° 029
Score: 3.3


Building N° 021
Score: 2.8


Building N° 042
Score: -0.7


Building N° 104
Score: -0.2


Building N° 045
Score: -1


Building N° 082
Score: 2.3


Building N° 020
Score: 2.8


Building N° 079
Score: 0.5


Building N° 006
Score: -0.7


Building N° 084
Score: 1.6


Building N° 077
Score: 1.6


Building N° 047
Score: 2.5


Building N° 089
Score: 2.5


Building N° 069
Score: 1


Building N° 024
Score: 2


Building N° 016
Score: 2.9


Building N° 038
Score: 3.3


Building N° 085
Score: 3.3


Building N° 041
Score: -1


Building N° 003
Score: -0.25


Building N° 019
Score: 3.4


Building N° 037
Score: 3.3

Fig. 4- 9 Random sample cases with their corresponding Contextual Score.

4.6 Clustering techniques compared with "contextual scores"

In order to have more conclusive results about the type of indicators to be selected, the "contextual score" is compared with clustering techniques using KNIME software. Clustering techniques will be used on the data base used for the calculation of contextual scores (Table 1), without any "weight factors". In order to compare the "contextual score" with clusters, it is used the color graduation similar as used for mapping the contextual scores, resulting in 5 graduations, as well the clustering is configured to generate 5 different clusters[6], first instance using Hierarchical Clustering and in second instance using K-Means.

4.6.1 Identifying Machiya Context using clustering techniques

In order to test the parameters, the experiment is repeated using different sets of parameters. It might be expected that the clustering techniques should be at least able to generate one cluster which could be corresponded to Machiya, therefore tend to match with a group defined by the highest contextual scores. If Machiya is best recognized as a typology of building and buildings are defined by physical parameters, it might be expected that including more number of parameters might generate more accurate resemblance. The first tryout was made without including the building area and number of floors, data which was only processed indirectly in the contextual score, the second tryout was made including such data, in order to compare if such data would help matching a cluster with Machiya.

In order to represent the results graphically, it is made a list of all buildings numbered from 1 to 111 (Table 2), indicating in each column from left to right the building ID number (ID N°), color grade corresponding to the contextual score (CS), Hierarchical Clustering without computing area and number of floors (Without a-f, Hierar.), clustering using K-Means without computing area and number of floors (Without a-f, K means) and clustering using K-Means with computing area and number of floors (With a-f, K means). Hierarchical Clustering with computing area and number of floors is not shown in the table (Table 2) as it did not generated helpful results.

Another graphical explanation can be seen in Fig. 4- 10, where we can some example cases being classified using the categories of CS, K-Means without computing area and number of floors and clustering using K-Means with computing area and number of floors, as in Table 2.

The results were clear; it is possible to see how without computing area and number of floors (columns Without a-f in Table 2), the cluster number 5 tend to match with Machiya (buildings with higher scores corresponding to graduations 4 and 5 in the column CS of Table 2), while including area and number of floors did not help in order to identify Machiya using clustering techniques in any clustering instance, for example see Table 2 column "With A-F, K means".

Table 2 Correspondence of CS and clustering techniques.

ID No	CS	Without a–f		With a–f	ID No	CS	Without a–f		With a–f
		Hierar.	Kmeans	Kmeans			Hierar.	Kmeans	Kmeans
1	2	2	4	5	57	5	5	5	5
2	3	2	5	5	58	4	2	5	5
3	2	1	2	5	59	1	1	3	1
4	2	1	2	1	60	5	5	5	5
5	2	1	1	1	61	2	1	2	5
6	2	1	2	1	62	5	5	5	1
7	2	1	3	5	63	2	1	3	5
8	4	3	5	3	64	2	1	2	1
9	4	3	5	3	65	2	1	3	5
10	3	3	3	5	66	4	5	5	5
11	3	3	3	5	67	5	5	5	4
12	3	3	3	5	68	5	5	5	4
13	3	3	3	5	69	3	4	4	3
14	3	3	3	5	70	4	5	5	5
15	3	3	3	5	71	4	5	5	5
16	4	5	5	1	72	4	5	5	5
17	5	5	5	2	73	4	5	5	1
18	3	4	4	2	74	4	5	5	5
19	5	5	5	1	75	4	5	3	5
20	4	5	5	5	76	4	5	3	5
21	4	5	5	5	77	3	2	1	2
22	3	1	3	5	78	4	5	5	5
23	3	5	4	1	79	3	4	4	5
24	4	2	4	5	80	2	1	2	5
25	2	4	3	5	81	2	1	2	5
26	1	1	3	1	82	4	5	5	5
27	4	5	5	5	83	3	1	3	2
28	4	5	5	1	84	3	4	4	1
29	5	5	5	1	85	5	5	5	1
30	1	1	3	2	86	5	5	5	2
31	2	2	4	2	87	3	1	1	2
32	2	2	4	2	88	2	2	4	1
33	2	2	4	3	89	4	2	5	3
34	1	1	1	2	90	4	5	5	5
35	2	4	4	2	91	5	5	5	5
36	5	5	5	3	92	4	5	5	5
37	5	5	5	5	93	4	5	5	5
38	5	5	5	5	94	4	5	3	5
39	4	5	5	5	95	5	5	5	5
40	1	1	3	4	96	4	5	5	5
41	1	1	2	1	97	4	5	5	5
42	2	1	2	1	98	4	5	5	5
43	1	1	2	5	99	4	5	5	5
44	1	1	2	5	100	4	5	5	5
45	1	1	2	1	101	4	5	5	5
46	1	1	2	5	102	4	5	5	5
47	4	2	5	1	103	4	5	5	5
48	5	5	5	5	104	2	1	2	2
49	5	5	5	5	105	4	5	5	5
50	5	5	5	5	106	4	5	5	5
51	5	5	5	5	107	5	5	5	5
52	5	5	5	5	108	2	2	4	1
53	2	4	3	5	109	4	5	5	2
54	4	5	5	5	110	2	1	2	2
55	4	4	4	1	111	3	2	4	3
56	3	4	3	5					

Legend: ID N°: building ID number; CS: Contextual Score (color scale as in Fig. 4- 5); Without a-f: without including Area and number of floors; With a-f: with including Area and number of floors; Hierar.: Hierarchical Clustering; K means: K-means Clustering.



Fig. 4- 10 Comparison of CS and clustering of a sample group. Upper row shows CS, middle shows K means clustering without number of floors and area, bottom row shows K means including number of floors and area, in the last case Machiya are spread in almost any cluster.

4.6.2 Back to detail, but with hierarchy

Focusing on *Indexical Indicators* it was possible to create an efficient set of parameters to identify Machiya context, matching at certain point with clustering techniques.

But for a more detailed distinction in between contextual scores and clustering techniques, we can look at the dendrogram generated by the Hierarchical Clustering (Fig. 4- 11). The vertical straight line indicates the split into 5 clusters, where in bold lines can be distinguished cluster 5 corresponding mainly to Machiya. We can notice that such cluster would be generated only by splitting into 6 or 5 clusters, also we can see that such cluster tend to be more homogeneous when compared to the dense amount of splitting of the other clusters, which can be explained by the amount of similar Machiya and Nagaya, when compared to the other clusters composed of more heterogeneous modern buildings. This means that Machiya context is still maintained by more homogeneous buildings as those in the other clusters, at least more homogeneous regarding the selected parameters related to Machiya; it is possible certain clarity in considering Machiya as a typology defined by the selected parameters. But it is important to notice that such a situation is not a general rule, since we could include other kinds of modern Machiya types as those that are described in other research examples (チェントロ・ストリコ研究会（主査：三村浩史）, 1993) eventually increasing the complexity of the cluster corresponding to "Machiya context buildings".

As the clustering analysis becomes more detailed it also becomes more descriptive again, even if the data set is based mainly on *Indexical Indicators* instead of *Iconic Indicators*. Hence we can clearly distinguish different roles for the clustering analysis and contextual scores: while clustering techniques tend to focus precision on detail (even if we can understand the hierarchy of such description), the contextual score is a tool focusing in an abstract way with precision according to a specific context, allowing interaction by setting the "weight factors" and achieving precision through focusing on inhabitation according the criteria explained in theoretical frame of this thesis and using C. S. Peirce's semiotic theory, still such criteria can be useful for both analysis.

4.7 Preliminary Conclusions

Using the contextual score we can see that the buildings with high scores, (for example see Fig. 4- 8) that such buildings have Machiya characteristics such as lattice windows[7], use of wood and other details, all of which are not included in the selected parameters (Fig. 4- 3), but still the buildings are being identified with high scores, and as well by clustering techniques in the same cluster (Fig. 4- 11 and Table 2). This shows that such parameters where not necessary to be included. Selecting only the parameters in Fig. 4- 3 using the explained criteria (see sections "4.2 Use of Semiotic Indicators" and "4.5 Determining parameters and weight factors"), it was possible to identify Machiya context, and to see such context reflected in much more detailed façades than the detail contained in the parameter set itself.

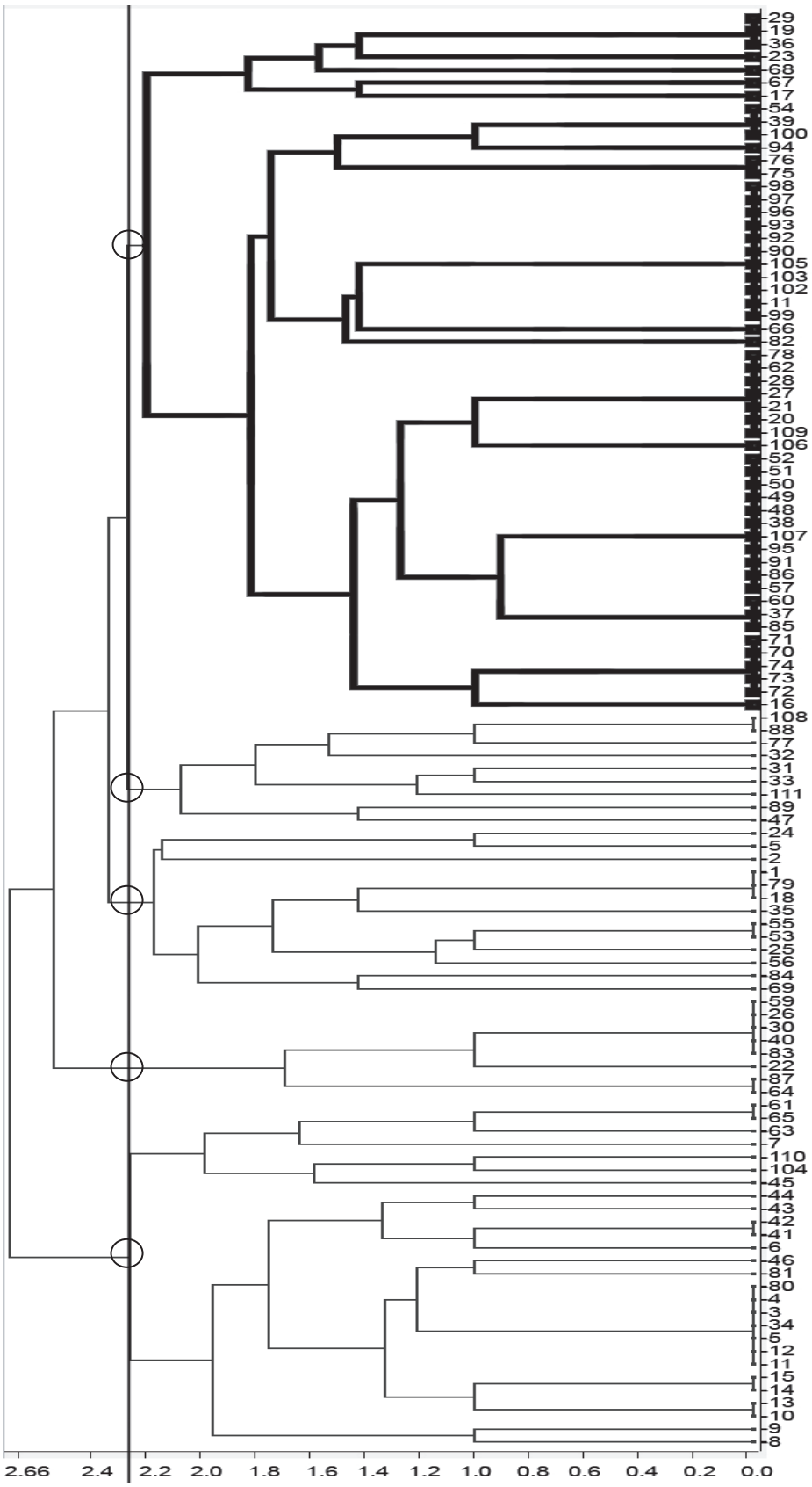


Fig. 4- 11 Dendrogram generated by Hierarchical Clustering without including number of floors and areas. The numbers on the right correspond to each building's designated identification number (building ID No). The bold cluster matches with the higher scores (in Ta ble 2 see cluster 5 in column "without a-f / Hierar."), circles indicate cutting points.

Moreover, if we look at Fig. 4- 4, we can see that the score can distinguish among very detailed imitations of Machiya façade and a building built in Machiya style from façade throughout the back, without the need to enter in each building. The result is very efficient, as less data is necessary and it is not necessary to use complicated methods to collect such data, as in this case we can easily identify them as existing or not existing semiotic indicators (signs). The only necessary task in order to achieve such simplification in data is using the already explained semiotic criteria.

Summarizing, we can find firstly that it is possible to recognize the context of Machiya by using physical parameters. The set of parameters used in this research showed to be useful, but, other parameters are not equally useful. Even when other methods of analysis were used such as clustering techniques, it is shown that some parameters do not help to define Machiya context.

Secondly, we can find a rule in order to differentiate the useful parameters and the not useful parameters by considering the semiotic approach; using C. S. Peirce's semiotic theory we can clarify the parameter selection (as explained in section "4.2 Use of Semiotic Indicators2).

Finally, when compared with other calculations such as clustering techniques (see section "4.6 Clustering techniques compared with "contextual scores""), it is still possible to find matching results as long as the parameters included in the analyses correspond mainly to *Indexical Indicators*. The selection of parameters is the most relevant issue, but can be resolved using the semiotic criteria proposed in section 4.2. The semiotic approach proved to be helpful in order to analyze the context of an architectural typology using a reduced number of parameters which can be recognized without complex methods or sophisticated instruments, but criteria of selection.

In Fig. 4- 12 we can see the same set of parameters as in Fig. 4- 3, but with the classification of parameters according to the semiotic criteria. Blue color indicates the iconic content, and corresponds to the data found to be less efficient than the indexical content marked with red.

We would add some afterthoughts as follows. It is necessary to widen the concept of Physical Context to Architectural Context, including not only physical parameters based on appearance, but architectural parameters mainly focused on inhabitation, as architecture will correspond to the organization of the systems used to inhabit space and their connections, focusing in how the inhabitant is related to space, rather than a physical description of such space.

If we consider Fig. 4- 13, we could see that the physical elements only work in combination with their inhabited meaning. The elements such has eaves alone will not make a Machiya context. In the building on the left picture we can see that the eave is only a visual element, by closing the space under the eave with a fence, the previously described as indexical indicator is converted into an iconic indicator. The picture on the right shows the eave still working as an indexical indicator. Because of this cases the parameter "Participation in Gion Matsuri or similar" becomes

more important, more precisely: inhabitation becomes more important.

General Attributes		**Possible Value**	**"Weight Factor"**
-"Building id number"		positive integer	not applicable
-"N° of Floors"		positive integer	not applicable
-"Area"		positive decimal	not applicable
Parameters	**(Semiotic Indicators)**	**P_X**	**W_X**
- Facade Continuous row systems:			
-"Has continuous eaves"	-Exists	"1" or "0"	+1
-"Connected Continuous façade system"	-Continuous eaves	"1" or "0"	+0.8
	-Other	"1" or "0"	+0.5
- Gardens: -Tsuboniwa*	-Covered	"1" or "0"	+0.4
	-Uncovered	"1" or "0"	+0.6
-Okuniwa**	-Covered	"1" or "0"	+0.5
	-Uncovered	"1" or "0"	+1
-Streets system:			
-"Main Street"	-Exists	"1" or "0"	+0
-"Secondary Street"	-Asphalt	"1" or "0"	+0
	-Stone or blocks	"1" or "0"	+0.5
-"Alley"	-Asphalt	"1" or "0"	+0.1
	-Stone or blocks	"1" or "0"	+0.5
-Façade:	-Kanban	"1" or "0"	-0.3
	-Other (not Machiya)	"1" or "0"	-0.1
	-Traditional***	disabled	not applicable
	-Traditional imitation***	disabled	not applicable
-Combined factors:			
-Has no eaves but is connected to eaves.		"1" or "0"	-1
-No Okuniwa and area over 100m^2		"1" or "0"	-0.45
-No Tsuboiwa and area over 70m^2		"1" or "0"	-0.2
-Area over 500m^2 and floors over 5.		"1" or "0"	-0.15
-Floors over 5		"1" or "0"	-1
-Participation in Gion Matsuri or similar****		"1" or "0"	+0.6

Parameters discarded before using clustering because of inefficiency or difficulty to verify

Additional parameters such as:
-colors
-shapes
-forms
-materials

* To make it compatible for diverse cases it is considered as "inner garden", not necessarily traditional type.
** To make it compatible for diverse cases it is considered as "garden space at the back of a building", not necessarily traditional type.
*** Disabled parameters are not used in the calculation; other parameters as well had been considered in previous tryouts.
**** Is not necessarily possible to recognize without additional information than physical inspection.

Fig. 4- 12 Scheme of Semiotic Indicators as parameters, classified according to semiotic criteria: red color corresponds to indexical indicators verified as efficient data, and blue color corresponds to iconic indicators, shown to be less efficient.



Fig. 4- 13 Machiya imitation buildings do not necessarily participate in Gion Matsuri. The space under the eaves in the left picture becomes meaningless, while in the picture of the right we can appreciate an inhabited meaning (but only the eave, no garden and so on…)

While the experimentation with different types of calculations is useful to check the consistency of the results in general (for example being able to identify Machiya and matching high contextual scores with clustering techniques without using "weight factors"), the use of "weight factors" can allow an architect or community to interact with the calculation in order to obtain more refined results.

Once it is possible to define the systems composing Machiya system, it is possible to link the surveyed contextual parameters to the inhabitation experiences. At this point it is possible to create diverse design approaches: it can be considered a conservative scheme using a continuity of a mixture of iconic and inhabitation experience related patterns (indexes with iconic content), as well as a less conservative scheme using only continuity of architectural systems, with inclusion of new systems and with free use of any physical and aesthetic patterns (using only indexical content), or adopting any combination of criteria allowing a greater diversity in design without losing cultural background.

However, before getting into such design approaches, we will focus more on inhabitation in the following chapters.

Notes of Chapter 4

[1] As explained in chapter 2, section 2.1.3 Sign classification.

[2] As for the term "Cho", it refers to the use given nowadays to the urban units composed of houses facing each other on the opposite sides of the street, as explained in section 1.2.2.

[3] In early stages of the contextual score, it was intended to create a numerical value representing physical resemblance of Machiya based on physical resemblance (Iconic Indicators), but such approach was inefficient due to the mixtures of different Machiya imitations and similarities in color or size, it would require too much parameters in order to differentiate buildings that resemble Machiya or in fact are Machiya.

[4] Machiya use inner gardens for natural ventilation and light source, therefore it is important for larger Machiya to count with several inner gardens, while small Machiya and Nagaya may only need one garden such as Okuniwa.

[5] Having an element known to be representative of Machiya such as the eaves, or the gardens, they will have a value of 1 and a parameter regarding to something different to Machiya as for example having floors over 5 or not having eaves but being connected to eaves will have weight factor -1. The value is limited to 1 or -1, because as standard it is considered that it should not exceed the importance of the parameter selection, which is the most important criteria.

[6] It was experimented as well with more clusters and graduations in order to match at certain point Contextual Scores and clusters.

[7] Wooden lattices are considered representative of Machiya, but not needing a parameter for lattices has its benefits: first lattices exist in many different kinds, also are applied to each window or door and not each building, therefore it is not easy to use as parameter of buildings, moreover from the point of view of inhabitation, lattices are a sign of privacy, it is to say a requirement of and not the system of space itself, not a semiotic indicator corresponding to index of inhabitation system.

5. Semantic Analysis of Machiya

5.1 Research aim

Recalling chapter 3, especially section "3.1.2 In the case of the semantic level", the traditional architecture of Machiya can be understood as composed of several activities, and the corresponding space is expressed according to semantic parameters related to each activity creating a semantic order for the activities, such as shown in Fig. 3- 8. But Machiya in contemporary context has to deal with new semantic parameters, where different values are being considered as "correct" or "incorrect" and influence of other inhabitation ideas (Fig. 2- 13). Therefore it is important to answer several questions such as:

1-Can contemporary inhabitants recognize the semantic order of Machiya?

2-Would contemporary people really like to live in Machiya?

3-How can we extend Machiya in contemporary context?

The aim of this part of the dissertation is to deal with such questions. The preliminary hypothesis suggests that to certain degree the answer of question 1 might be true, but as for question 2 the expectation might be different, therefore even if Machiya are currently popular the answer to this question is less optimistic, but it might be possible to find answers to question 3 using an approach based on inhabitation with the current semiotic framework, because using it we should be able to find a link with Machiya recognized by contemporary inhabitants, leaving open possibilities to include contemporary values. As well this approach does not depend on formalistic imitations, such as the ones that can be seen in some modern buildings in Kyoto, with "fake" Machiya styles, and on the other hand might not depend on the material expenses associated to formal imitations.

5.2 Research method

The data collection is done with a written questionnaire as explained in section "3.2.2 Culturally". The data analysis is done using a database where all 223 received answer sheets are collected sorted and processed.

The distribution of the answers according to gender is as follows: 116 male, 105 female, 2 did not specify. According to age the distribution is the following: from 0-29: 73; from 30 to 39: 49; from 40 to 49: 16; from 50 to 59: 17; from 60 to 69: 39; 70 and over: 26; and 3 did not specify age. According to nationality 180 are Japanese, 40 non Japanese and 3 did not specify. Additionally it is used data mining software KNIME in order to make graphs and clustering analysis.

The answered sheets have less than 10% of missing data for each question; however, in the case of missing data we did not include them in the analysis[1].

5.3 General findings

In this section we will explain the general findings from the questionnaire in order to show the general context and tendencies of the surveyed population.

In first place we would show the distribution of dwelling types we found. It is important to consider that the number of Machiya is relatively low when compared to studies where the researcher defines Machiya such as in 京町家まちづくり調査 (京都市, 2003), (京都市, 2011), because in this case the numbers are given by the inhabitants, and correspond therefore only to Machiya, actually being interpreted by the inhabitant as Machiya. We can see the existing distribution in Fig. 5- 1and the distribution of preferences in Fig. 5- 2.

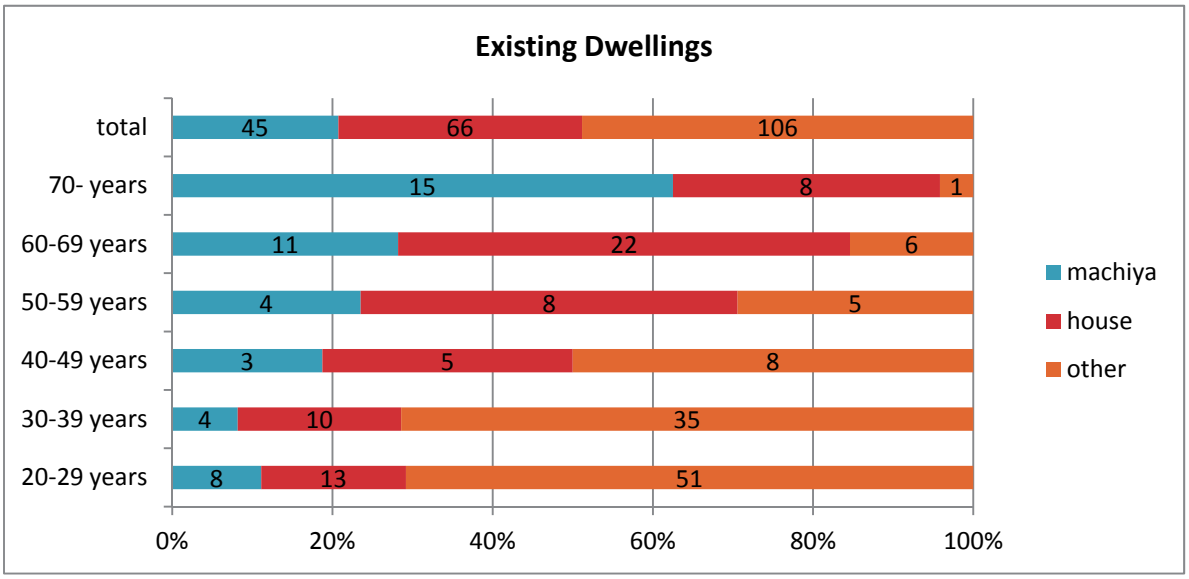


Fig. 5- 1 Existing dwelling types according to the answers for question 1 with the distribution according to age.

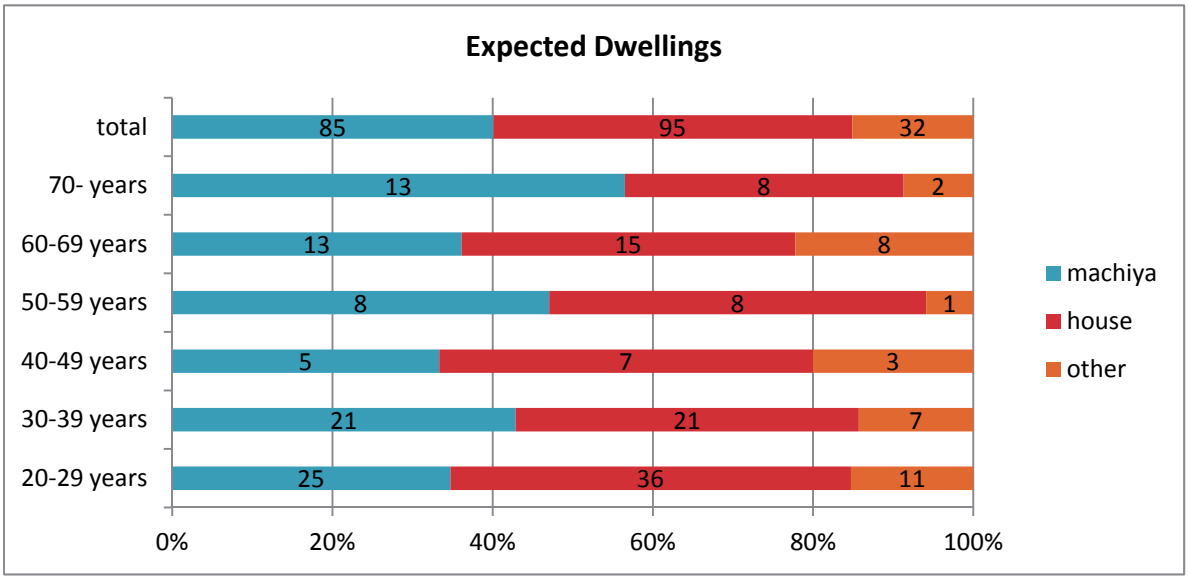


Fig. 5- 2 Expected dwelling types according to the answers for question 1 regarding inhabitant preferred dwelling type, with the distribution according to age.

As we can see the age distribution of existing buildings in Fig. 5- 1 shows that mainly older people do live in Machiya, and younger people do not much live in Machiya, while in Fig. 5- 1 we can see that preferences are more balanced among different age groups.

Nevertheless we can see that the amount of inhabitants preferring Machiya is much higher than the amount of people currently living in Machiya. But for the age group mostly living in Machiya (70 years and above) we can see that the amount of people preferring to live in Machiya is lower than the amount of people who prefer Machiya. This situation means basically that while a great amount of young people who do not live in Machiya answer that they would like to live in Machiya, the older people who do live in Machiya might prefer to live in another type of building.

The implications of the previously explained situation will affect the analysis of further results in the next sections. For instance we will just show a general overview about the values corresponding to the dwelling typologies and the expected values. In Fig. 5- 3 we can see a graph showing the perceived average values for each dwelling typology according to their inhabitants with solid bars, and with dotted lines we can see the average values according to inhabitants' preferences grouped according to their preferred dwelling type (Expected values). In such graph we can see an average difference of the existing dwellings and the values we could estimate as required to match the expectation the inhabitants have for each dwelling typology. While in Fig. 5- 4 we can compare the average values for each dwelling typology compared with the average of preferred values. However this approach shows a simplified overview of the dwelling typologies, and it is required to show more detailed data in the next section in order to understand this situation in detail, which can be compared with these preliminary results afterwards.

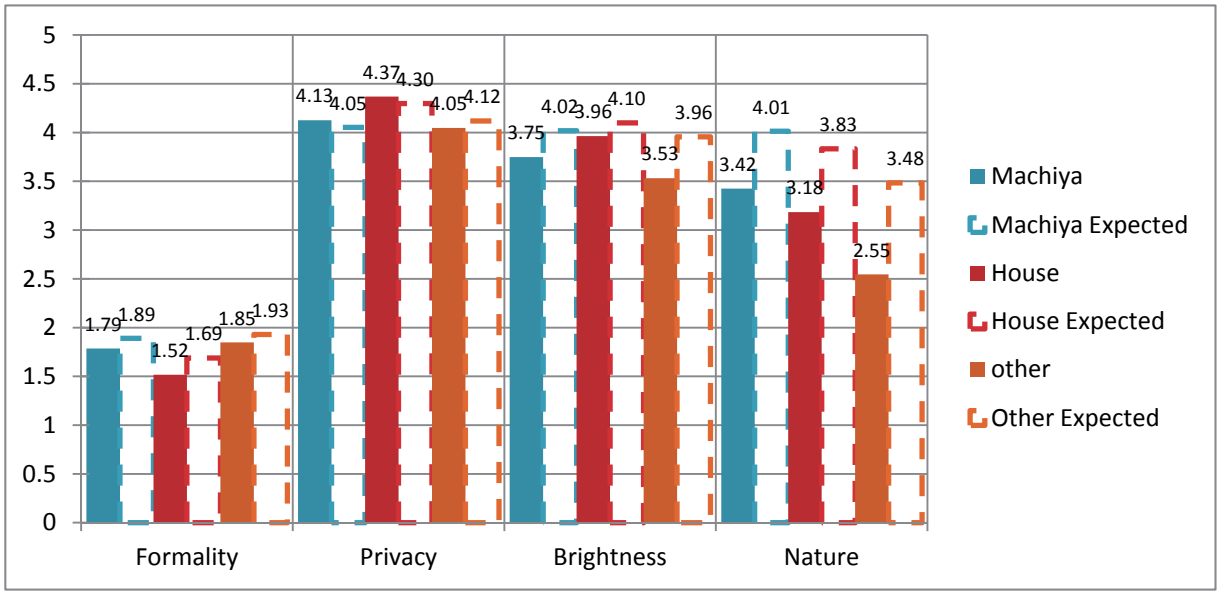


Fig. 5- 3 Comparison of dwelling typologies using the average values of answers to question 10. Additionally it is shown the data corresponding to the preferred values (question 11) according to each preferred dwelling type.

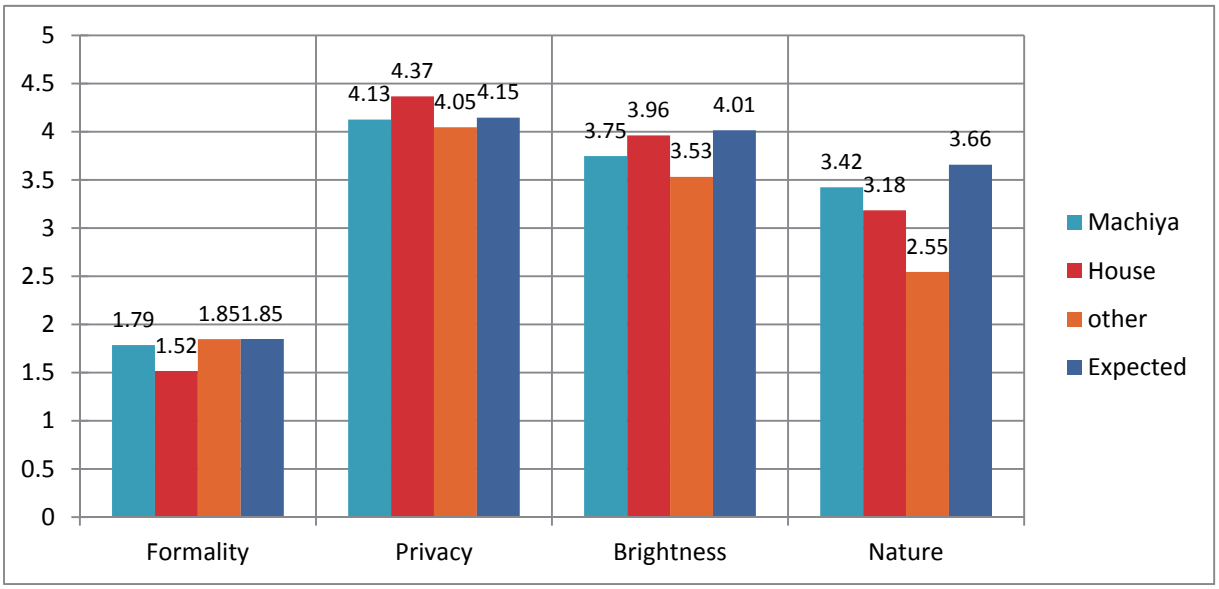


Fig. 5- 4 Comparison of dwelling typologies using average data of all answers of question 10 and the average of all preferred values.

In order to add detail to the tendencies we can consider the values corresponding to each activity. In Fig. 5- 5 and Fig. 5- 6 we can see the tendencies for each activity. In these graphs the semantic dimensions are divided in two groups for easier representation. One group consists in formality and privacy, while the other group consists in brightness and naturalness.

The aim of these graphs is to represent tendencies; therefore each activity is shown as an arrow. The origin of the arrow corresponds to the data of the existing dwelling, which means the average values gathered from answers to question 10. The point of each arrow will indicate the values corresponding to the average of answers given to question 11.

As we can see in both graphs Fig. 5- 5 and Fig. 5- 6, the length of each arrow varies. This means that the differences between the existing values and expected values vary for each activity. This variation becomes relevant as we consider in this dissertation that the works of architecture are defined as inhabitation systems and not necessarily as buildings. Therefore we can recognize that not only the semantic dimensions for each activity are particular, the average variation for each activity is as well different for each activity.

However we can still find some general tendencies.

In the case of Fig. 5- 5 we can see that the arrows tend to point towards the formal side, and keeping almost the same privacy. But within such tendency we can see that activities such as washing (shower), bathing, breakfast, lunch, leisure and work there is little variation, therefore applying the same criteria for semantic variation to all activities in a dwelling would be a mistake.

In the case of Fig. 5- 6 we can see a clearer tendency to more naturalness and slightly brighter, which seems more as a general tendency, especially seeking more nature.

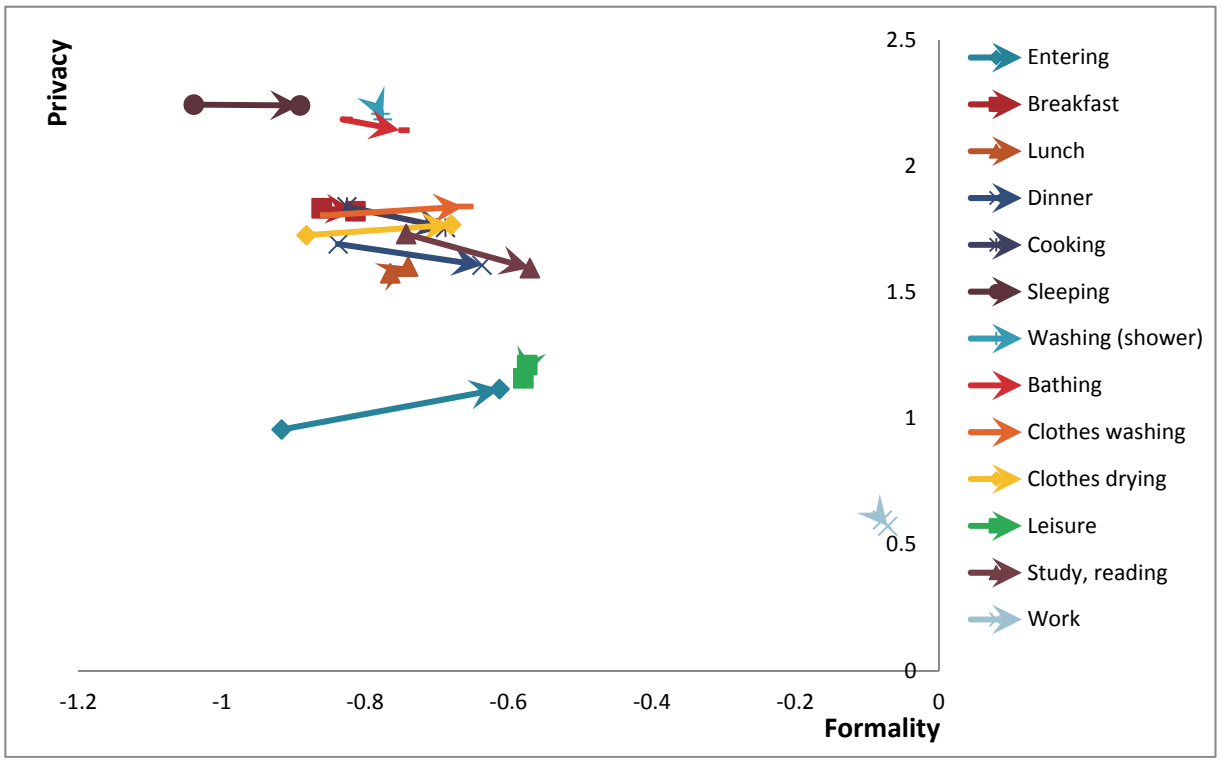


Fig. 5- 5 Formality/Privacy tendency graph. This graph shows average formality and average privacy for each activity as an arrow. The origin of each arrow corresponds to the average data of the current situation, pointing towards the average preferred value.

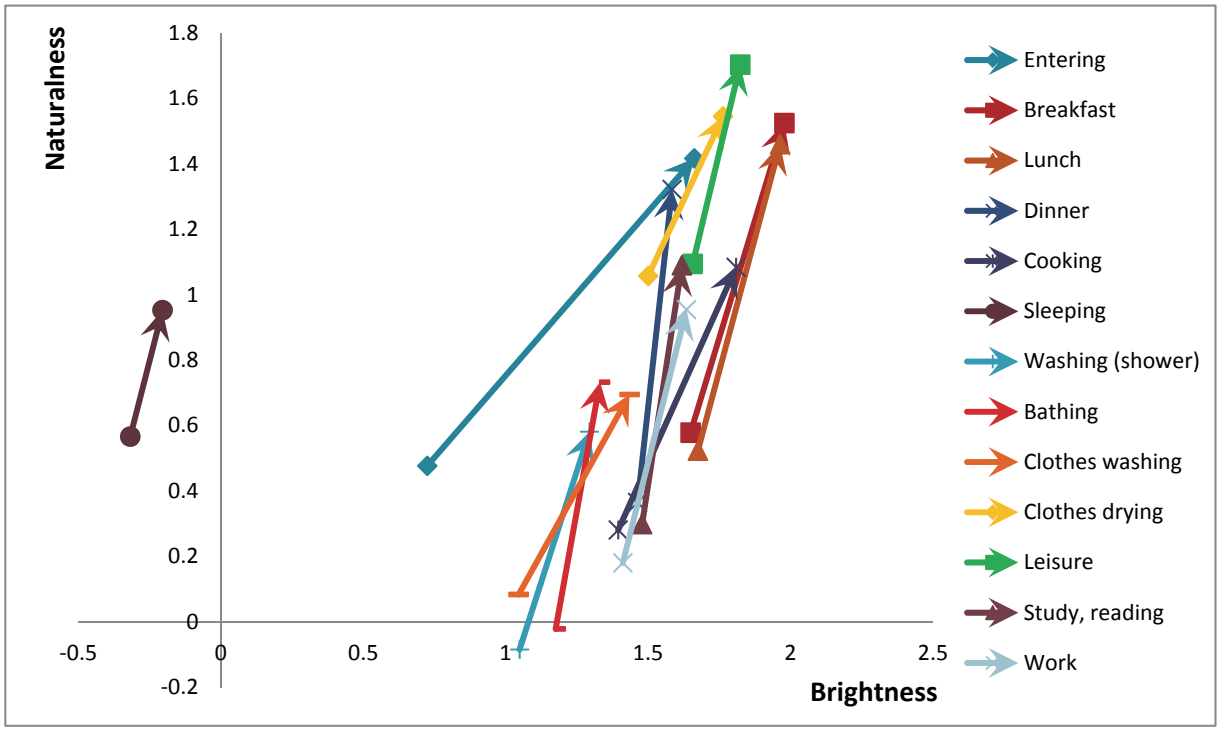


Fig. 5- 6 Brightness/Naturalness tendency graph. This graph shows average brightness and average naturalness for each activity as an arrow. The origin of each arrow corresponds to the average data of the current situation, pointing towards the average preferred value.

In order to understand such general tendency to more naturalness more in detail we should consider the following graphs and the Importance of gardens. In Fig. 5- 7 we can see a high preference of gardens; in Fig. 5- 8 we can see that as well 64% prefer more naturalness, of which 99% prefer gardens.

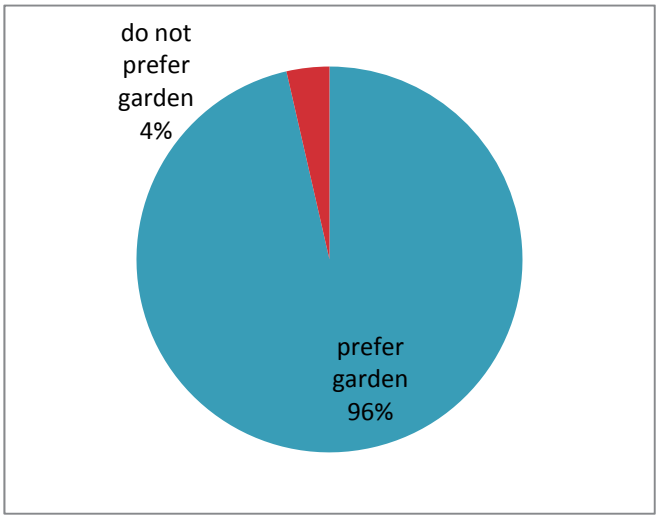


Fig. 5- 7 Garden preference of the surveyed population

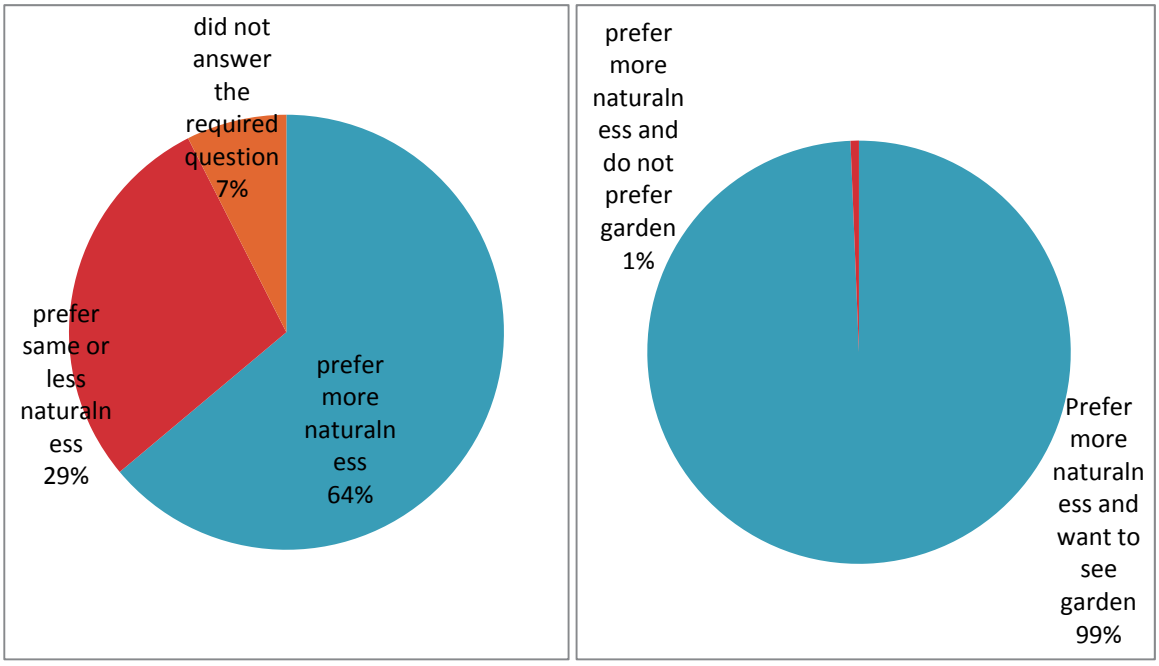


Fig. 5- 8 Left: Comparison of existing perceived naturalness and preferred naturalness using question 10 and 11. Right: Graph showing the relation of how many of those who preferred more naturalness also preferred gardens.

Most of the data in the previous graphs is in one way or another related to the cultural identity of the surveyed population; therefore we consider as well differences in preferences among Japanese and those who are not Japanese. But again in this case we find results based on the existing condition and not necessarily the expected. In the case of Fig. 5- 9 we can notice that the difference rather than marked by a higher preference for futon and tatami, the Japanese show

a higher ambivalence (bed = futon and Tatami = flooring) than non Japanese. While in Fig. 5- 10 we can see that the separated bath is much more clearly a Japanese preference, while gardens seem to be widely preferred by both, Japanese and those who are not Japanese.

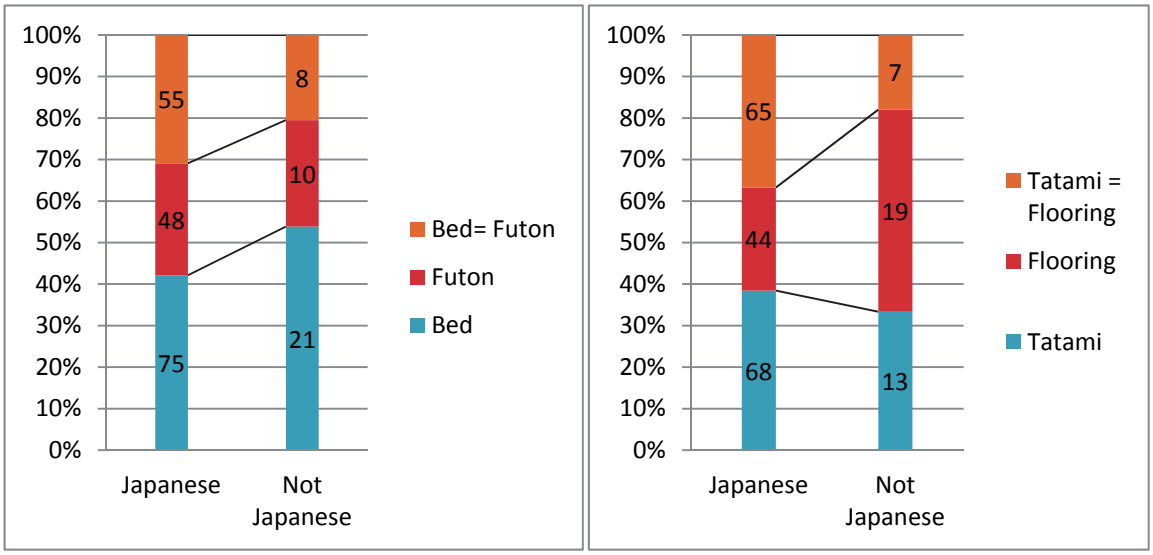


Fig. 5- 9 Left: Comparison of preference regarding futon or bed for Japanese and those who are not Japanese. Right: Comparison of preference regarding tatami or flooring for Japanese and those who are not Japanese.

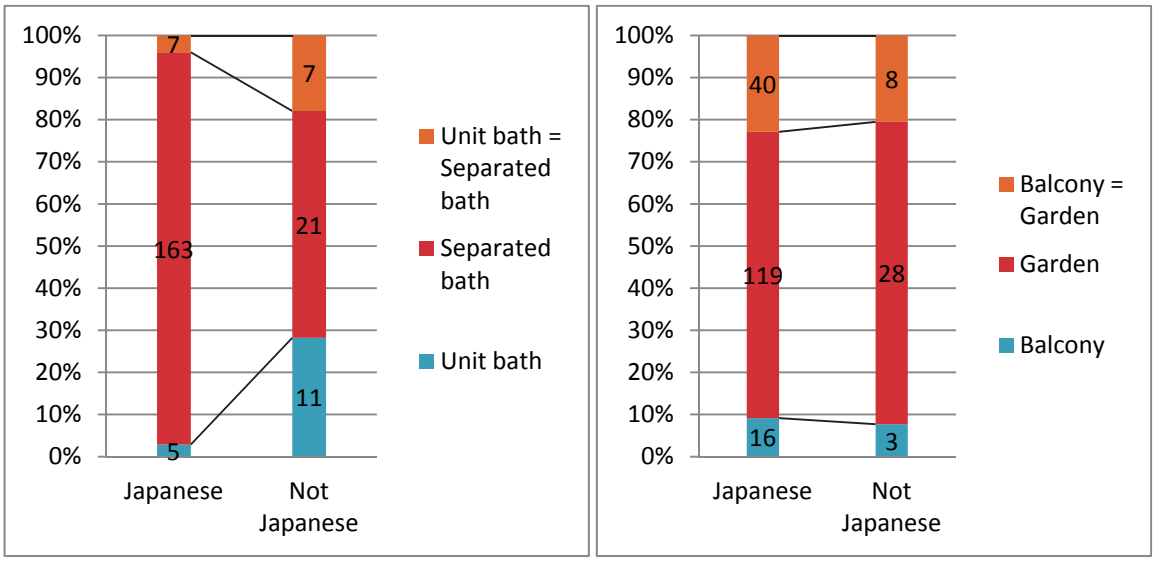


Fig. 5- 10 Left: Comparison of preference regarding unit bath or separated toilet and bath for Japanese and those who are not Japanese. Right: Comparison of preference regarding balcony and garden for Japanese and those who are not Japanese.

Finally we would consider the rating each inhabitant gave to Machiya elements, we can see in Fig. 5- 11 that the highest rating is given to the roof, followed by lattice windows, we can see that the iconic description is being considered important by the inhabitants, which contradicts the results found in the previous chapter. Nevertheless it is important to notice that "space under the

eaves" is slightly higher than "eaves", showing that at least some inhabitants do recognize the inhabitable concept being more important than the physical object. Also we can notice that elements referring to details such as "Mushiko mado" and "Inu yarai" got lower rating than the more general structures such as the previously mentioned roof and lattice windows, and as well lower than the inhabited elements such as the gardens "Tooriniwa", "Okuniwa" and "Tsuboniwa" or the "Tatami room" (zashiki), but the "shop" (mise), which is an important characteristic element of Machiya was not considered with a high rate.

In general we can notice that when we ask directly about Machiya, the conception of Machiya tend towards a classical image of Machiya, based on iconic content rather than inhabitation, and as well Machiya will figure as very likable dwelling as in Fig. 5- 2. However the since such likability might be much lower for those who really live in Machiya (see 70 years and older in Fig. 5- 1 and Fig. 5- 2), we could hypothesize that the appeal to Machiya is more a physical issue than a real desire to live in Machiya. Therefore we will use the semantic dimensions applied to inhabitation in order to investigate more in detail, as such information is more pragmatic and difficult to disguise as romantic ideal.

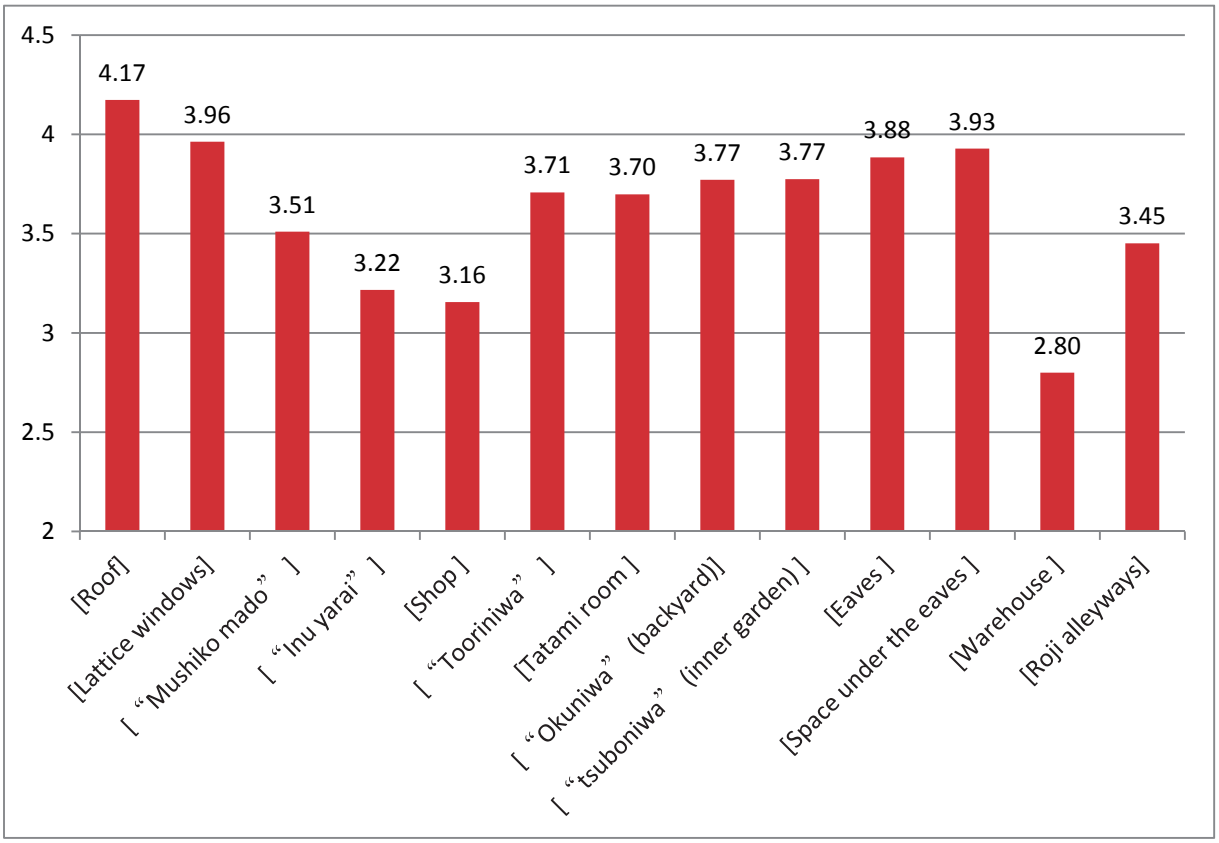


Fig. 5- 11 Average rating of Machiya elements, corresponding to question 6 of the questionnaire.

5.4 Semantic order of Machiya

Can contemporary inhabitants recognize the semantic order of Machiya?

As the interpretation of architecture can be complex, and may mix many tendencies as in Fig. 2- 13, some people might not necessarily agree if certain building is or not a Machiya, and as well we might face situation as previously described where people focus more on the image of Machiya than Machiya, it is used inhabitation data gathered from the inhabitation questionnaire grouped into the following building types used hereinafter:

1. Machiya: Machiya including Nagaya.

2. "House": houses and row houses which are not Machiya.

3. "Other (buildings)": including other building types mainly apartment buildings and collective dwellings.

The results are then plotted in graphs representing semantic space where the four semantic dimensions are represented in the following way: Axis X (horizontal) indicates average formality, axis Y (vertical) indicates average privacy, and the shade of the bubbles indicates average brightness (black = dark, yellow = bright) and the size of the bubbles indicates average naturalness (bigger = more naturalness) (Fig. 5- 12, Fig. 5- 13 and Fig. 5- 14). The data scale is from 1 to 5 as in the questionnaire. Semantic graph is for referential comparison; more accurate depiction of values can be seen in other graphs (such as Fig. 5- 17, Fig. 5- 18 or Fig. 5- 19).

The data in semantic graphs is shown using x axis, y axis, bubble size and color shades for visually comparing data at a glance, for more accurate representations of values, other representations are used.

As the data scale is from 1 to 5 as in the questionnaire, which avoids distortion from scattered data when averages are used. We experimented with average values and plotting individual data, as we use discreet data, averages showed to effectively represent the general tendency for each activity.

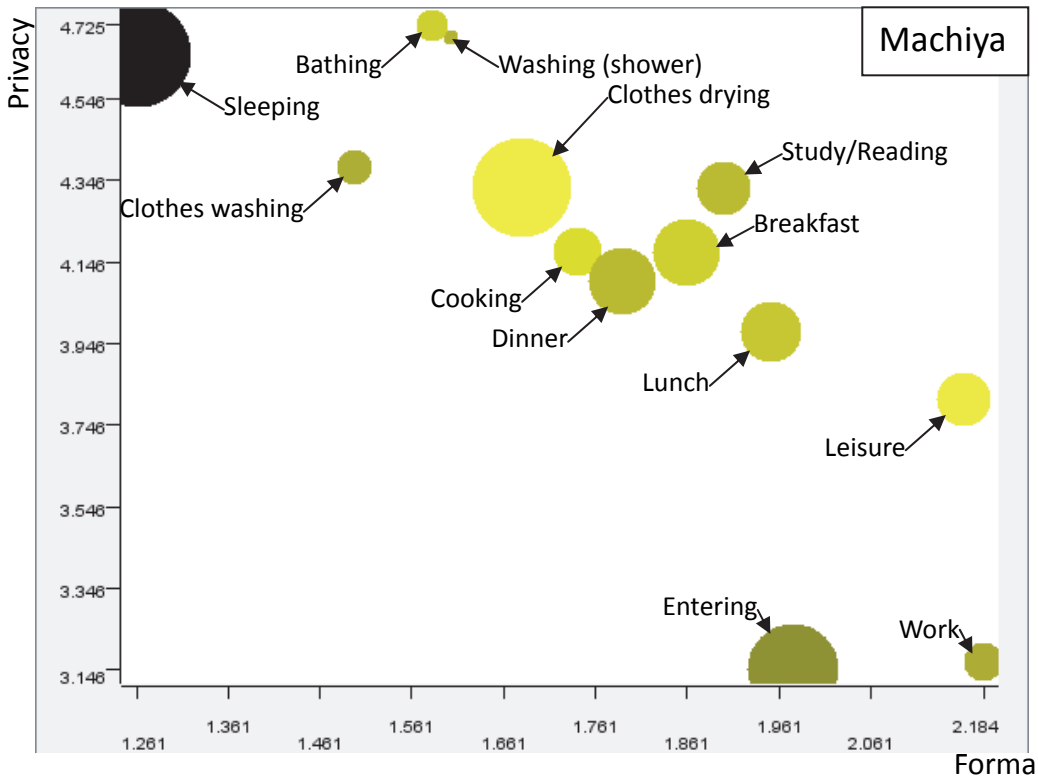


Fig. 5- 12 Semantic description of Machiya. Axis X (horizontal) indicates average formality, axis Y (vertical) indicates average privacy, the shade of the bubbles average brightness (dark = dark, yellow = bright) and the size of the bubbles indicates average naturalness (bigger = more natural).

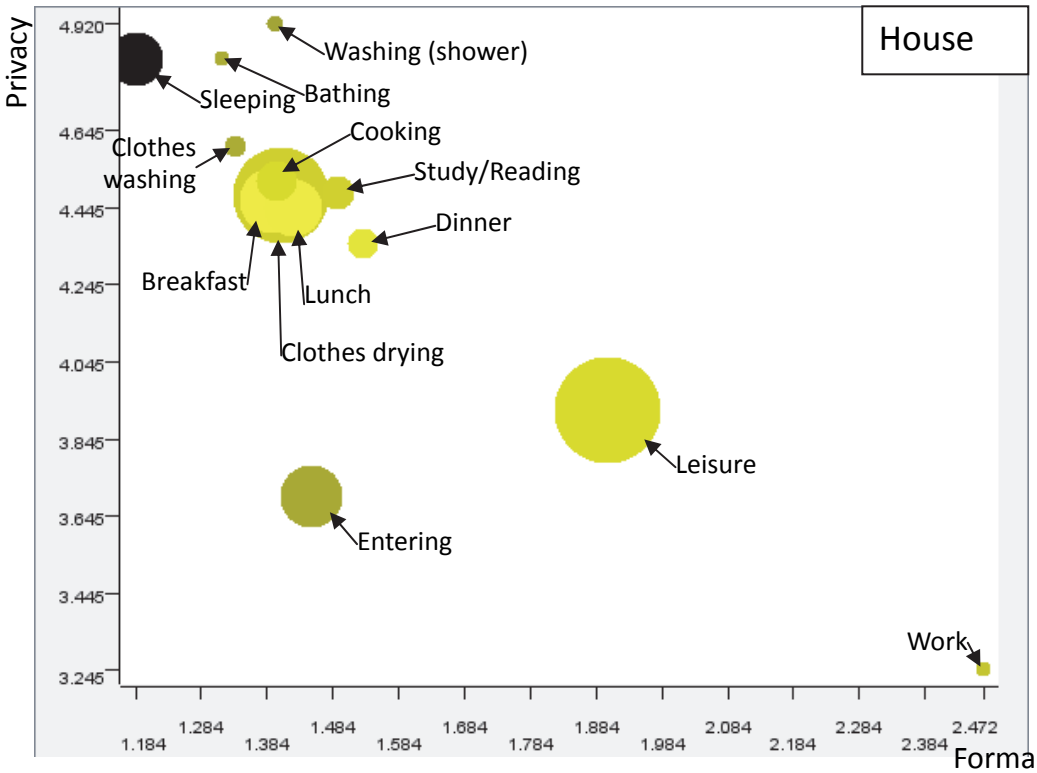


Fig. 5- 13 Semantic description of House. Axis X (horizontal) indicates average formality, axis Y (vertical) indicates average privacy, the shade of the bubbles average brightness (black = dark, yellow = bright) and the size of the bubbles indicates average naturalness (bigger = more natural).

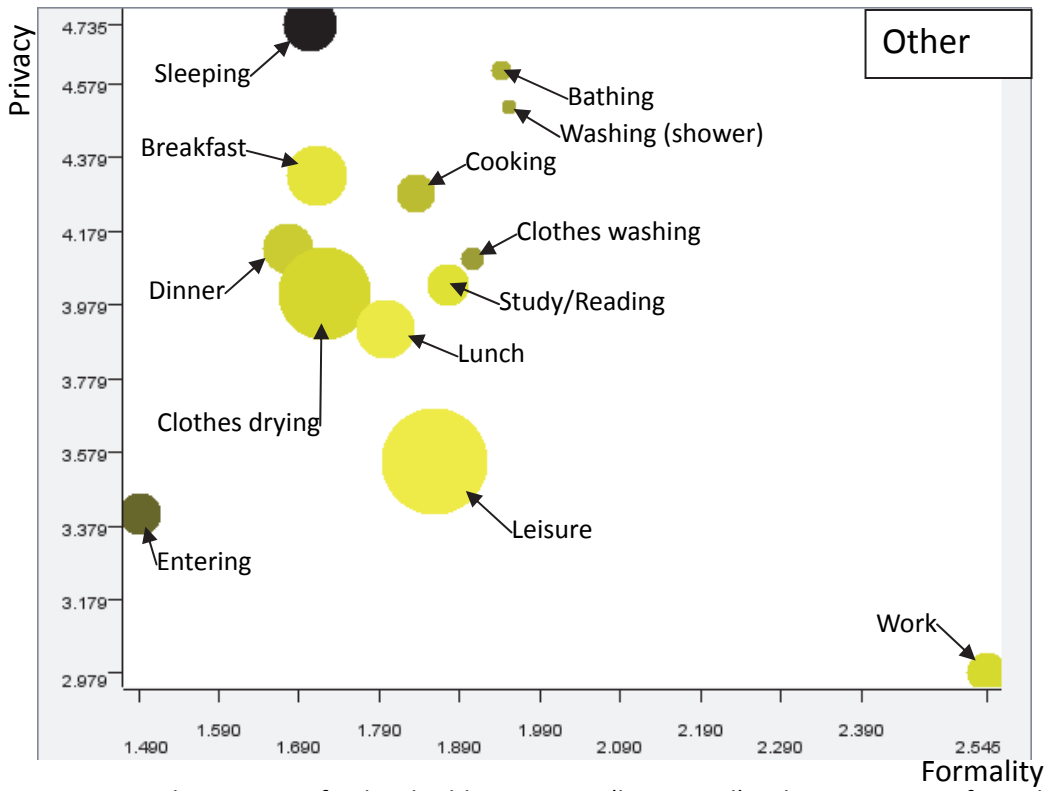


Fig. 5- 14 Semantic description of Other buildings. Axis X (horizontal) indicates average formality, axis Y (vertical) indicates average privacy, the shade of the bubbles average brightness (black = dark, yellow = bright) and the size of the bubbles indicates average naturalness (bigger = m more natural).

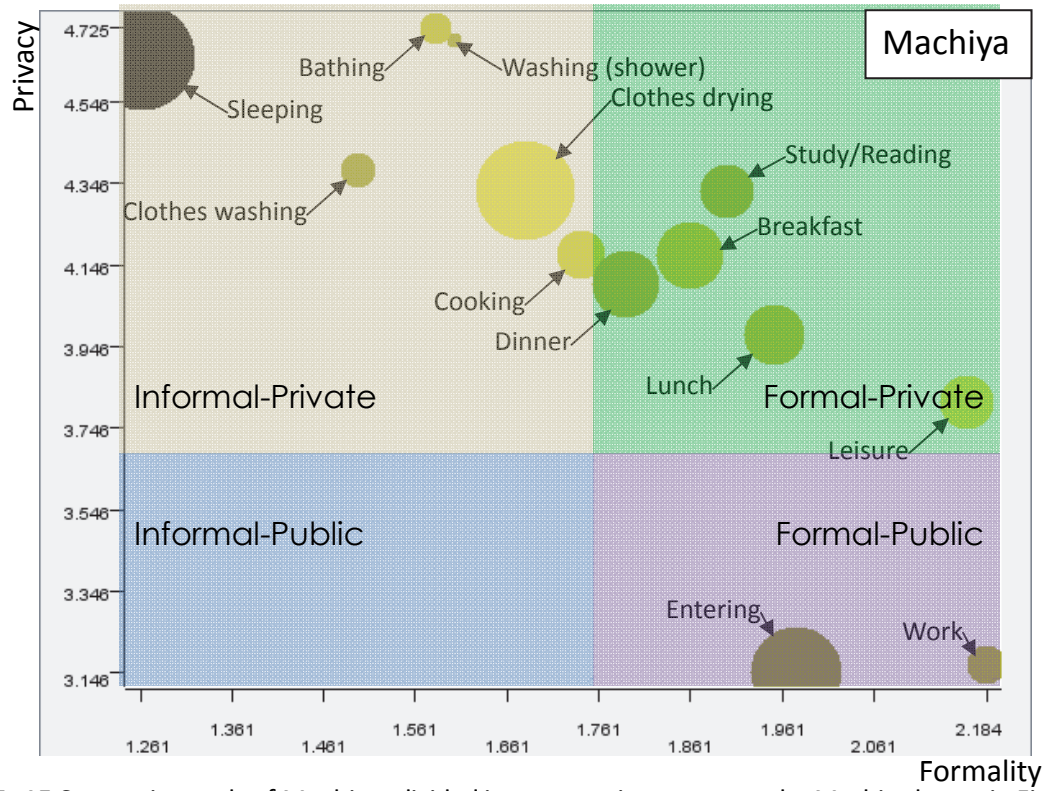


Fig. 5- 15 Semantic graph of Machiya, divided into semantic quarters as the Machiya layout in Fig. 3- 8. Axis X (horizontal) indicates average formality, axis Y (vertical) indicates average privacy, the shade of the bubbles indicates average brightness (black = dark, yellow = bright) and the size of the bubbles indicates average naturalness (bigger = more natural).

We can then divide the graphs of Fig. 5- 12 into 4 quarters, corresponding to "formal-private", "informal-private", "formal-public" and "informal-public" (Fig. 5- 15).

We can notice in Fig. 5- 15 that the informal-public quarter is empty, but the closest activities in the adjacent quarters are cooking and entering. Also we can notice that entering is the most informal of the public activities (on the left of work); bathing and shower are in the back towards the informal-private; also within the same informal-private quarter we can find sleeping, clothes washing, clothes drying and cooking; in the formal-private quarter we can find study/reading, dinner, lunch, breakfast and leisure towards the public side; and in the public-formal quarter we find work and entering. This is consistent with a Machiya layout, as we can see if we compare it with Fig. 3- 8 (sleeping would be in the second floor and entering is next to the informal public quarter). Note that the tooriniwa is one of the most relevant elements in Machiya layout, since Machiya is the only typology where cooking is located clearly on the left side of eating activities (breakfast, lunch and dinner) in the semantic graphs (Fig. 5- 12), while in "Houses" (Fig. 5- 13) breakfast has almost the same formality as cooking, and "Other buildings" (Fig. 5- 14) have eating activities on the left side of cooking.

Another important point we see in Machiya is that work is much closer to the rest of the activities in the semantic graphs (Fig. 5- 12, Fig. 5- 13 and Fig. 5- 14), and is closest to entering.

In the case of Machiya, the central point will correspond symbolically to the daikokubashira, in this case it is symbolically marked a division into the four semantic quarters in Fig. 5- 15 as in Fig. 3- 8, in order to make a comparison of both and in such way we could approximately map a Machiya layout over the graph in Fig. 5- 15 using such symbolic division as reference.

But as this correspondence (between Fig. 3- 8 and Fig. 5- 15) appeared by plotting the data from those who answered the questionnaire we can conclude that inhabitants could recognize the semantic order of Machiya and differentiate it from the other typologies, even if the inhabitants who answered were not necessarily aware of doing so.

This unawareness is in fact important, as this way we can avoid that the inhabitant influences his answers by the physical appeal of the image of Machiya instead of inhabitation. Each inhabitant is requested to describe his/her inhabitation and not trying to explain if his/her dwelling is more or less Machiya. In the previous section we could recognize certain incongruence leading us to hypothesize *"that the appeal to Machiya is more a physical issue than a real desire to live in Machiya"*, therefore now we used the inhabitation data in order to be sure that the answers correspond to Machiya as inhabitation system, and not some iconic image of Machiya. As well we consider that such unawareness of how we will use the inhabitation data to define Machiya makes it more likely to get honest answers.

In the questionnaire, question 1, where each inhabitant chooses the dwelling type he/she lives in is not linked in the questionnaire to question 10, nor is it stated anywhere that the answer

of question 10 is related in any way to the answer given in question 1. Therefore it is very unlikely that any inhabitant might get influenced by the iconic idea of Machiya or any other dwelling type while answering question 10, nor question 11 in the case of the next section.

5.5 Machiya compared with contemporary expectations

Would contemporary people really like to live in Machiya?

This section will be crucial in recognizing the impact of the inhabitation based analysis on interpreting preferences. Previously we already saw that many inhabitants might say that they prefer Machiya (Fig. 5- 2), but also we discovered certain inconsistencies, suspecting that such appeal might be based just on the image of Machiya or a more iconic appreciation.

In this section we will use a scope similar as in Fig. 5- 3, considering the semantic preferences (question 11) of those who answered that they prefer Machiya, but this time we will make an analysis in detail based on the list of activities as in the previous section. This way we can make the semantic graph of their expectations (Fig. 5- 16), with data of what we can call "**Machiya as expected"**.

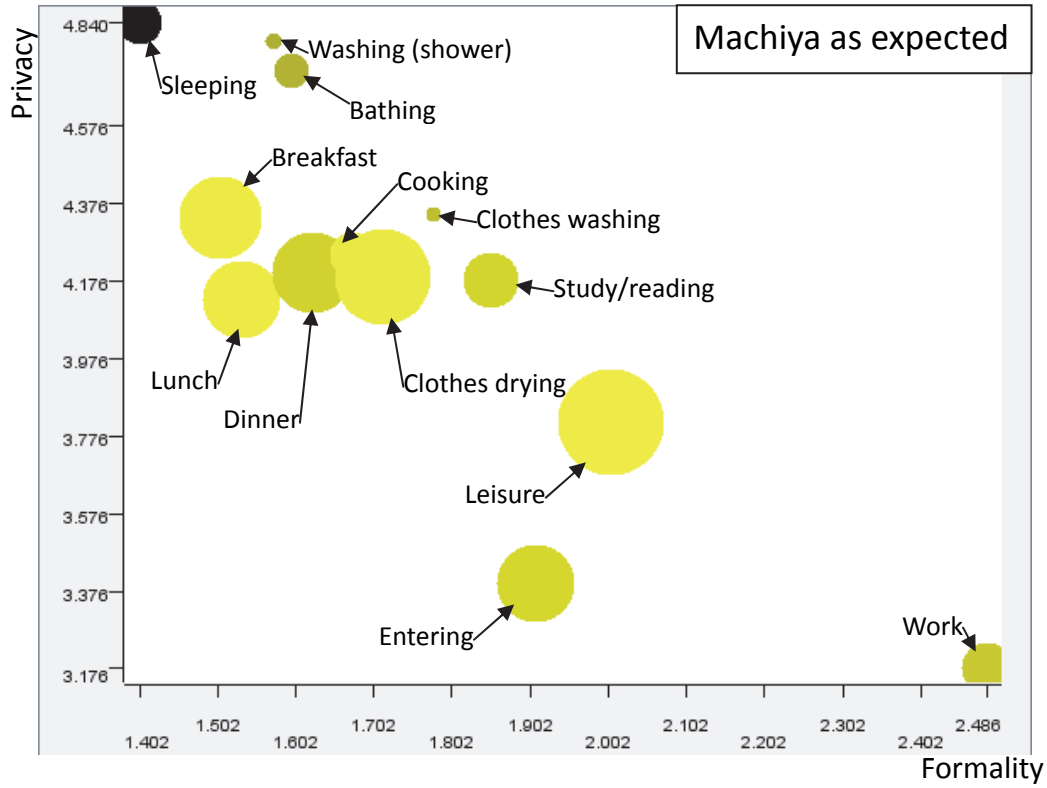


Fig. 5- 16 Semantic graph of Machiya based on preferences of people who preferred Machiya. Axis X (horizontal) indicates average formality, axis Y (vertical) indicates average privacy, the shade of the bubbles indicates average brightness (black = dark, yellow = bright) and the size of the bubbles indicates average naturalness (bigger = more natural).

We notice several differences between the real Machiya (Fig. 5- 12) and the "Machiya as expected" (Fig. 5- 16). Looking at the results from people who answered that they want to live in Machiya (Fig. 5- 16), it is apparent that they are not aware of the semantic order of Machiya as explained previously or simply they do not really want to live in Machiya.

We see that the formality of the Machiya as expected is more similar to "Houses" (Fig. 5- 13) and "Other buildings" (Fig. 5- 14) than Machiya (Fig. 5- 12), as the eating activities (breakfast, lunch, dinner) are on the left of the washing, and cooking activities (which in Machiya (Fig. 5- 12) are on the left of eating activities, in the tooriniwa). On the other hand the expectation for "naturalness" is relatively high and when compared to other dwelling types Machiya indeed tend to be perceived as more "natural".

To explain better such incongruence we consider the formality graph (Fig. 5- 17). We can notice that each dwelling type has certain influence in the expectation of the inhabitants of each dwelling type. This means that for example in the case of bathing in Fig. 5- 17, inhabitants of "Houses" perceive a low formality for such activity, and keep the expected formality as well low, while inhabitants in Machiya perceive bathing as more formal and as well expect a higher level of formality for bathing, but neither inhabitants of "Houses" nor Machiya inhabitants consider bathing as formal as inhabitants of "Other buildings", which as well expect that the formality for bathing will be among the most formal activities. This means that in part the great difference in formality expected by many of the inhabitants who chose Machiya as their preference and the formality perceived by inhabitants really living in Machiya is because many of those who choose Machiya are currently living in other dwelling types and are unaware on how much their current dwelling is affecting their choice of semantic dimensions.

We can see as well reflected this incongruence of inhabitants preferring Machiya and having semantic preferences different from Machiya as we include data of age. Older inhabitants live more in natural Machiya and also consistently expect more naturalness (Fig. 5- 18), while younger people mainly living in less natural apartment buildings, expect less naturalness, especially for washing (shower), bathing and clothes washing, which are activities radically modernized in modern buildings if compared to Machiya.

The data explained in the previous two paragraphs indicates that the current context of the people answering the questionnaire has a strong influence, as it is a semiotic stream (Fig. 2- 12 and Fig. 2- 13) in which a certain design (building) is situated, affected by a past experience and as well can affect future expectations as described in chapter 2.

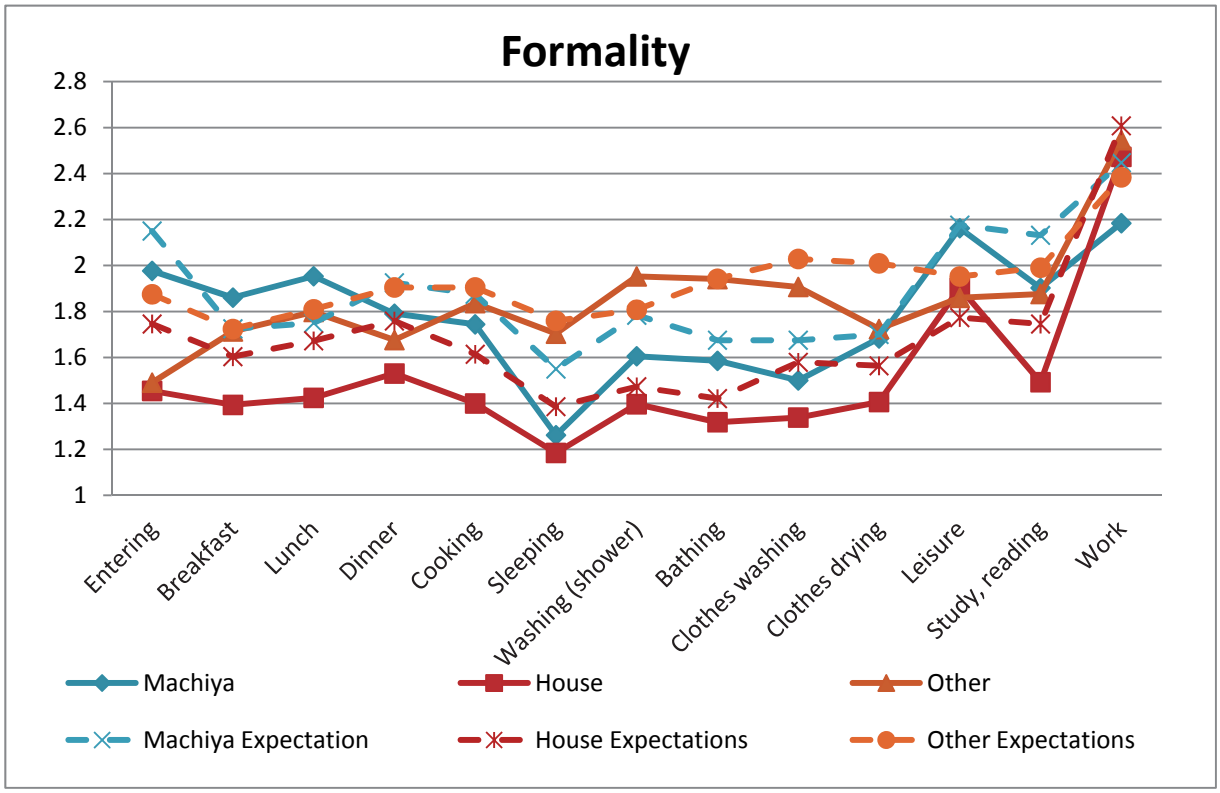


Fig. 5- 17 Graph showing the perceived formality according to each dwelling type and the expected formality according to the inhabitants of such dwelling types.

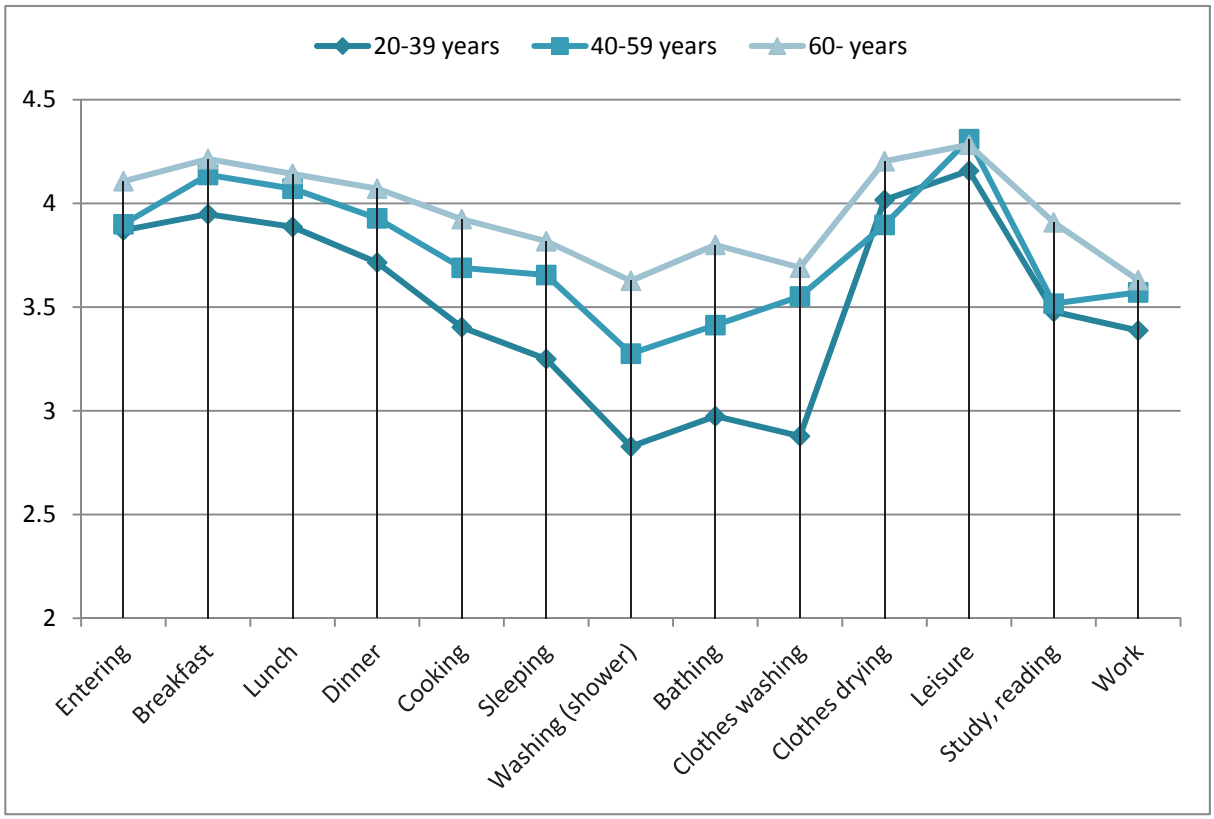


Fig. 5- 18 Graph showing preferred "naturalness" for each activity according to age.

If we include the data corresponding to the evaluation each inhabitant did about the suitability of their living space for each activity, (Fig. 5- 19) we can notice that Machiya still tend to be considered quite suitable, but less when compared to "Houses" in some points. Indicating that even if expectations of inhabitants choosing Machiya are different from real Machiya, their suitability tend to be good, and therefore Machiya might be successful in contemporary context but with some changes.

Finally answering the question if contemporary people would like to live in Machiya, we could say that even considering that an important percentage of inhabitants choose Machiya as their preference, the current context of the people who choose is more relevant, and they may in fact prefer something different as what a real Machiya is being perceived. Therefore those who answered Machiya might only successfully live in Machiya if they are willing to adapt to something different than expected or the Machiya is modified according to their expectations as in Fig. 5- 16.

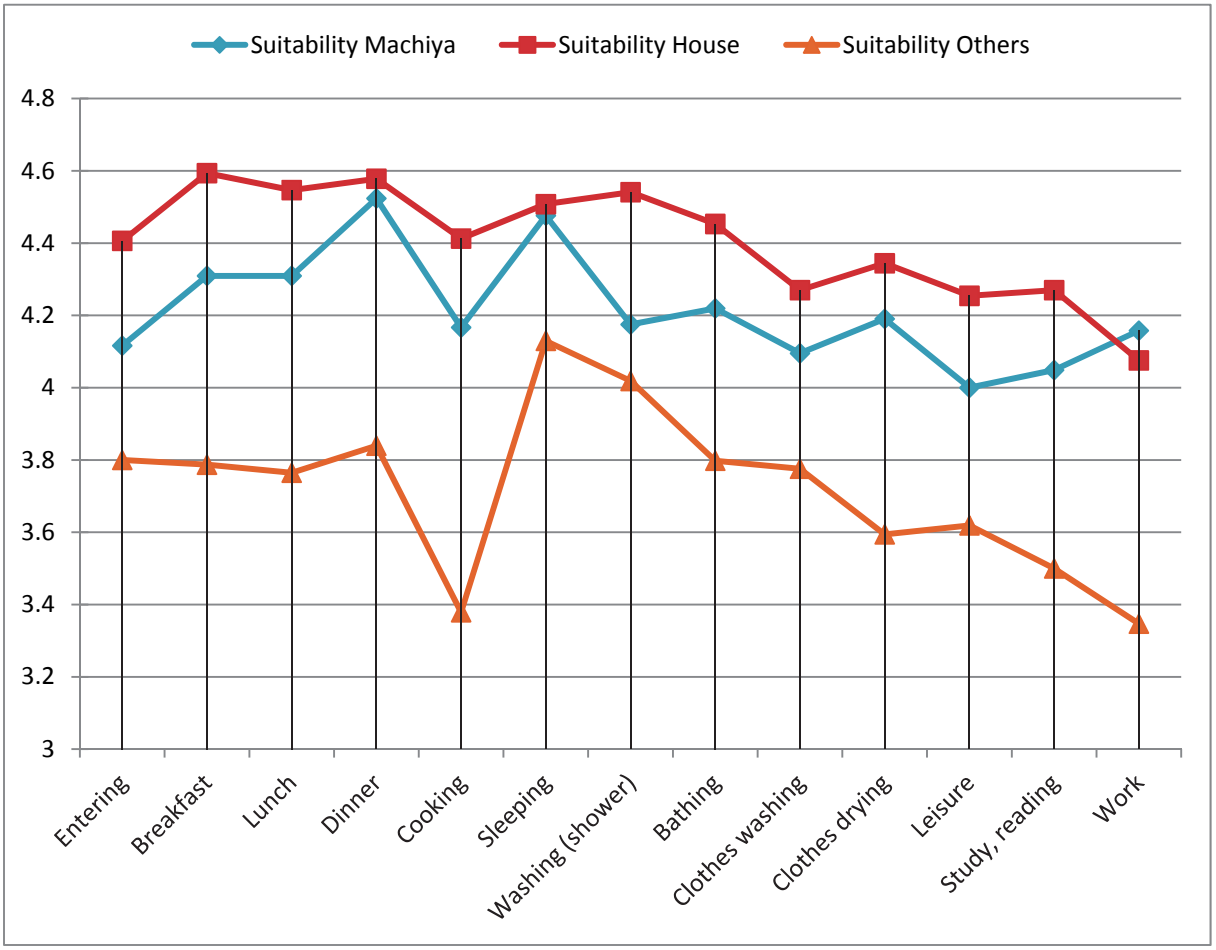


Fig. 5- 19 Graph showing suitability for each activity according to building type.

5.6 Machiya in contemporary context

How to extend Machiya in contemporary context?

Considering the expectation of inhabitants, the first point we would mention regarding the high levels of naturalness are the gardens. The 96% of inhabitants answer that they prefer a garden or view to a garden from their dwelling (Fig. 5- 7), also from the people who answered question 5 about preference among balconies and gardens (Fig. 5- 10), we can conclude that garden are important to consider. As for the views (questions 12 and 13), in Fig. 5- 20 we see that the existing views are dominated by "other view than garden", while the preferences are dominated by gardens. This shows a great opportunity for designing houses and as well apartment buildings or others with more gardens instead of balconies.

In the case of Machiya the gardens are particularly important under these circumstances, and as well can be reflected in the high level of naturalness (as can be told from data of question 10 of the questionnaire, especially for breakfast, lunch, dinner, study/reading or sleeping when compared to other dwelling types (wider bubbles in Machiya (Fig. 5- 12) than other types (Fig. 5- 13 and Fig. 5- 14)). Gardens and naturalness are a big opportunity for Machiya, even more considering nowadays environmental concerns. Moreover only 1% of those who preferred more naturalness than they had in their existing dwelling did not prefer a garden or garden view.

A more complicated issue happens with the layout of Machiya. Even if we can notice that there is a correspondence of the semantic space recognized by inhabitants of existing Machiya and the layout of traditional Machiya (Fig. 5- 15 and Fig. 3- 8), we can also notice that the structure of an informal tooriniwa (towards the left of the semantic graph in Fig. 5- 15) where activities such as cooking, washing, bathing and clothes washing are located is the opposite of the expected Machiya (Fig. 5- 16), and as well opposite as in other typologies (Fig. 5- 13 and Fig. 5- 14). Thus we can find an expected and a perceived pattern and we can focus on both in order to develop new designs.

In order to handle the internal structure, we can assume that Machiya should adapt to the expectations of those who chose Machiya as their preference, or use the data of existing Machiya in order to make the traditional scheme (as in Fig. 3- 8) evolve with newer methods. As for example we will apply cluster analysis on the data of Machiya (Fig. 5- 12 and Fig. 5- 15) and the data of "Machiya as expected" (Fig. 5- 16). For this purpose it is used bottom-up hierarchical clustering (complete linkage)[2], in KNIME software. The cluster analysis considered all four semantic dimensions, Manhattan distance function[3] and complete linkage. Results are in Fig. 5- 21 and Fig. 5- 22.

In the case of using hierarchical cluster analysis we can recognize different agglomerations of activities which we will call semantic units. We can differentiate the agglomeration for each dwelling type, and consider such hierarchy for new design.

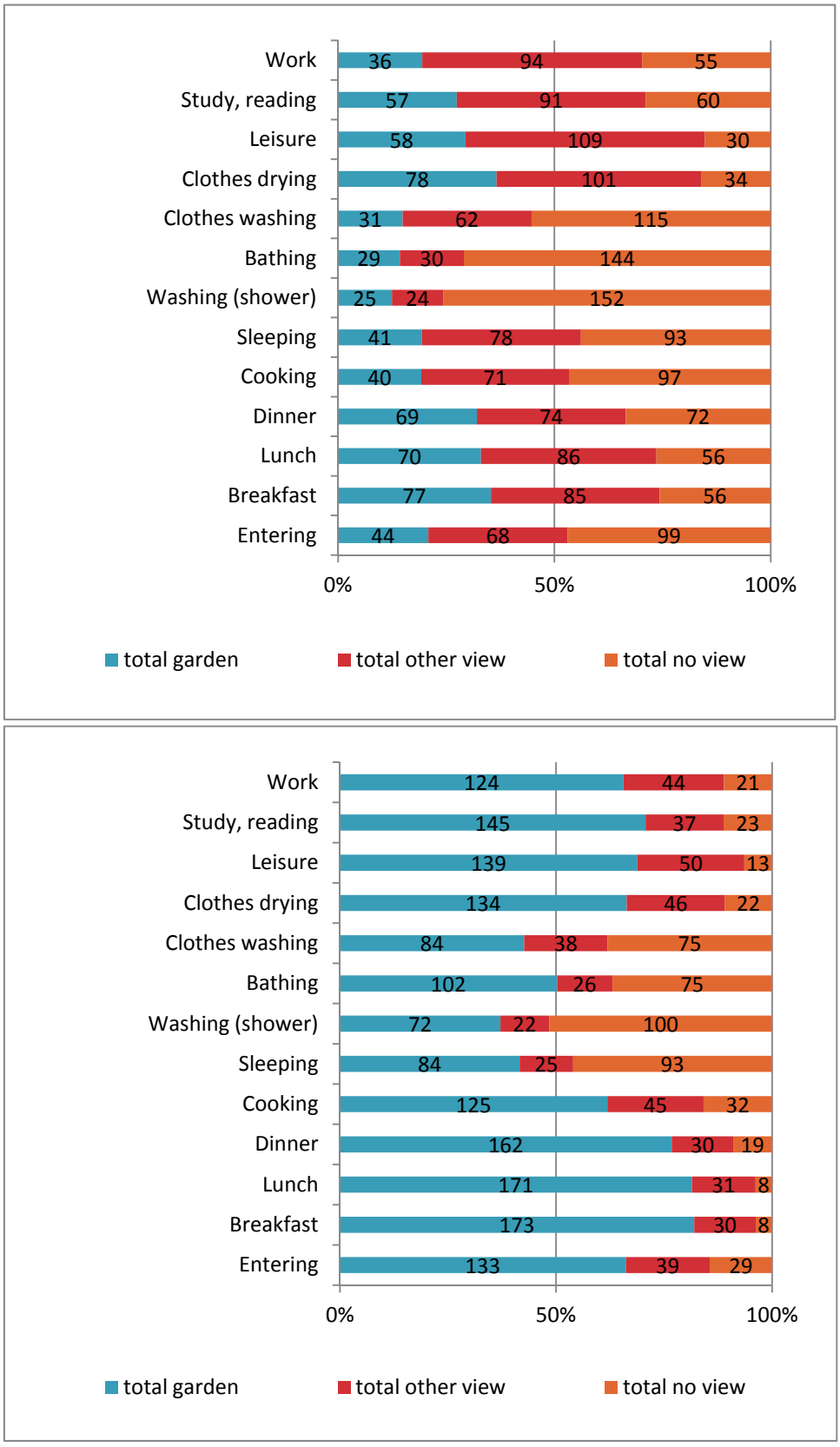


Fig. 5- 20 Upper graph: Existing views for each activity. Lower graph: Preferred views for each activity.

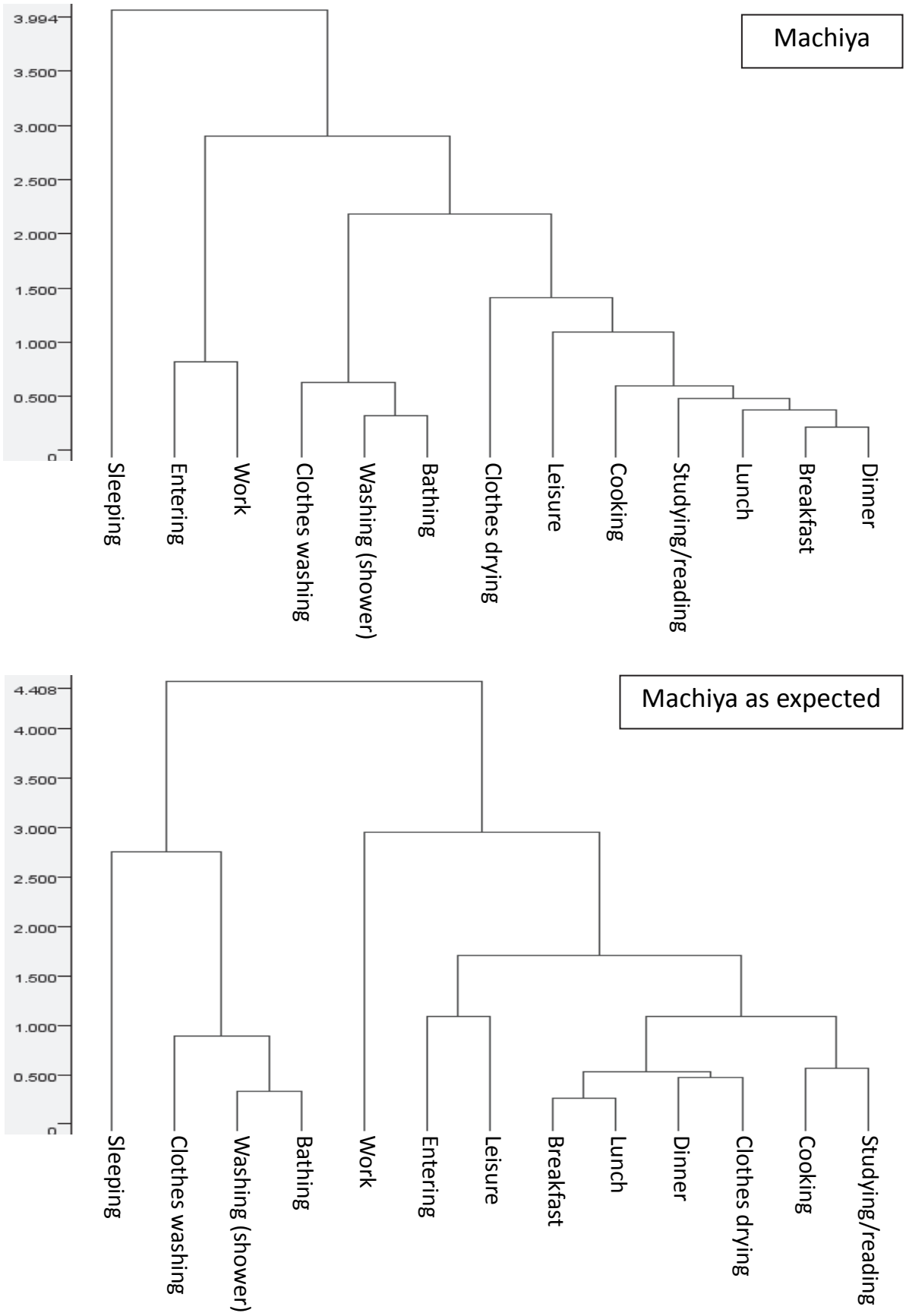


Fig. 5- 21 Dendrograms, corresponding to cluster analysis applied to the semantic dimensions data of building types “Machiya” and “Machiya as expected”.

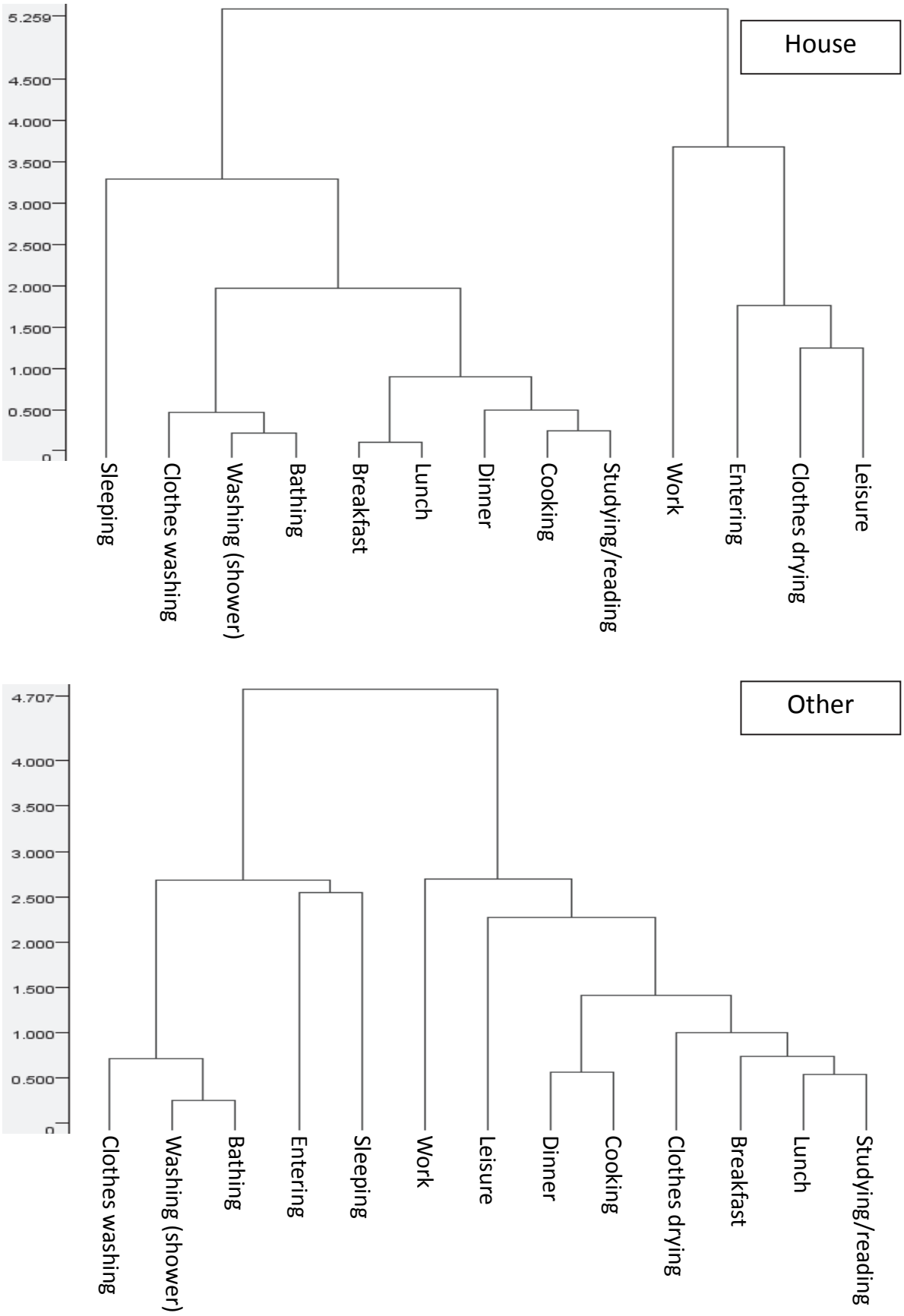


Fig. 5- 22 Dendrograms, corresponding to cluster analysis applied to the semantic dimensions data of building types “House” and “Other”.

If we compare the "Machiya as expected" and "Machiya" using this analysis, we can find new patterns as well as the following similarities and differences (Fig. 5- 21 and Fig. 5- 22):

We notice for example about the activities entering and work that in "Machiya" are grouped in one cluster, while in "Machiya as expected" are in different clusters.

As another example we can see that in the case of "Machiya as expected" the sleeping activity is next to the bathing, washing (shower) and clothes washing cluster, corresponding to a functional unit; while in "Machiya" sleeping is the most distant activity in the dendrogram. Such functional cluster seems to be similar to the cluster in other type of buildings (lower dendrogram in Fig. 5- 22), where we can see clothes washing, washing (shower), bathing, entering and sleeping in one cluster. We should remember that great part of the inhabitants who answered that they would like to live in "Machiya" (and therefore contributing with data for elaborating the "Machiya as expected" graph Fig. 5- 16) are currently young people living in buildings corresponding to the "Other" typology, therefore we could expect that their expectations might show certain influence of their current dwelling typology.

On the other hand we see some similarities between "Machiya" and "Machiya as expected" as both have a similar cluster composed of dinner, breakfast, lunch, cooking, study/reading, clothes drying and leisure (in the case of "Machiya"). But in the case of "Machiya" in this cluster, activities such as cooking and clothes drying would be the informal components of such cluster (Fig. 5- 15), while in the case of "Machiya as expected" cooking and clothes drying would be a formal component of such cluster (Fig. 5- 16). If similar clusters appear but with a difference in semantic definition, we can recognize a semantic shift of such activities, which means that the space(s) for such activities is changing its meaning.

According to these findings, if we would try to transform an existing Machiya into the expected type we would need to re-structure part of the central area of Machiya, mainly affecting the semantic relation of the tooriniwa and the eating room (daidoko). Also the highest level of naturalness, would be more towards the public side than in Machiya ("Machiya" has bigger bubbles in the upper part of graph in Fig. 5- 12, while "Machiya as expected has bigger bubbles in the lower part of Fig. 5- 16), indicating also an eventual change in the relation towards the garden. We can recognize that such changes are related to the influence of modern buildings, but in a similar way we could also try to transform the newer buildings into more similar to Machiya.

Using semantic dimensions we can approach the design problem of new types of Machiya very freely. We can focus on Machiya according to new expectations or focus on how actual Machiya are being perceived; in fact, we could eventually design new types of "Other buildings" based on the gathered data by integrating new garden systems instead of conventional balconies and changing the internal semantic order of such buildings. On the other hand, we could transform existing Machiya and organize the internal space as described before.

Apart from cluster analysis we can use many more methods to find new spatial organization. As for the number of semantic units, we can consider fewer semantic units (less clusters) for tighter spaces or more semantic units (more clusters) for larger dwellings. Also we can complement the process with other technologies and even incorporate different design methods into this framework.

As for the exterior of Machiya and the relation with the streetscapes, we have done research focused on such issue in the previous chapter (Jander, June 2012), also verifying the importance of inhabitation systems and not emphasizing formal expresion[4].

5.7 Preliminar Conclusions

We can recognize underlying structures in the arrangement of the activities in different dwelling typologies. In this case using four semantic dimensions; "formality", "privacy", "brightness" and "naturalness" we distinguished Machiya from other existing building typologies ("House" and "Other") and as well hypothetic dwelling typologies such as "Machiya as expected".

Contemporary inhabitants can recognize the semantic structure of Machiya, but are not necessarily aware of such situation, as the expectation of those who say that they would like to live in Machiya is quite different as the existing Machiya. Moreover we could find that there is a recognizable influence of the existing context in the preferences of the inhabitants. The semiotic stream in which a certain design (building) is situated is affected by a past experience and as well can change future expectations; therefore it is important to consider such semiotic stream as part of the design process in a way as it was related to the vernacular design process as well (see section 2.1.8 In the case of Machiya:)[5].

The semantic dimensions can be recognized in existing buildings as well as projected into expected buildings. Additionally it is possible to track down influences of existing contexts and the expected ones, therefore the semantic dimensions are able to construct a bridge between changing contexts; we can analyze and compare present spaces with future expectations and past using the same semantic dimensions.

We can find opportunities for Machiya in the contemporary context mainly focusing on its naturalness.

On the other hand we might need to establish a new order of formality for new expected Machiya types. Considering such aspects one of the most affected elements of Machiya will be the tooriniwa and the activities done in such space (specially cooking), so we can find new ways for designing such spaces[6].

As the semantic dimensions are underlying structures of the space of the activities done in the different dwelling typologies, the data obtained from such analysis is very versatile as

underlying structures do not depend on superficial details.

Considering design problems that can be seen in Kyoto, such as Machiya reformed as conventional modern houses, or buildings imitating Machiya, the semantic dimensions offer new alternatives which can be used for creating internal layouts of new Machiya adapting them to new contexts without need to use conventional designs, and on the other hand can be used to change internally new buildings in order to adapt to Machiya context.

In further research it should be considered to focus on specific case studies, in order to appreciate the effect and influences of semantic dimensions more in detail. Also more detailed study should cover the relation among different inhabitants as well as guests and residing inhabitants.[7]

Notes of Chapter 5

[1] Missing data in the case of correlations is treated with listwise deletion. In such case the missing data still affect less than 10% (e.g., the graph of Fig. 9). However in the case of independent variables pairwise deletion is used to keep the maximum sample number.

[2] When cluster analysis is being used, it is important to notice that clustering techniques where developed in other fields, and therefore are not necessarily optimized for any task in the field of architecture. Moreover, even if clustering techniques are mathematical techniques, the application of such techniques should not be considered in any sense as an objective definitive method. Any results will depend on several settings such as the type of clustering technique, and other parameters (in this case hierarchical clustering with complete linkage and Manhattan distance function), there is no unique setting that could guarantee an optimal result, but a great variety approximate alternatives for an experimental approach.

The findings explained in this chapter regarding cluster analysis are therefore indicative results showing general tendencies, helping us to explore relations among different data to be considered relevant (which is more or less the purpose of data mining techniques, more than solving giving an exact solution to a problem).

[3] Manhattan distance is used because all dimensions are considered as independent, thus absolute difference is being calculated.

[4] In the conclusion of Architecture in context (Brolin, 1980), it is suggested that the architect`s ego is one of the obstacles in designing visual continuous architecture (referring to visual context in such case, while this research focuses on inhabitation context), pointing out that it is a modern tendency to think that creativity of architects has to stand out from the rest and that similarity is something negative, but it is not necessarily the case. Once again, considering architecture as semiotic stream we can understand that architecture deals more with collaboration in between systems than with personal reaffirmation. Moreover architecture is a collective creation as the context always belongs in part to each work of architecture and vice versa, and as explained by Floyd (Merrel, 1995) we are never in the beginning of the semiotic stream.

[5] If applied to Christopher Alexander´s unselfconscious and selfconscious design processes (Alexander, 1964), the semiotic streams would help to link the unselfconscious vernacular process with the contemporary context.

[6] The renovation of the tooriniwa is a common issue in Machiya, for examples we can see cases in なるほど!「京町家の改修」～住み続けるために～ (京都市景観・まちづくりセンター編, 2003).

[7] In the next chapter we will analyze individual cases of Machiya, including one case in which it is considered the distinction of family and guests.

6. Pragmatic analysis of cases relating semantics and syntactics

6.1 Research aim

The aim of this chapter is to put in context, particular cases of modified Machiya using semantic and syntactic analysis. In this chapter we will use the semantic context explained in the previous chapter (based on the analysis method explained in sections "3.1.2 In the case of the semantic level" and "3.2.2 Culturally") and the syntactical analysis based on activities explained in section "3.1.1 In the case of syntactic level".

As Machiya has been changing its form in the past (see section "1.3.2 Evolution of block structure and Machiya"), we consider important to establish a framework we can use to identify a modified Machiya as Machiya or something else within the context of the existing Machiya used as reference.

We consider that it is not enough to analyze the form of Machiya, as we consider that the meaning of Machiya depends more on the interpretation of a space as Machiya, as the meaning is given by the inhabitant and not by the form itself[1]. Therefore we focus on the meanings and interpretations (semantics), and the relation of its inhabited spaces (syntactics).

We will use as reference existing explanations of formal evolution of the space of Machiya (Löfgren, 2003), (今, 1989), (松井, 2001),(丸山, 2007). In the case of semantic data we will use "semantic dimensions" in order to differentiate Machiya from other building typologies as in the previous chapter in order to define the Machiya context. While the syntactic analysis will focus on specific cases using connectivity graphs in order to understand better the relation of space and its inhabitation.

As the result we should be able to understand newer forms of Machiya or modified Machiya from a point of view of the inhabitant´s interpretation of such new spaces. Also we can identify intangible differences and similarities between the existing Machiya and newer Machiya or other dwellings

The analysis will focus not only on the syntactic and semantic levels, but as well in the pragmatic level, since as mentioned in section "3.1.3 In the case of the pragmatic level", we will focus now on the relation of the sign (space) and the user. We will in this chapter combine the syntactic and semantic analyzes to focus on the real inhabitants' perception linked to its semantic context by acquiring the semantic dimensions for the same activities for each case study and for the semantic context.

6.2 Case selection

As our aim is to understand the pragmatic context of Machiya, we will not select random cases as in the case of a more general approach. We will instead select example cases for our interest. In first place we include some typical Machiya, as representative of the traditional

Machiya. The representative case we selected corresponds to the person currently inhabiting (and owner of) the building with the highest "contextual score" (see chapter 4). Additionally we select cases representing different changes in Machiya context. First we include a damaged Machiya; secondly a restored redesigned Machiya (designed within Machiya context); thirdly we consider a extensively modified Machiya transformed into shared house; and finally two cases representing semantic variations we could find using the semantic analysis related to the Machiya development example given section "1.3.2 Evolution of block structure and Machiya" and the influence by modern style buildings where the dining kitchen and other new systems became preponderant.

The aim of selecting such last two cases is to see *"if we can find cases adapted to modern lifestyles that can still be considered as Machiya and what conditions do such cases have."*

6.3 Case analysis

In this section we will present and analyze each of the previously mentioned cases.

6.3.1 Case 1

This case, with the highest contextual score in chapter 4, corresponds to the building N° 67, with a contextual score of 4.3 (Fig. 6- 1) (for details see chapter 4).

In chapter 4 we analyzed the building from the exterior, but in this chapter we will analyze not just the interior but the interpretation of its inhabitant.

Building N° 067

Contextual Score: 4.3



Fig. 6- 1 Façade of building corresponding to case 67.

As can be seen in Fig. 6- 3, in this case we will analyze the inhabitation of a large Machiya.

The inhabitant of this house considers her lifestyle as Machiya lifestyle. If we consider the semantic analysis of activities in Fig. 6- 2, we can recognize that we will have mainly two clusters: Cluster A corresponding to informal-private activities, which are as well brighter than the activities in Cluster B, corresponding to formal-public activities. Such division of space can be easily associated not only with formality and privacy, but with the Japanese idea of Omote and Ura, or in combination with Kami-Shimo as in (青木 et al., January 1994). As explained by the owner of the house, many activities are in fact different for guests (more public) and the family (more private), as can be seen in Fig. 6- 3 activities in several cases have different location for guests (in blue), or for the general use (in red).

In this case the questionnaire was filled as an interview with the inhabitant, therefore more specific detail could be considered in order to explain the omote-ura relation in semantic dimensions. Activities where it was considered by the inhabitant to mention a special value for guests and her own, both values were written in the questionnaire, and for the calculations an average value is used.

The tooriniwa played a leading role in the semantic description of the case. Even if in a general tendency family activities were considered as informal (formality 1), and activities done by guests as formal (formality 5), activities such as bathing and washing done in common space for family and guests at the back of the tooriniwa (Fig. 6- 3) remained as considered informal for both, family and guests. In the case of cooking it is also considered a different space for cooking for family and for cooking for guests, but both located in the tooriniwa and should not be accessed by guests, therefore in average remained less formal than other activities considered as formal for guests.

Moreover the place where the family does breakfast, lunch, dinner considered in this case as informal for the family is as well located at the back of the tooriniwa next to the space where cooking for the family is located. This situation would in fact be considered as a semantic shift towards a joint eating cooking space for the family, as in the previous chapter we could see that eating and cooking tend to be considered more similar (see Fig. 5- 12 for details of semantic description of eating activities and cooking based on average data of Machiya). In this case we could say that the traditional semantic order of Machiya appears by the inclusion of the guests.

As for activities not been done in the tooriniwa such as leisure and sleeping, we can notice more flexibility for sleeping shown in different places in Fig. 6- 3, remaining formal for guests and informal for the family, while leisure even in the case of family is considered only slightly informal, resulting in the highest formality in average (Fig. 6- 2).

In the syntactic analysis (Fig. 6- 4), we considered the panels of wood with glass separating

the tooriniwa and the formal space as different than the light partitions used in the formal space, so we can easily distinguish the informal side on the left of Fig. 6- 4 defined by doors and voids and the formal side on the right of the graph defined by sliding panels.

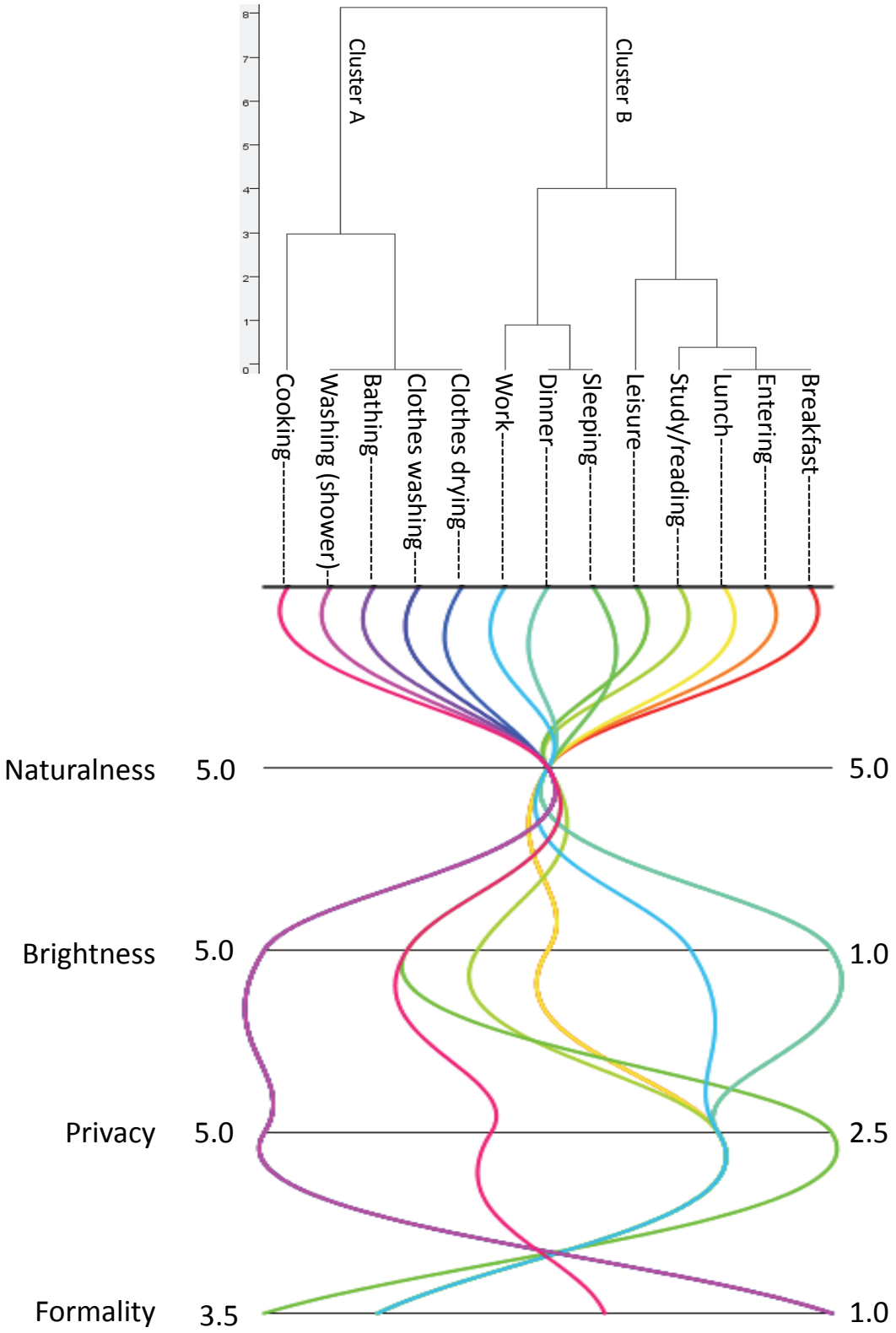


Fig. 6- 2 Clustering analysis of Case 1. Upper graph corresponds to the dendrogram, while the lower part corresponds to a parallel coordinates graph representing the semantic dimensions.

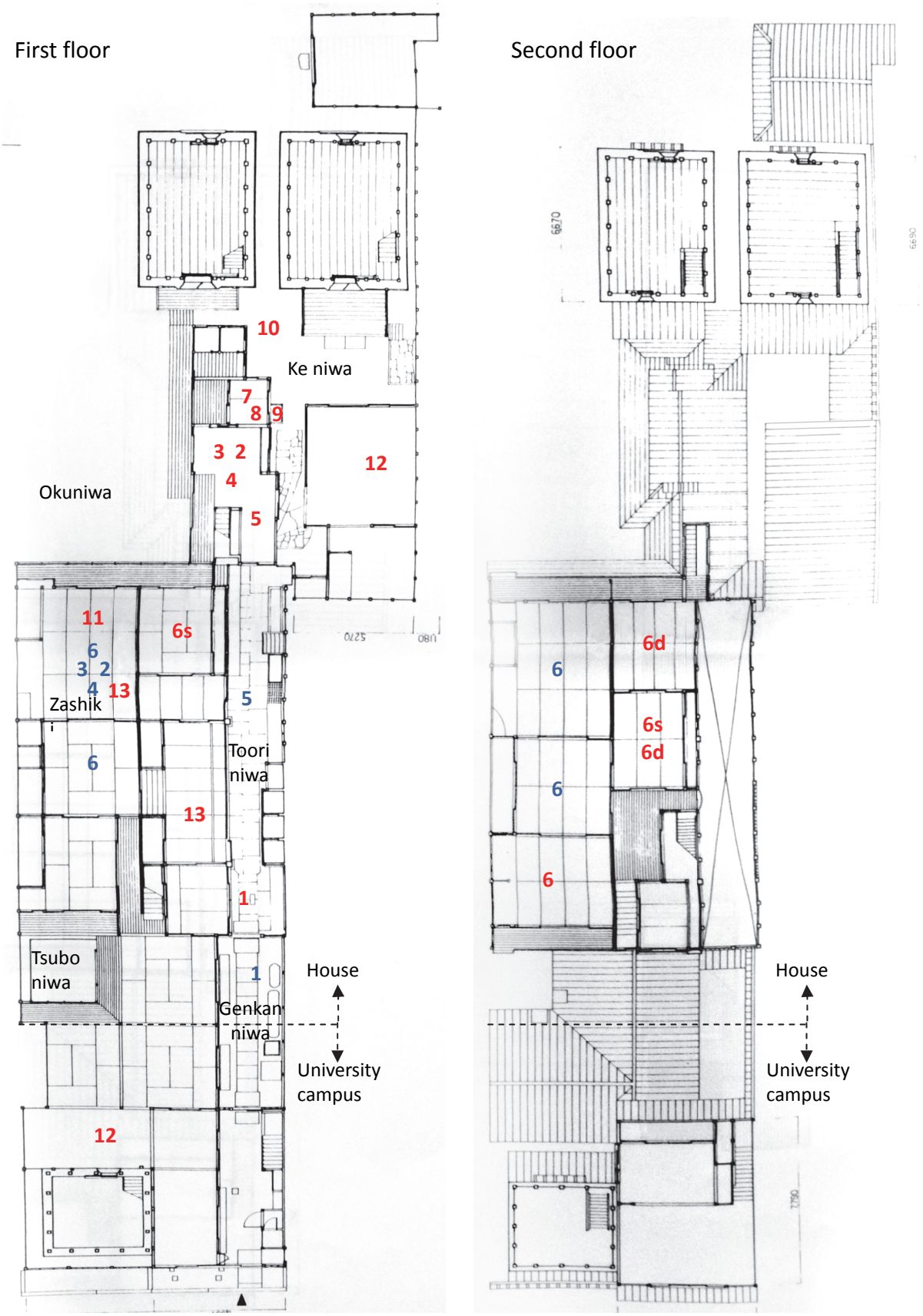


Fig. 6- 3 Case 1: **1** Entering; **1** Guests' entering; **2** Breakfast; **2** Guests' breakfast; **3** Lunch; **3** Guests' Lunch; **4** Dinner; **4** Guests' Dinner; **5** Cooking; **5** Cooking for guests; **6** Sleeping; **6** Guests' Sleeping; **6s** Sleeping in summer; **6d** daughters' Sleeping; **7** washing (shower); **8** bathing; **9** clothes washing; **10** clothes drying; **11** Leisure; **12** Study/reading; **13** Work

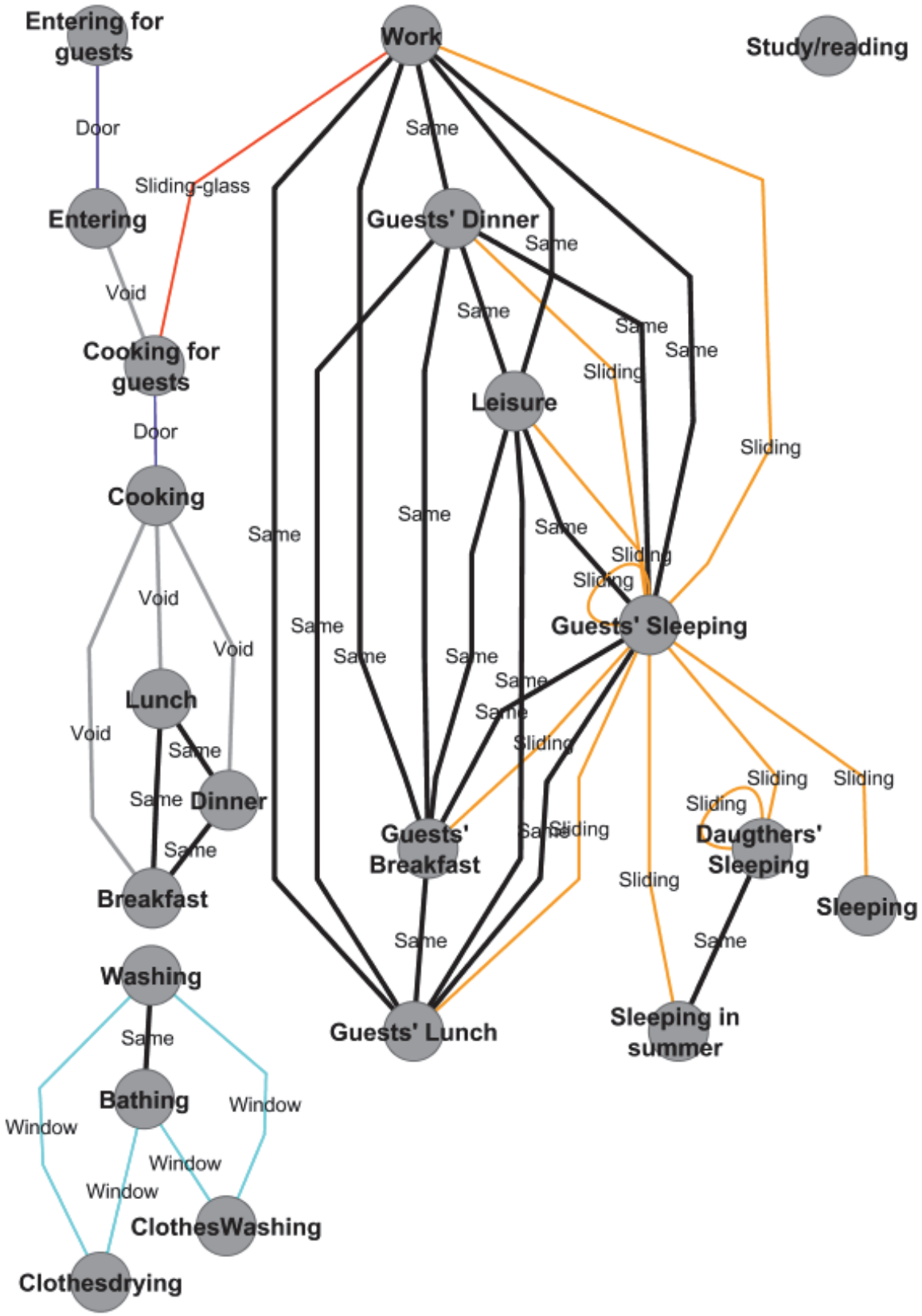


Fig. 6- 4 Syntactic activity graph for case 1.

The difference in between the formal side of the house (tatami rooms) and the informal side of the house (tooriniwa) can be seen as well comparing Fig. 6- 5 with and Fig. 6- 6 Fig. 6- 7.



Fig. 6- 5 Informal side of case 1. Left: daidokoro, this is used for informal circulation and cooking for guests (usually guests would not enter this area); upper right: genkan niwa towards the daidokoro, family members would enter strait forward through the daidokoro (behind the noren) while guests would enter through the sliding door on the left; lower right: genkan niwa towards the street, the part behind the door and to the right towards the street corresponds to the public function of the house, in this case instead of a shop it is used as university campus.



Fig. 6- 6 Formal side of case 1. Upper image: Okuniwa; Lower image: tokonoma in the zashiki.



Fig. 6- 7 Formal side of case 1. Upper image: tsuboniwa; lower image: view from the zashiki towards the tsuboniwa. In these pictures we can see the use of summer fixtures, such as sudo panels, sudare blinds and ajiro mats.

The only exception within the tooriniwa would be the entering space in the genkan niwa (on the right in Fig. 6- 5), which would be the only less informal activity completely located in the tooriniwa, for guests and family (Fig. 6- 3 and Fig. 6- 2). But such exception if in fact coherent with the fact that the case of Fig. 5- 15, there is no public-informal activity, and entering is in fact for the average of Machiya considered as a more formal activity than other activities located in the tooriniwa.

6.3.2 Case 2

The second case is a well maintained 100 year old two story Machiya in Shimogyo-Ku, Kyoto. This house would be considered as a typical Machiya (Fig. 6- 8): it has a wooden façade with lattice windows in the first floor and windows with sudare in the second floor and so on. The most significant modifications include a new dining kitchen in the first floor and a new office style working room in the second floor over the kitchen.

The first particularity we can observe is that cooking is connected to the eating activities with a "Same" type of connector shown in the syntactic activity graph (Fig. 6- 9), and it means that those activities happen in the same place: a dining kitchen, this will have implications in the semantic dimensions.



Fig. 6- 8 House corresponding to case 2 seen from the outside.

A second particularity is that doors appear in an area corresponding to tea ceremony and a space for study/reading and work (Fig. 6- 9); this odd configuration corresponds to a room in the second floor arranged to be used for tea ceremony and a new added studio located over the new dining kitchen (a tea house at the back of the house is now used as storage).

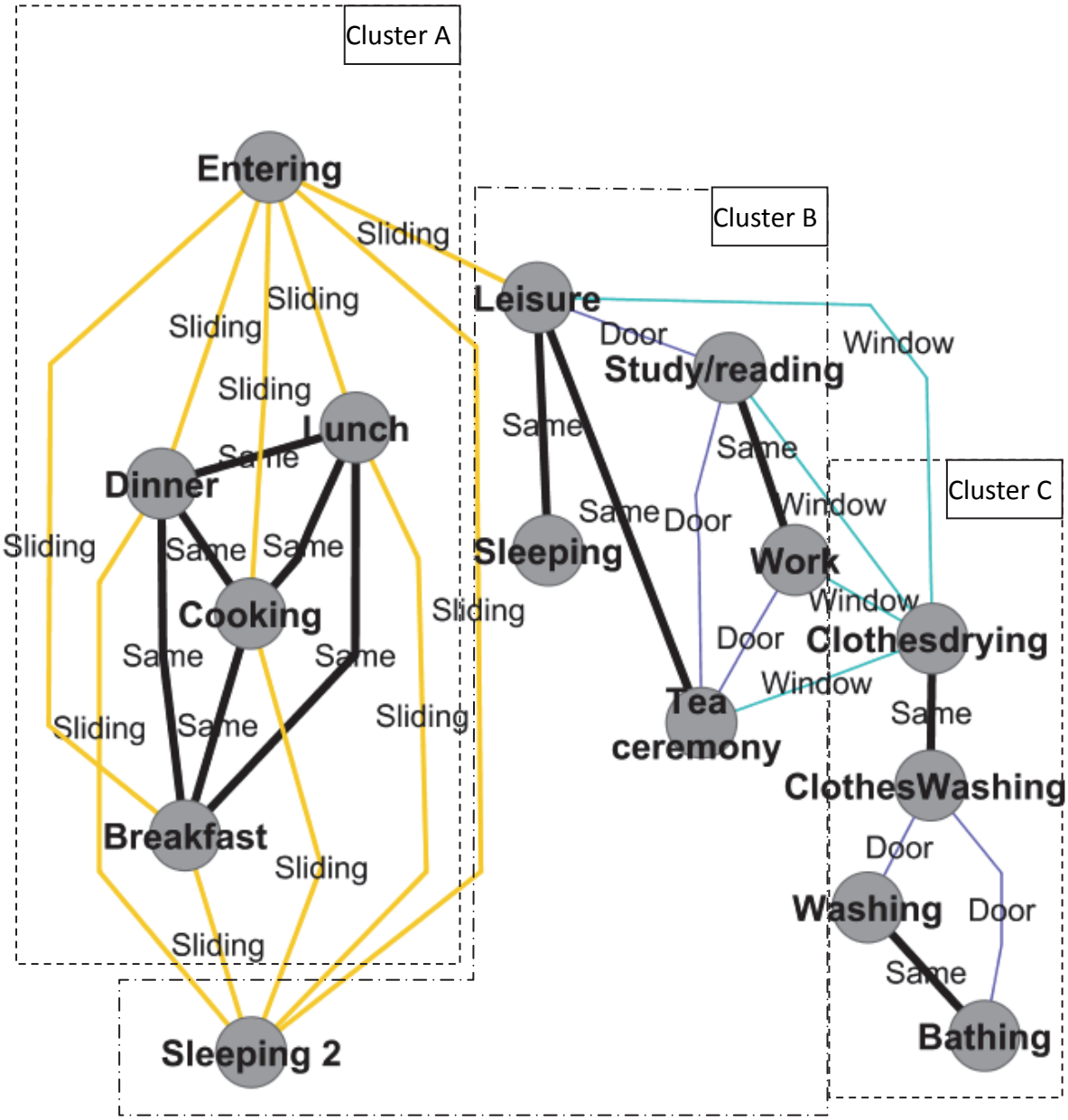


Fig. 6- 9 Syntactic activity graph (drawn using Cytoscape) corresponding to Case 2. Dotted lines indicate cluster A as in Fig. 6- 11.

The third particularity would be that a second sleeping activity appears in the former zashiki (Fig. 6- 9 and Fig. 6- 10); this is because of the former zashiki being temporally used as dormitory for an older member of the family.

Finally in the rear part of the tooriniwa space for washing, bathing and clothes washing remains in a similar disposition as in Machiya. Clothes drying can appear as connected with a "same" connector to clothes washing or through window connectors connected to tea, study/reading and work, as it can be in the same space for clothes washing or in a terrace over the roof of the bath in the back of the house visible through a window from other activities.

Fig. 6- 9 can be compared with Fig. 6- 10 to see the plan of case 1.



Fig. 6- 10 Case 2: 1 Entering; 2 Breakfast; 3 Lunch; 4 Dinner; 5 Cooking; 6 Sleeping; 6b Sleeping 2; 7 washing (shower); 8 bathing; 9 clothes washing; 10 clothes drying; 11 Leisure; 12 Study/reading; 13 Work; 14 Tea ceremony

In order to put the case with its particularities in context, we can see the particular semantic information of this case in Fig. 6- 11. Firstly we can notice a main formal cluster composed of cook/eating functions and "entering" (Cluster A in Fig. 6- 11). A functional core located close to the entrance; a dinning kitchen directly accessible from the doma.

As for the second particularity, we can recognize that study/reading appear with high brightness together with Leisure (Fig. 6- 11).

While as for the third particularity sleeping appears more private and formal than in Machiya.

Semantically only 5 activities remain with a similar formality and privacy as Machiya: In Fig. 6- 11 we see the entering remains formal-public; clothes washing and clothes washing remain informal-private; while washing (shower) and bathing are not formal nor informal (middle formality in Fig. 6- 11), but still private, and as in Machiya Fig. 2 such activities are among the most formal of the informal private activities, we still consider similar.

The semantic clustering (Fig. 6- 11) tends to match Fig. 6- 9 except for Sleeping 2, which is in Cluster B, but more connected to Cluster A.

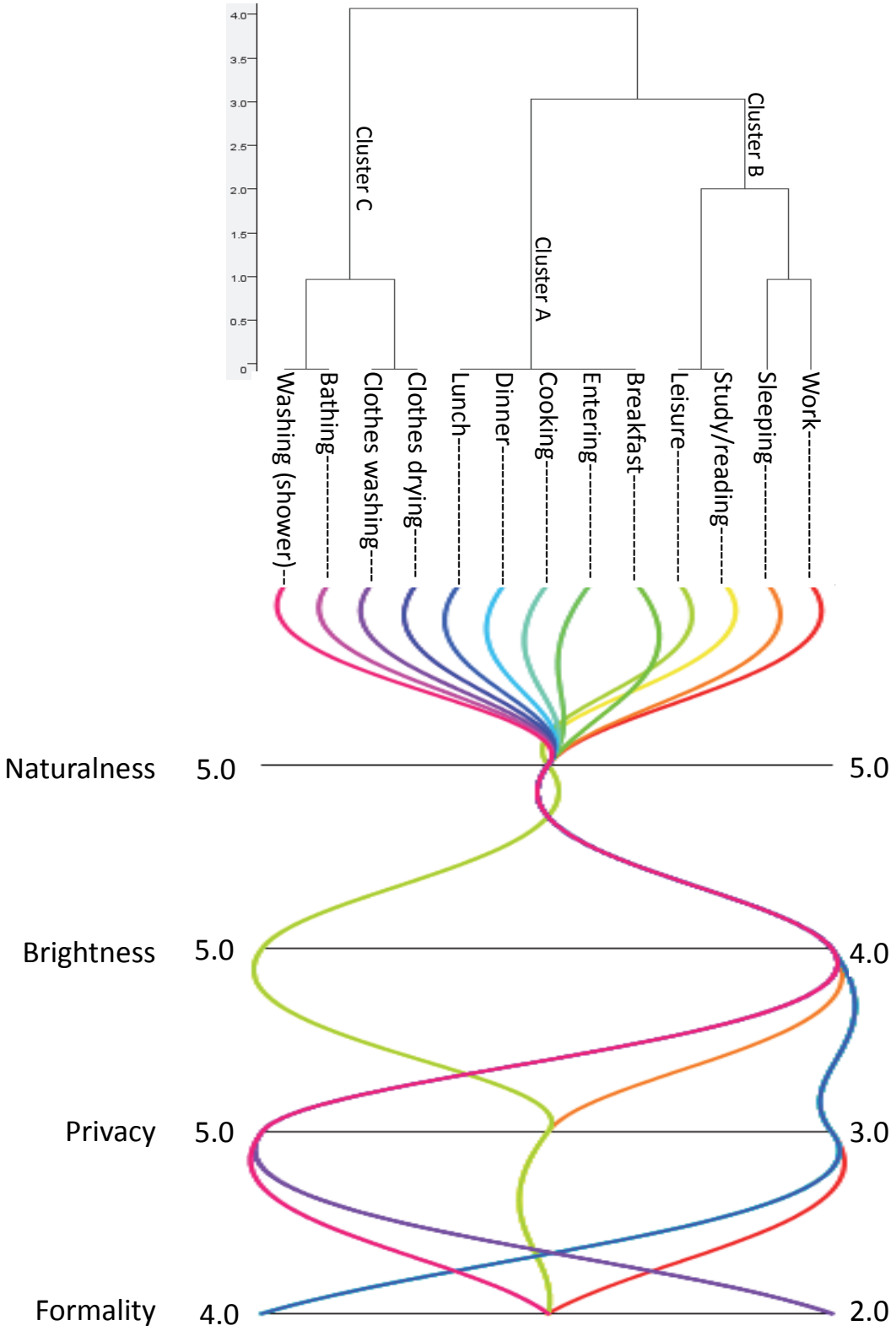


Fig. 6- 11 Clustering analysis of Case 2. Upper graph corresponds to the dendrogram, while the lower part corresponds to a parallel coordinates graph representing the semantic dimensions.

6.3.3 Case 3

The third case (Fig. 6- 12) corresponds to a two story Machiya in Nishijin district with long tradition (Nyunt, 1978). The house remained almost unchanged for a long period, but after remaining unoccupied for a time, it became seriously deteriorated. After major repairs of the roof a foreign architect started to live in the house and continues repairing it in a traditional way. At the moment this dissertation is written, only the first floor was inhabitable. Plan in Fig. 6- 13.



Fig. 6- 12 House corresponding to case 3 seen from the outside.

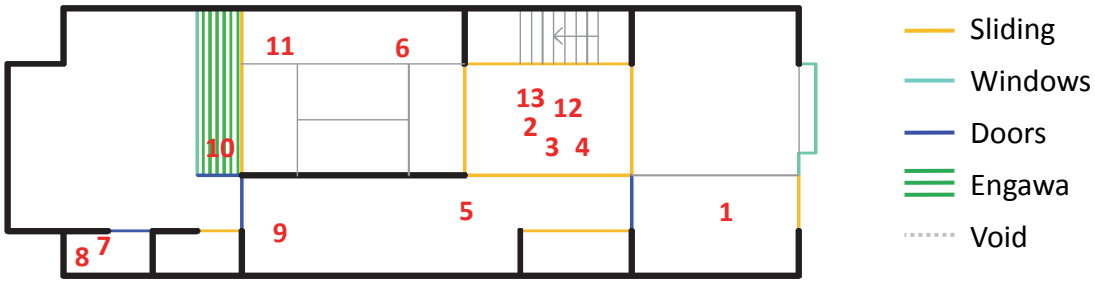


Fig. 6- 13 Case 3: 1 Entering; 2 Breakfast; 3 Lunch; 4 Dinner; 5 Cooking; 6 Sleeping; 7 washing (shower); 8 Bathing; 9 clothes washing; 10 clothes drying; 11 Leisure; 12 Study/reading; 13 Work (the second floor is not yet being used)

We can recognize that there is a living core composed of the activities breakfast, lunch and dinner (Cluster A in Fig. 6- 14 and Fig. 6- 15); grouped with work, leisure and study in cluster B. In this case the core is defined by activities in the same space (except Leisure), and related to the rest by sliding panels (Fig. 6- 14). As well cooking, even if well connected to such core is in cluster together with clothes drying and clothes washing (Fig. 6- 15) (in Machiya these activities would correspond to less formal than activities such as breakfast, lunch, dinner, leisure, study or

work). In this case as for the syntactical order (Fig. 6- 14), it keeps resemblance to Machiya as we can recognize for example the entrance connected to cooking space and the latter to connected with a void to clothes washing and with sliding panels to the living core (still we can see that there is a great number of activities in the same space as not many rooms are able to be used yet). If in the dendrogram (Fig. 6- 15) we look at higher hierarchy, we can see that Cluster B corresponds to tatami rooms, Cluster C to tooriniwa and Cluster D to temporary or unfinished spaces; there is a strong correlation of physical space and semantic data clustering.

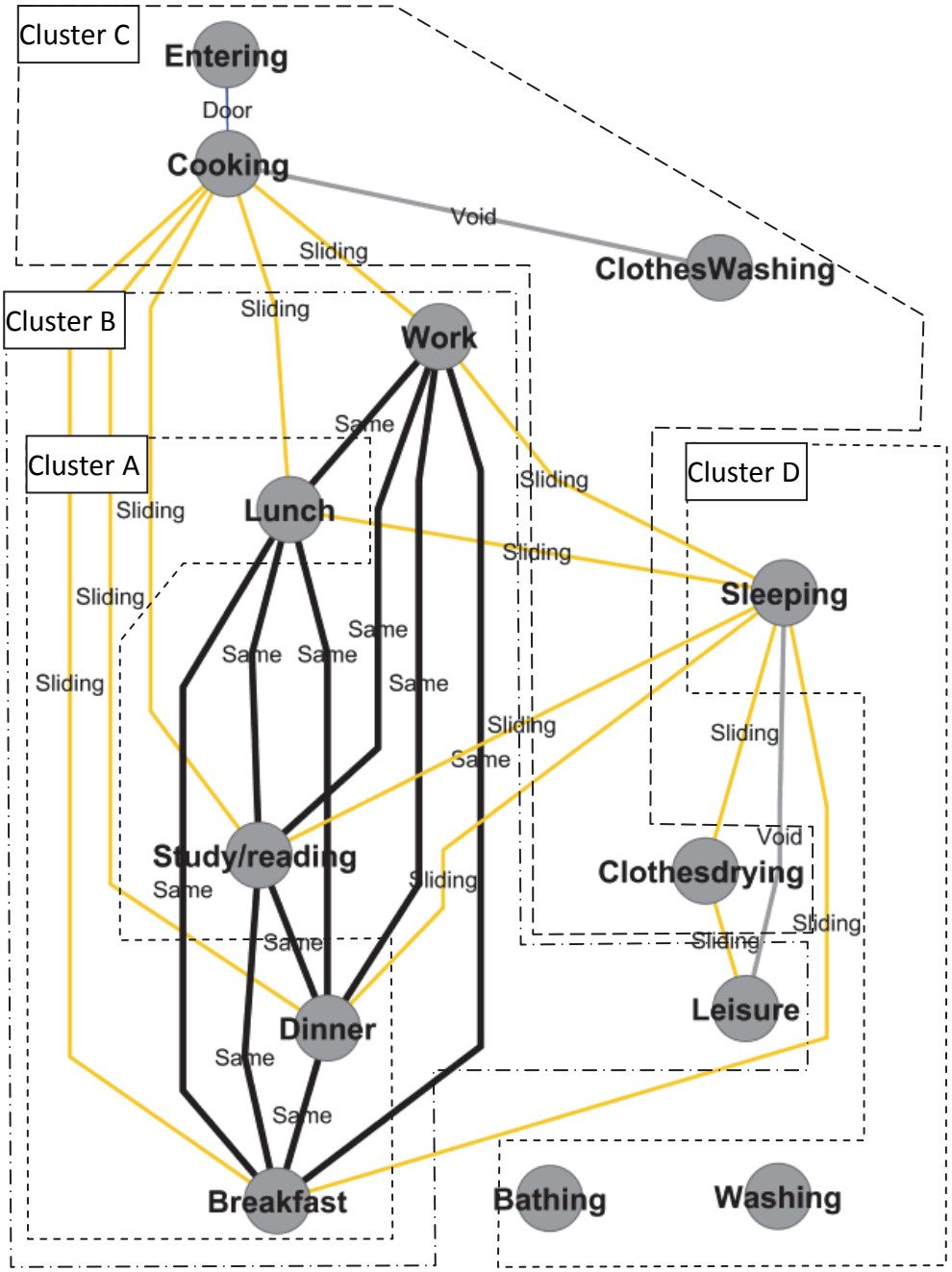


Fig. 6- 14 Syntactic activity graph (drawn using Cytoscape) corresponding to Case 3. Dotted lines indicate clusters A, B, C and D as in Fig. 6- 15.

But we have to consider that formality is not perceived as in traditional Machiya in this case, as almost all activities are considered as informal (Fig. 6- 15), this case resembles Machiya syntactically more than semantically, which means that this Machiya is being inhabited in a new nontraditional way but keeps physical order of Machiya, despite the repairing.

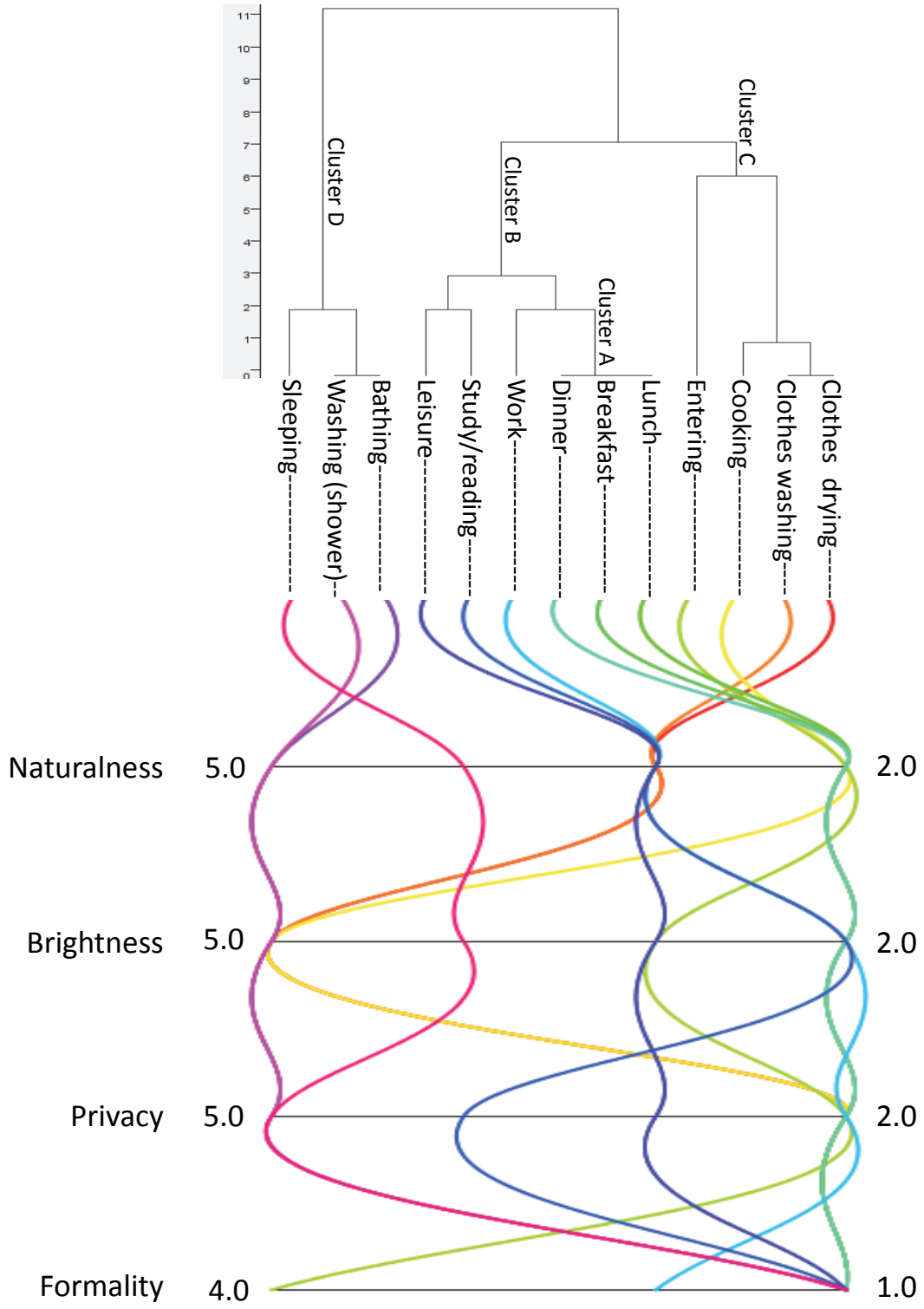


Fig. 6- 15 Clustering analysis of Case 3. Upper graph corresponds to the dendrogram, while the lower part corresponds to a parallel coordinates graph representing the semantic dimensions.

6.3.4 Case 4

Case 4 (Fig. 6- 16): the fourth case corresponds to a three story Machiya that has suffered major modifications; its first floor is used for parking, second and third floors are divided in rental dwellings while the owners live in a new built house in the back of the former Machiya, moreover the entrance is on the back side. Such cases are common, but complex to be analyzed.



Fig. 6- 16 House corresponding to case 4 seen from the outside.

For the analysis of this case, the average of semantic data from two different inhabitants of the same house is used (Fig. 6- 17). Those data are recollected with inhabitation questionnaire (one person answered that this house is Machiya, while the other answered that it is a House different from Machiya). As for syntactic analysis (Fig. 6- 18) two nodes are used for sleeping and study/reading corresponding to the two inhabitants.

At a first glance case 4 might not fit into any category, as it is a hybrid between Machiya and other type of house. For example, considering the formality we can see that the pattern of case 4 is more likely a "house type" as most activities are considered as informal so we cannot associate the sliding panels to formal tatami rooms anymore (as in case 1). While the privacy of the case study seems atypical, because of Cluster A (Fig. 6- 18); the activities, breakfast, lunch, dinner, cooking and leisure are in this cluster with relatively low privacy (Fig. 6- 17), suggesting that in the case, such activities are done in shared rooms, different as the average values of other typologies. This particularity reflects the change of use of the building; a rental dwelling shared by inhabitants who are not family, whereas the low formality is reflecting the internal renovation made in style of non Machiya houses.

Looking at Fig. 6- 18 we can notice several particularities:

Two different sleeping activities, corresponding to each inhabitant are in a very different way. One inhabitant sleeps in a space used as well for study and work, in a way as personal room connected to an eating/leisure space, while the other inhabitant also has a room for sleeping and

study, but connected to the entrance, clothes washing and a space for shared use for leisure and dinner, but not other meals.

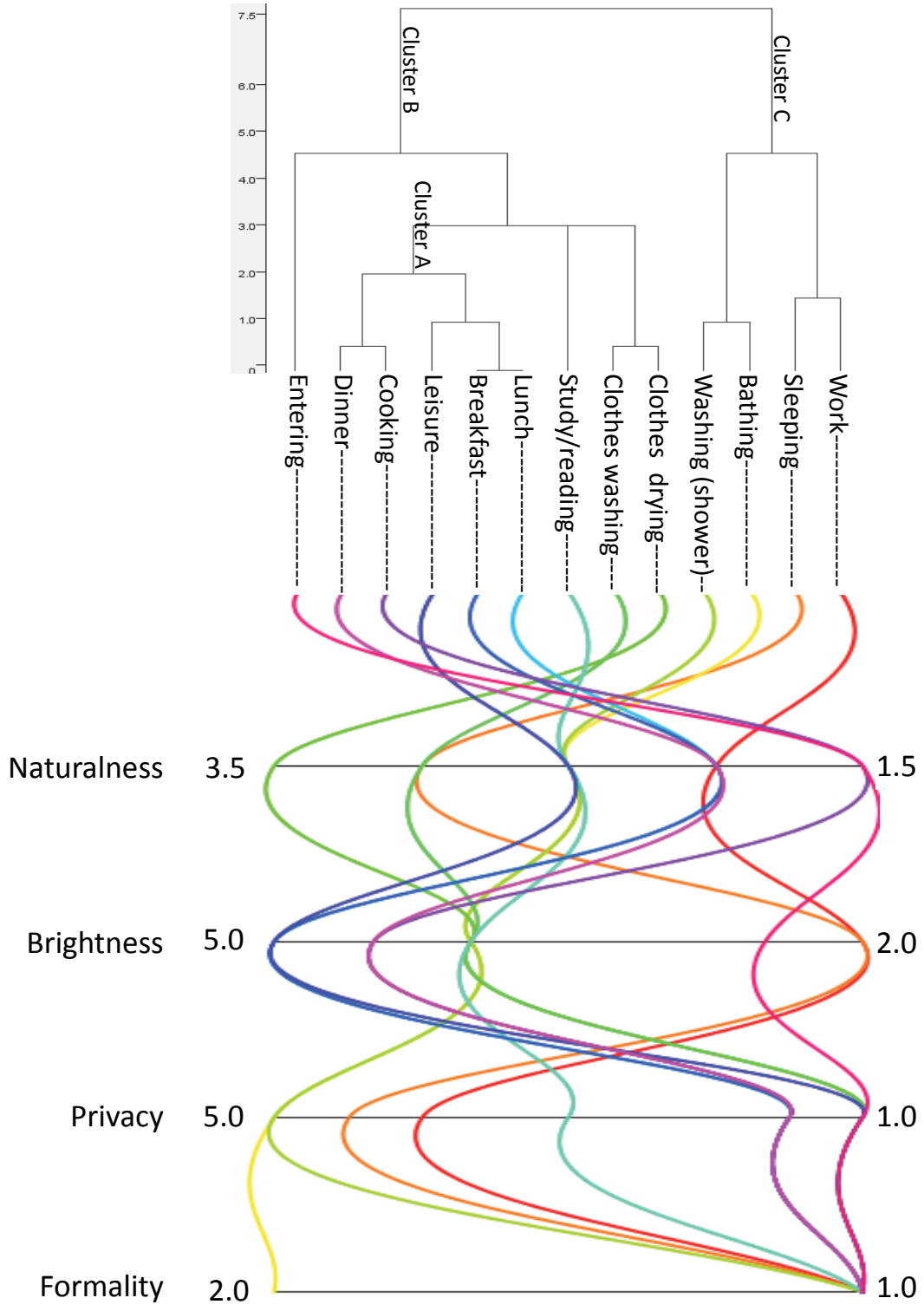


Fig. 6- 17 Clustering analysis of Case 4. Upper graph corresponds to the dendrogram, while the lower part corresponds to a parallel coordinates graph representing the semantic dimensions.

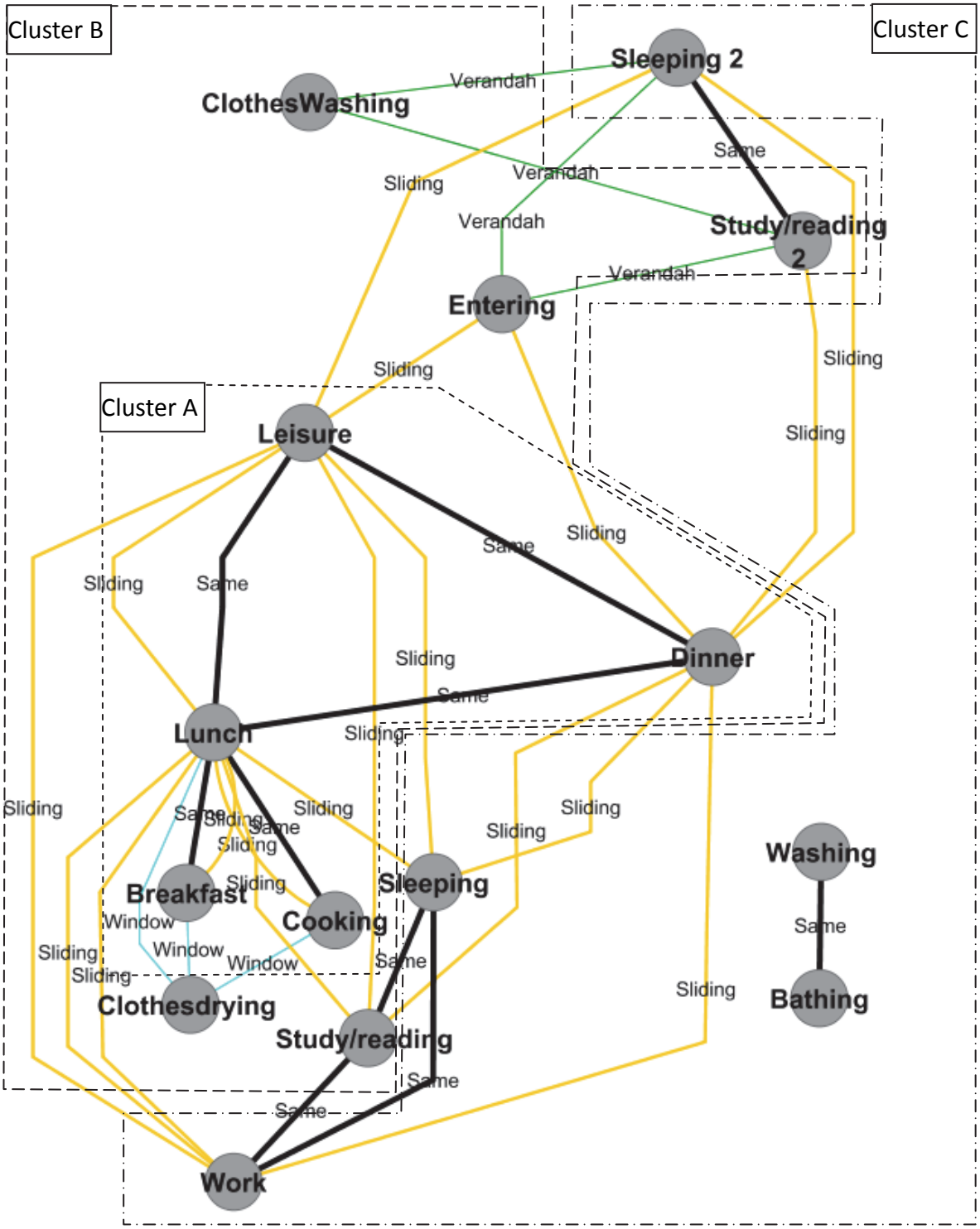


Fig. 6- 18 Syntactic activity graph (drawn using Cytoscape) corresponding to Case 4. Dotted lines indicate clusters A, B and C as in Fig. 6- 17.

Among the eating activities, cooking and leisure we can see ambiguous or double connections, indicating that more than one space is used for the same activities, while the sleeping spaces are well defined as individual rooms. This inhabitation pattern reflects the common areas and personal rooms of a shared house. Plan can be seen in Fig. 6- 19.

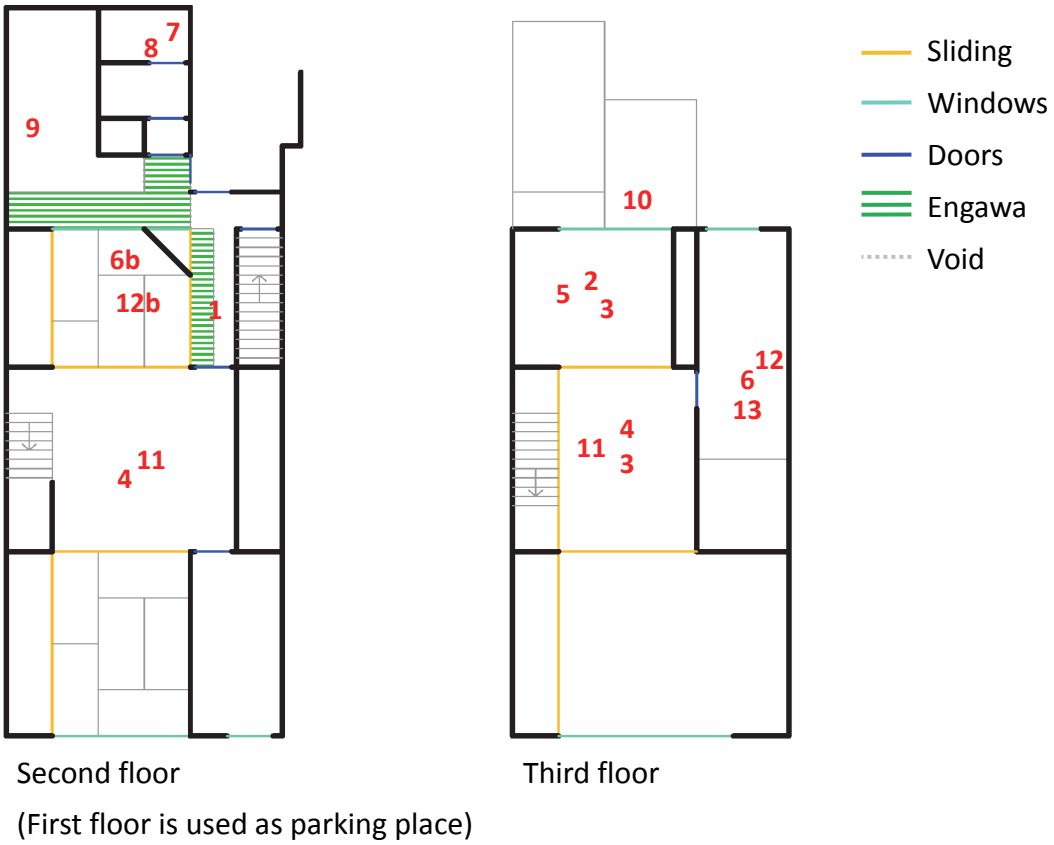


Fig. 6- 19 Case 4: 1 Entering; 2 Breakfast; 3 Lunch; 4 Dinner; 5 Cooking; 6 Sleeping; 6b Sleeping 2; 7 washing (shower); 8 bathing; 9 clothes washing; 10 clothes drying; 11 Leisure; 12 Study/reading; 12b Study/reading 2; 13 Work

There is not a clear order where we could recognize a formal or an informal part, as the ambiguous use of common space connects almost everything with sliding panels, and only a verandah system might be associated with another group of activities connecting Entering, Bathing and washing, with the second study/reading and sleeping. But these connections cannot be clearly associated with Machiya inhabitation systems.

Considering Fig. 6- 17, in a higher hierarchy, we can see clusters B and C. Cluster B will correspond to the shared activities and C to the private activities. This would be a brief outline of the perceived inhabitation of this shared house. We can notice strong influence in the privacy levels difference of the shared activities in contraposition of well defined personal space.

As result of the modifications and given use we cannot recognize the Machiya systems such as tooriniwa, formal living rooms, or shop (mise). Neither the semantic data reflects much of Machiya identity; therefore we could say that this is not a real Machiya anymore, but indeed a share house.

6.3.5 Case 5

Case 5 corresponds to a renovated Machiya, but intentionally designed in order to be a modern Machiya (Fig. 6- 20). The house is a narrow Machiya 5 meters wide and 25 meters long, originally composed of one row of five sections, with a garden between the third and fourth section (counting from the street to the back). This house before being renovated had already a kitchen with raised floor, but not fully converted into DK or LDK system, as the kitchen was not yet joined together with a dining room.



Fig. 6- 20 House corresponding to case 5 seen from the outside.

After the renovation the house was transformed into residence and office. Contrary to traditional Machiya in this case the office space uses the full area of the first floor, while the second floor remains as residence. Another particularity is the use of system kitchen in a space joined with dining room, making it somewhat similar to the DK system. Plan can be seen in Fig. 6- 21.

If we consider Fig. 6- 22, we can realize that in this case the main semantic dimensions (formality and privacy) still have certain correlation with Machiya; entering and work remain formal-public; Cooking, Sleeping, Washing, Bathing, Clothes washing and Clothes drying remain informal private; while Study/reading remains formal private.

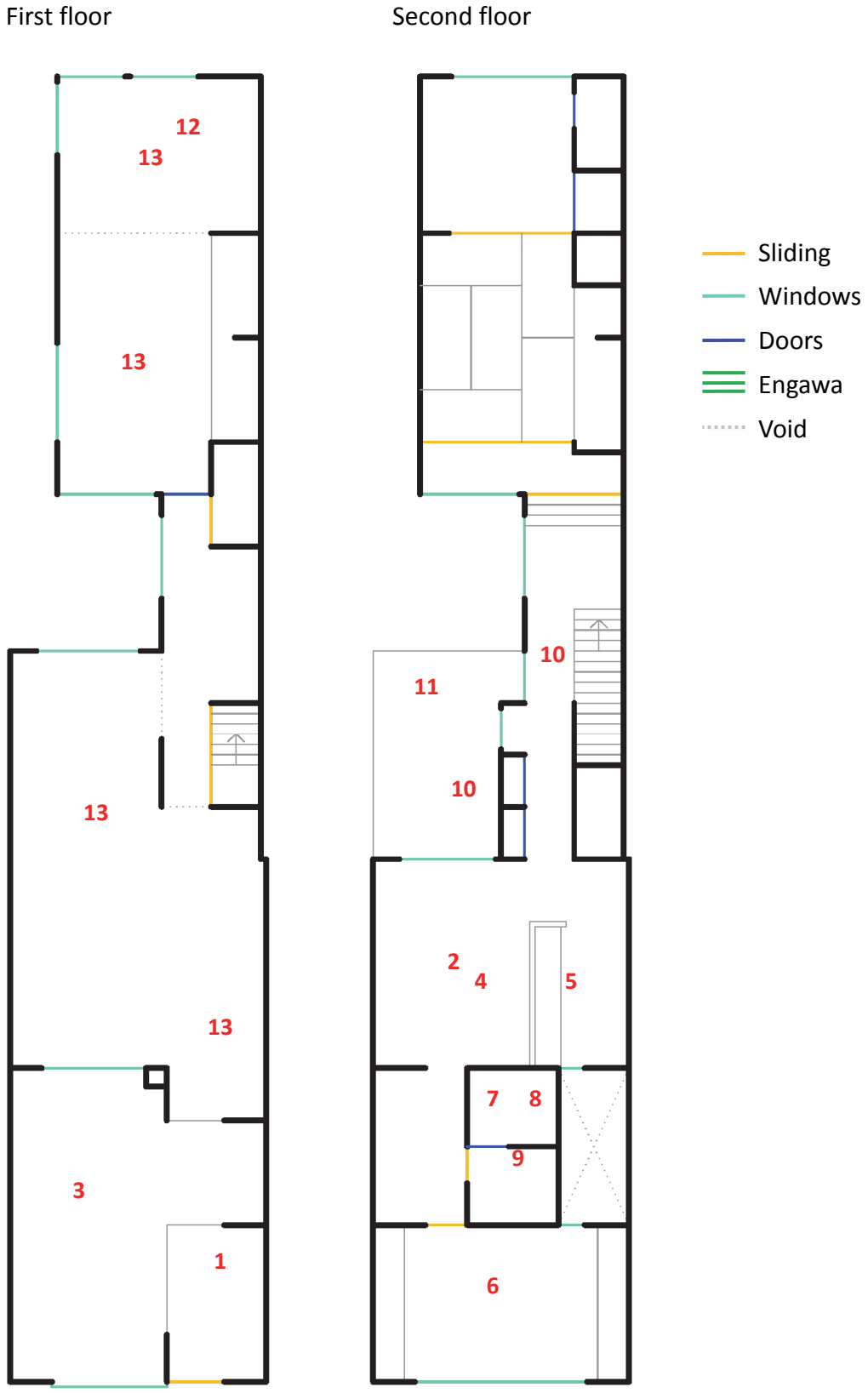


Fig. 6- 21 Case 5: 1 Entering; 2 Breakfast; 3 Lunch; 4 Dinner; 5 Cooking; 6 Sleeping; 7 washing (shower); 8 bathing; 9 clothes washing; 10 clothes drying; 11 Leisure; 12 Study/reading; 13 Work

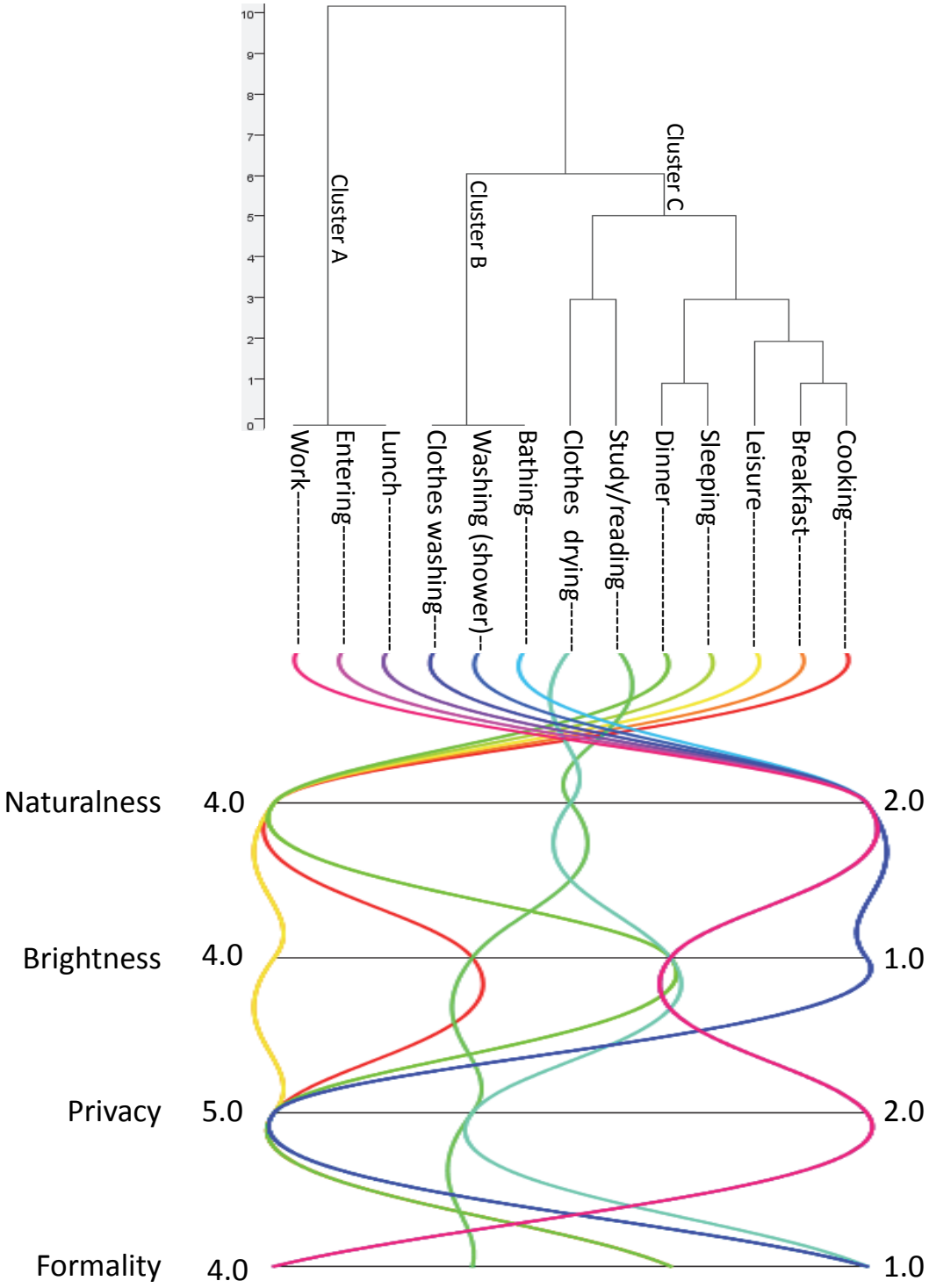


Fig. 6- 22 Clustering analysis of Case 5. Upper graph corresponds to the dendrogram, while the lower part corresponds to a parallel coordinates graph representing the semantic dimensions.

In Fig. 6- 22, we can realize that in this case lunch, entering and work appear in one cluster (Cluster A in Fig. 6- 22) with high formality. These three activities all occur in the first floor; in the office space. If we look at Fig. 6- 23 we can see that only study/reading appear connected to

these activities, but it is located only in part of the working space keeping more privacy (Fig. 6-22). We can therefore recognize that the first floor would be now in this case corresponding to the formal side; while the informal-private living space is divided mainly by naturalness into Cluster B and Cluster C (Fig. 6- 22). Still we can recognize in Fig. 6- 22 the predominant separation of public-formal and private-informal (as shown by the arrows in a similar way as in case 1 (Fig. 6- 2)), with the exception of study/reading, which is private-formal but located in the first floor.

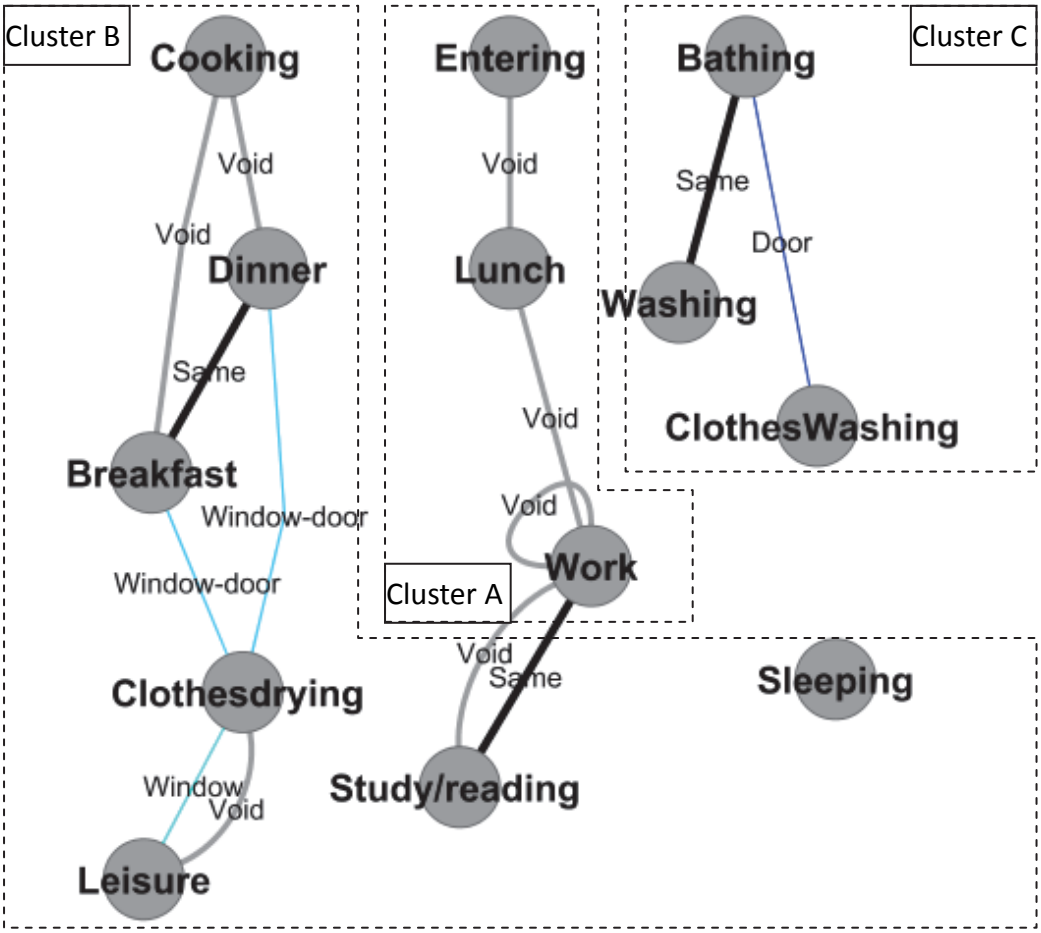


Fig. 6- 23 Syntactic activity graph (drawn using Cytoscape) corresponding to Case 5. Dotted lines indicate clusters A, b and C as in Fig. 6- 22.

In this case we can find an overall semantic similarity with Machiya (9 out of 13 activities remain correlated with Machiya as explained in the third paragraph of section 6.3.5); therefore we can say it is a kind of Machiya. Only 4 activities have different semantic dimensions than in Machiya (Lunch is public, Dinner, Breakfast and Leisure are informal), resulting in a particular semantic clustering, which tend to match the syntactic order of the building (except for study/reading). But as the syntactic systems in Fig. 6- 23 are different from Machiya, this will be considered as a new or different kind of Machiya.

6.3.6 Case 6

Case 6 (Fig. 6- 24) corresponds as well to modified Machiya. In this case the inhabitant stated that his lifestyle was different from traditional Machiya, pointing out that he was using a western dining-living room next to the kitchen (the kitchen has raised floor and both spaces have the same flooring material).



Fig. 6- 24 House corresponding to case 6 seen from the outside.

As for the semantic analysis, the inhabitant gave two answers for cooking and dinner, as he had a custom to invite guests for dinner, and in such occasions these activities would be considered formal. For the analysis as in Fig. 6- 25 the data for ordinary daily life is used, omitting such occasional behavior (in case 1 the differentiation of guests is not considered as occasional).

In this case a very unusual pattern of formality can be seen, most activities are considered as informal (formality 1 in Fig. 6- 25), while clothes washing, clothes drying, leisure, study/reading and work where considered more formal (formality 1.0 in Fig. 6- 25). In the case of Machiya the average values (as in Fig. 5- 15 in chapter 5) indicate that it is expected that in Machiya eating activities should be more formal, and clothes washing and clothes drying should be less formal. Nevertheless it was found that in other types of buildings, mainly corresponding to apartment or mansion buildings using DK or LDK systems, eating activities would be less formal, and clothes washing and drying would be more formal. At this point it becomes relevant that the inhabitant of the house remarked that he was living in a modern lifestyle.

If we analyze this case more in detail, as in Fig. 6- 26 we can realize the following:

The entrance order of Machiya accessing the cooking space from the entering space is still conserved, but cooking is divided only by a void from lunch, breakfast and dinner (all connected with "same" type of connector). Therefore the eating and cooking space is already different from Machiya (Cluster A in Fig. 6- 25).

As for a room in front of the cooking-eating space and separated from it by a sliding panel, corresponding to work and study/reading (Cluster B in Fig. 6- 25 and Fig. 6- 26), we could say it is more like a formal space for work in Machiya with its high formality (as in Fig. 6- 25).

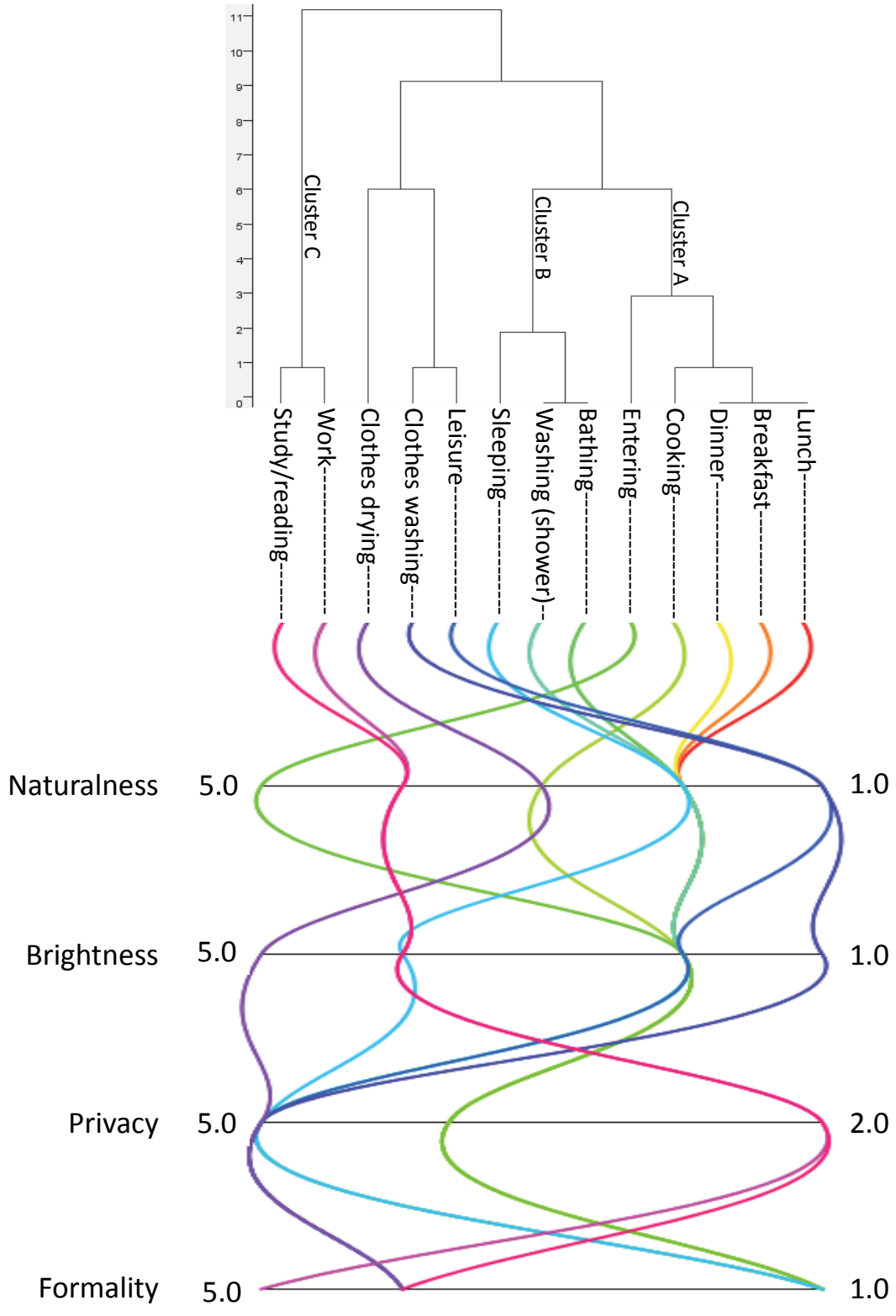


Fig. 6- 25 Clustering analysis of Case 6. Upper graph corresponds to the dendrogram, while the lower part corresponds to a parallel coordinates graph representing the semantic dimensions.

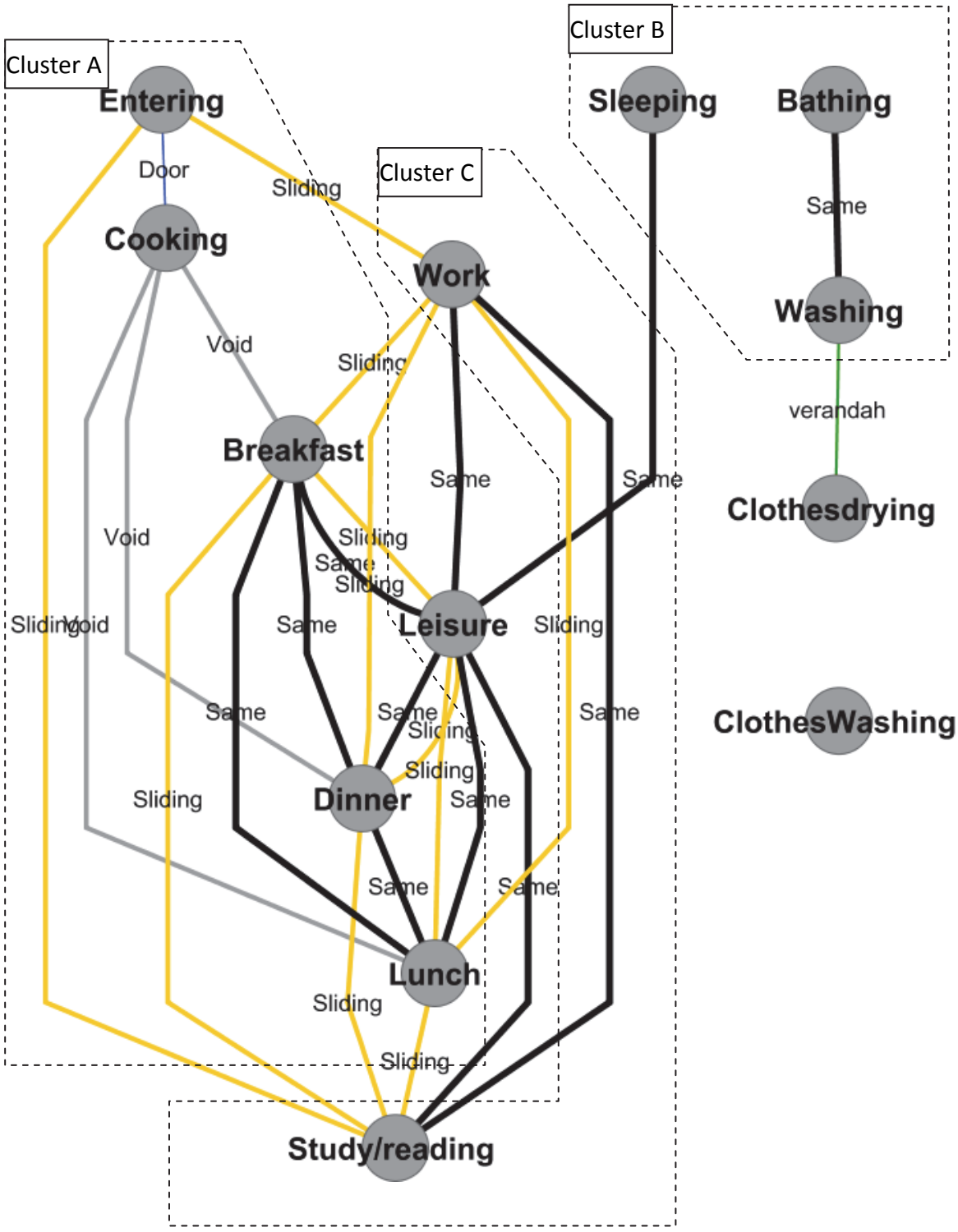


Fig. 6- 26 Syntactic activity graph (drawn using Cytoscape) corresponding to Case 4. Dotted lines indicate clusters A, B and C as in Fig. 6- 17.

Concerning washing activities, these are more or less unconnected (as in Fig. 6- 26), allocated in an added bathroom at the back of the house (bathing and washing), the garden at the back (clothes washing) and a utility space next to the new bathroom. For these activities not much similarity with Machiya remains but the location at the back of the house and the correlation with the privacy of washing and bathing (privacy 5 in Fig. 6- 25). Leisure in this case may occur in many spaces, hence the multiple connectors in Fig. 6- 26 connected to Leisure.

Case 6 could be considered a hybrid case as well, mixing newer lifestyles with some remains of Machiya. But in general there is not so much correlation between its physical and semantic space as in case 3, which means that the use of space designated only by the inhabitants point of view plays an important role.

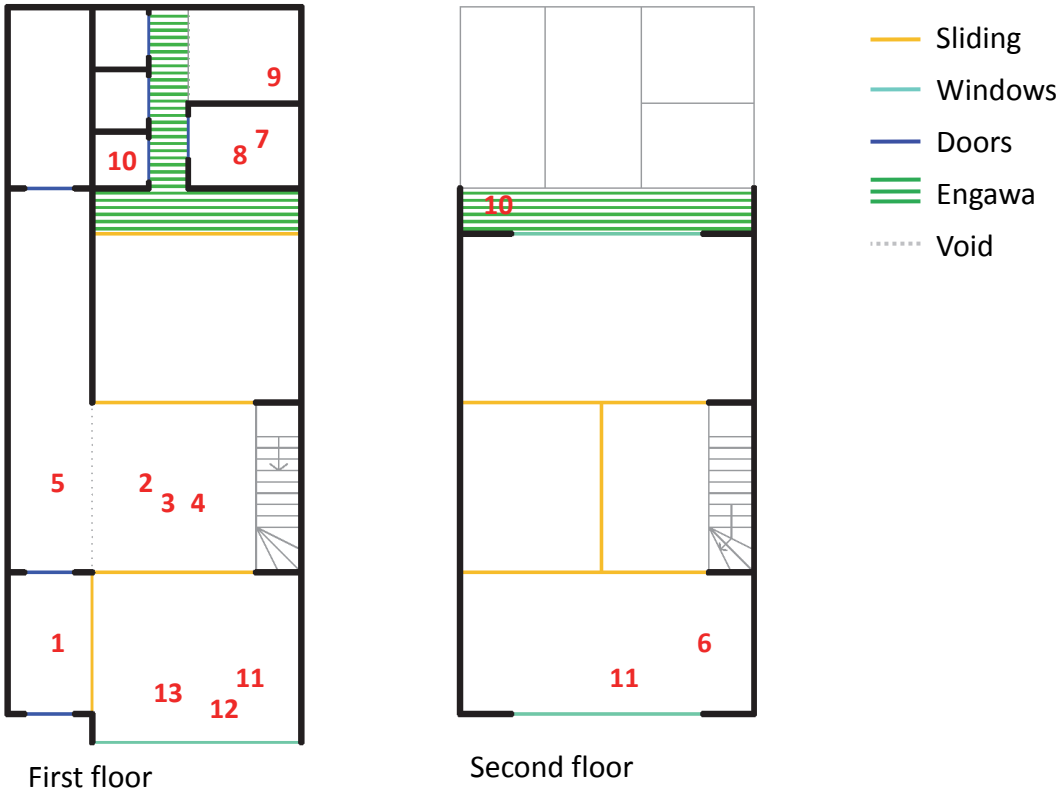


Fig. 6- 27 Case 2: 1 Entering; 2 Breakfast; 3 Lunch; 4 Dinner; 5 Cooking; 6 Sleeping; 7 washing (shower); 8 bathing; 9 clothes washing; 10 clothes drying; 11 Leisure; 12 Study/reading; 13 Work

6.4 Summarizing analyses

Comparing the cases we can realize that there are different types of modified Machiya, regarding their physical resemblance; we can classify the cases into the consisting in conserved Machiya such as case 1; Machiya without radical changes, such as in case 3; and the cases with substantial changes such as in case 4. Or cases intermediary types where Machiya structure can partially be identified such as in cases 2, 5 or 6, which could potentially be considered as new types of Machiya. But such physical changes might not necessary have the same semantic or syntactic effect; such superficial consideration might in fact reflect almost only syntactic aspects.

In Table 3 we can summarize an analysis of all cases (C1 to C6) compared with Machiya (M) considering the main semantic qualities for each activity, which are formality and privacy (FPu: Formal-Public. FPr: Formal-Private. IPr: Informal-Private. IPu: Informal-Public)[2] and type of syntactic system[3] (W: front working space of Machiya. F: formal tatami rooms of Machiya. T: Tooriniwa. S: tatami rooms of second floor of Machiya. E: engawa. G: garden. DK: Dining kitchen. Of: office space. R: roof. O: Other systems). We can analyze each case (columns) or each activity (rows). If we analyze each case and compare it with Machiya (column M) we can count how many activities have a similar semantic description as Machiya or how many activities for each case are located in a similar syntactical system as in Machiya. If we analyze activities we can as well verify how many the semantic descriptions and the syntactical systems for each activity coincide with the values corresponding to Machiya.

Considering this analysis (Table 3) we can notice that the case most similar to Machiya (without considering case 1, which is considered a conserved Machiya) regarding its semantic description is case 5 and not case 3 as it might be considered previously based on the physical inspection (in the first paragraph of this section), while the most similar to Machiya regarding its syntactic systems is in fact case 3 (if we exclude case 1). As for the activities we can notice that semantically the most conserved are sleeping and washing, bathing and work; while the less conserved are eating activities and Leisure, while concerning the syntactic systems the most conserved are Entering and Leisure and the less conserved are eating activities, cooking, clothes drying, study/reading and work.

Brightness and naturalness are not included in Table 3 because it is a much summarized table. But such dimensions play an important role in defining each particular case, as for example the naturalness of case 5 (see fourth paragraph of section 6.3.5 Case 5), or Brightness of study/reading and Leisure in case 2 (see sixth paragraph of 6.3.2 Case 2).

As for case 1 we should have in consideration that for this case we made a more detailed analysis, since we approached such case considering the activities for guests and for family, therefore the semantics analysis of case 1, tend to emphasize the omote-ura relation reflected in a

formal-public versus informal-private relation, showing no formal-private nor public-formal activities. Therefore formal private activities such as Breakfast, Lunch, Dinner, Leisure and Study/reading appear as formal public, as well as sleeping, which is an average of family and guests. We could say that this case is perhaps more traditional than the average we use as reference (calculated in the previous chapter and represented in Fig. 5- 15)

Table 3 Comparison of cases.

M: Machiya. C1 to C5: cases 1 to 5. FPu: Formal-Public. FPr: Formal-Private. IPr: Informal-Private. IPu: Informal-Public. W: front working space of Machiya. F: formal tatami rooms of Machiya. T: Tooriniwa. S: second floor of Machiya. E: engawa. G: garden. DK: Dining kitchen. Of: office space. R: roof. O: Other systems. "# same as M(achiya)." indicates how many values are equal to values of Machiya in the corresponding case or activity. In case 2 additionally we define HH: half formal half private. HPr: half formal-Private. And HPu: half formal-Public[4].

Table 1		Semantic description								Syntactical systems							
Activi-ties	Case	M	C1	C2	C3	C4	C5	C6	# same as M.	M	C1	C2	C3	C4	C5	C6	# same as M.
1 Entering		FPu	FPu	FPu	FPu	IPu	FPu	IPr	4	T	T	T	T	O	T	T	5
2 Breakfast		FPr	FPu	FPu	IPu	IPu	IPr	IPr	0	F	F	DK	F	O	DK	DK	1
3 Lunch		FPr	FPu	FPu	IPu	IPu	FPu	IPr	0	F	F	DK	F	O	W	DK	1
4 Dinner		FPr	FPu	FPu	IPu	IPu	IPr	IPr	0	F	F	DK	F	O	DK	DK	1
5 Cooking		IPr	IPr	FPu	IPu	IPu	IPr	IPr	3	T	T	DK	T	O	DK	DK	2
6 Sleep		IPr	FPu	HH	IPr	IPr	IPr	IPr	5	S	S/F	S	F	O	O	S	3
7 Washing		IPr	IPr	HPr	IPr	IPr	IPr	IPr	6[5]	T	T	T	T	O	O	O	3
8 Bathing		IPr	IPr	HPr	IPr	FPr	IPr	IPr	6[6]	T	T	T	T	O	O	O	3
9 Clothes washing		IPr	IPr	IPr	IPu	IPu	IPr	FPu	3	T	T	T	T	O	O	O	3
10 Clothes drying		IPr	IPr	IPr	IPu	IPu	IPr	FPu	3	E/G	G	T/R	E	O	O	O	2
11 Leisure		FPr	FPu	HH	IPr	IPu	IPr	FPr	1	F	F	F	F	O	O	F	4
12 Study/ reading		FPr	FPu	HH	IPr	IPr	FPr	FPr	2	F	F	Of	F	O	W	W	2
13 Work		FPu	FPu	HPu	FPu	IPr	FPu	FPu	5	W	F	Of	F	O	W	W	2
# same as Machiya		13	7	5[7]	5	2	9	7		13	12	6	11	0	2	4	

6.5 Preliminary Conclusions

First we can recognize in the analyzed cases that it is possible to distinguish the complexity of many particularities reflected in semantic and/or syntactic qualities. We can put each case into context using as reference the semantic data representing various classes as it can be seen in

chapter 5, and analyze more in detail each case using syntactic analysis (more related to physical resemblance). We can recognize Machiya using the main semantic dimensions formality and privacy relating them with the Machiya layout using Fig. 5- 15, and as well we can find particularities of each case including brightness and naturalness, in particular as mentioned in cases 5 and 2 (see fourth paragraph of section 6.3.5 Case 5, or sixth paragraph of 6.3.2 Case 2).

Considering that syntactically resembling Machiya such as case 3 can be semantically less Machiya than other modified cases (Table 3), the relevance of the inhabitants interpretation (semantic analysis) is evident in order to design new Machiya which can still be interpreted as Machiya. We could consider the creation of new Machiya as case 5 conserving the semantic description of Machiya, or new habitation (new semantic interpretation) for the traditional form of Machiya conserving the syntactical order of Machiya as in case 3.

Secondly, from the case studies we can conclude that in all cases there are mainly two types of factors creating the architecture of each case. One factor is the physical changes in the building itself, and another is the interpretation of each inhabitant. For this reason we consider that each work of architecture is result of collaboration between architect and inhabitant. Especially in the cases of modified houses, corresponding to great part of the remaining Machiya in Kyoto, each inhabitant is an active part of the design process, and not only those who actually physically modify a house, but also the architecture making process is actively made by the inhabitant who do not physically modify buildings, but gives them a meaning by interpreting them as he inhabit in them. In other words, inhabitation is a creative form of interpretation, as in the case of C.S. Peircian concept of semiosis, an interpretant is created from the interpreted sign (For reference see chapter 2 section 2.1.7 Work of architecture:).

Therefore, if the inhabitant is involved in part of the design process, it would be unfair to attribute a work of architecture entirely to the architect as author. But rather we can consider the architect as collaborator in the design process.

Third, with an analysis as in Table 3, we can assess the conservation of the context of certain dwelling types, and also understand where we can find tendencies in inhabitation and design opportunities to create new systems or knowing what might need to be improved.

We can conclude from the analysis of Table 3, that analyzing activities instead of each case shows clearly the results about how inhabitation changes, as for example in the case of the inclusion of the DK system. Therefore such systems can be considered as well as architectural units instead of buildings. And in such case we could, as for example, analyze the context of tooriniwa or other system separately.

Finally we can add that apart from the reference we use as Machiya explained in chapter 5, even if consistent with the conventional Machiya layout, we can notice in case 1 a perhaps more

traditional approach based on the omote-ura relation of formal-public versus informal-private inhabitation system.

Notes of Chapter 6

[1] The importance of not only form but meanings for Machiya can be reaffirmed by our own research, and by others such as (Salastie, 2001).

[2] In order to define if an activity would be Formal-Public (FPu), Formal-Private (FPr), Informal-Private (Ipr) or Informal-Public (IPu) it is used semantic dimensions. In the case of Machiya the data is in Fig. 5- 15, while for each case we can see the semantic graphs (Fig. 6- 2, Fig. 6- 11, Fig. 6- 15, Fig. 6- 17, Fig. 6- 22 and Fig. 6- 25); as for example in case 5 in Fig. 6- 22 we can see a blue line for Clothes washing going from informal to private (IPr).

[3] In order to define the semantic systems it is not enough to see if a case has certain element or not (such as tooriniwa, engawa and so on) it is necessary to consider if the activities are done in such spaces and connected with corresponding boundaries such as sliding panels, voids or doors depending on each case, this information can be seen in the Syntactic activity graphs (Fig. 6- 4, Fig. 6- 9, Fig. 6- 14, Fig. 6- 18, ,Fig. 6- 23 and Fig. 6- 26).

[4] In case 2 we encountered activities for which the inhabitant rate half formal half informal, and half private half public, therefore we add such categories.

[5] As explained in case 2, washing (shower) and bathing are not formal nor informal (see note 4), but still private, and as in Machiya such activities are among the most formal of the informal private activities, so we still consider similar then similar, therefore such values are counted as "same as Machiya".

[6] Ibid 5.

[7] Ibid 5.

7. Discussion and Conclusions

7.1 Creative interpretation

Before proceeding with the final conclusion we would like to review some of the findings and preliminary conclusions, in order to reconsider what might be necessary to be discussed before making final conclusions.

Summarizing, in chapter 1 we explained the background of the research, following with the framework in chapter 2 explaining the definitions of Sign, "Semiotic streams", sign classification, spatial language, syntactics, semantics and pragmatics, architecture, work of architecture, Machiya and interpretation as design, all in a way to understand architectural design and Machiya inhabitation as a creative interpretation process. Later in chapter 3 we explained the analysis methods in syntactic, semantic and pragmatic levels.

Along this dissertation, we have developed the theoretical framework of considering architecture as the *"place we mentally construct out of a space by means of the inhabited interpretation of it"*. We have found in repeated instances that inhabitation plays an important role in defining architecture. In this section we will clarify the implications of such findings and to put the results of chapters 4, 5 and 6 into context.

In the case of chapter 4 we noticed the importance of indexical semiotic indicators, as the context of Machiya could be expressed better when we refer to the inhabitation systems by means of indexical content referring to inhabitation instead of physical similarity. But in the case of such findings we would make some observations about such semiotic indicators regarding the role of abstraction levels.

The level of abstraction can determinate the creative potential

The semiotic indicators used in chapter 4 resulted useful to easily determinate the contextual scores of buildings, but all experimentation in chapter 4 is based on existing architecture. Nevertheless we include certain level of abstraction, as we showed the superiority of indexes when compared to icons, in chapter 4 we still depend on certain physical elements, which as shown in the theoretical frame of the thesis are not essentially architecture.

If for instance we would consider the "continuous eaves" used in chapter 4. The importance of the element was attributed in such chapter to the element because of its inhabitation. Such abstraction (considering it as index of certain inhabitation instead of the iconicity), helped us to more efficiently assess the context of the buildings, but still we used the physical inspection of the buildings to recognize if there was an eave or not, but in fact the inhabited space would be the space under the eave not the eave itself.

If we consider the façade of the house of Kanjiro Kawai in Gojozaka (Fig. 7- 1), we can better illustrate such idea. In such house, there is no eave between the first and second floor, but still we can realize that the house does fit into the continuous eave system (Fig. 7- 1). Moreover,

we could say that this house has the space under the eave but without an eave. Additionally the house does not have a gable roof as the surrounding Machiya, but a hip roof instead. Neither having the eave nor having the same type of roof seems to affect the urban streetscape in any negative way; as can be seen in Fig. 7- 1, the house does fit continuously into the surroundings, with the proviso that the first floor is slightly set back.



Fig. 7- 1 Space under the eave without eave: entrance of the house of Kanjiro Kawai.

If Kawai's house would be analyzed using the method used in chapter 4, we should then consider the protruding beams between the first and second floor (Fig. 7- 1) as continuous eaves system.

In the case of the inner gardens we also could argue about the effect of abstraction. First we recall the description of the representational nature of tea gardens used to develop gardens in Machiya as well cited in the first chapter: *"The tea garden… should look like the hermitage of a recluse found in the shadow of an old forest in the countryside. A thicket should be planted, a narrow path must be laid out, a gate of plaited bamboo or a garden wicket is built, in appearance it should be simple and calm…"* (Kuitert, 1988, p 172). According to such description, we could argue about the real function of the gardens. Let us consider for instance that the whole intention is to transport our mind to the hermitage of the countrside, but as well the hermitage of the countryside is a relaxed state of mind far from the bustling cities. If the beauty of the garden is then to transport our mind away from the cities to a more relaxed environment, then we could have a much abstract approach to gardening.

The manual for designing gardens contains much descriptive material (iconic), but as well some hints about the intentions of the described elements (indexes and symbols); therefore, an interpreter living in a complete different context who might not know about the described objects, could adapt the content of the manual with other objects he might know referring to a remote simple and calm place, as long as he can imagine such place based on his/her own context; hence, the resulting place might eventually be resembling a tropical beach instead of a hermitage of a recluse in the old Japanese forest. Still we can notice that the interpretation might be linked in a deeper level of abstraction to a tea garden even if its physical appearance might be completely different, dropping the iconic content of the manual, but trying to maintain the indexical and symbolic content. As well we cannot predict what would look such a place after an undefined number of interpretations in a long *semiotic stream*. We cannot know if any interpreter in the future would find its peaceful retirement in a mirrored garden shaped as a pentagonal dodecahedron kaleidoscope (Fig. 7- 2), or in virtual reality for example.

If we consider the case of the "pentagonal dodecahedron kaleidoscope garden" (Fig. 7- 2), deciding if we should count it as tsuboniwa or not might be more difficult than in the case of the absence of the eave in Kawai's house, but mainly because of the fact that the "pentagonal dodecahedron kaleidoscope garden" looks completely different than a normal tsuboniwa. Nevertheless, the "pentagonal dodecahedron kaleidoscope garden" could eventually accomplish its function as tsuboniwa, not only for light and ventilation, but its more essential representational function; representing in this case not the hermitage of a recluse in the forest, but allowing our mind to transport itself away from the bustling cities to a distant world, where we could stay focused for a long time contemplating and discovering the geometric patterns of

such kaleidoscopic hermitage.

Such different approaches should be seen as a challenge to our capacity to enjoy different ways of transporting our minds instead of deficient application of superficial knowledge.

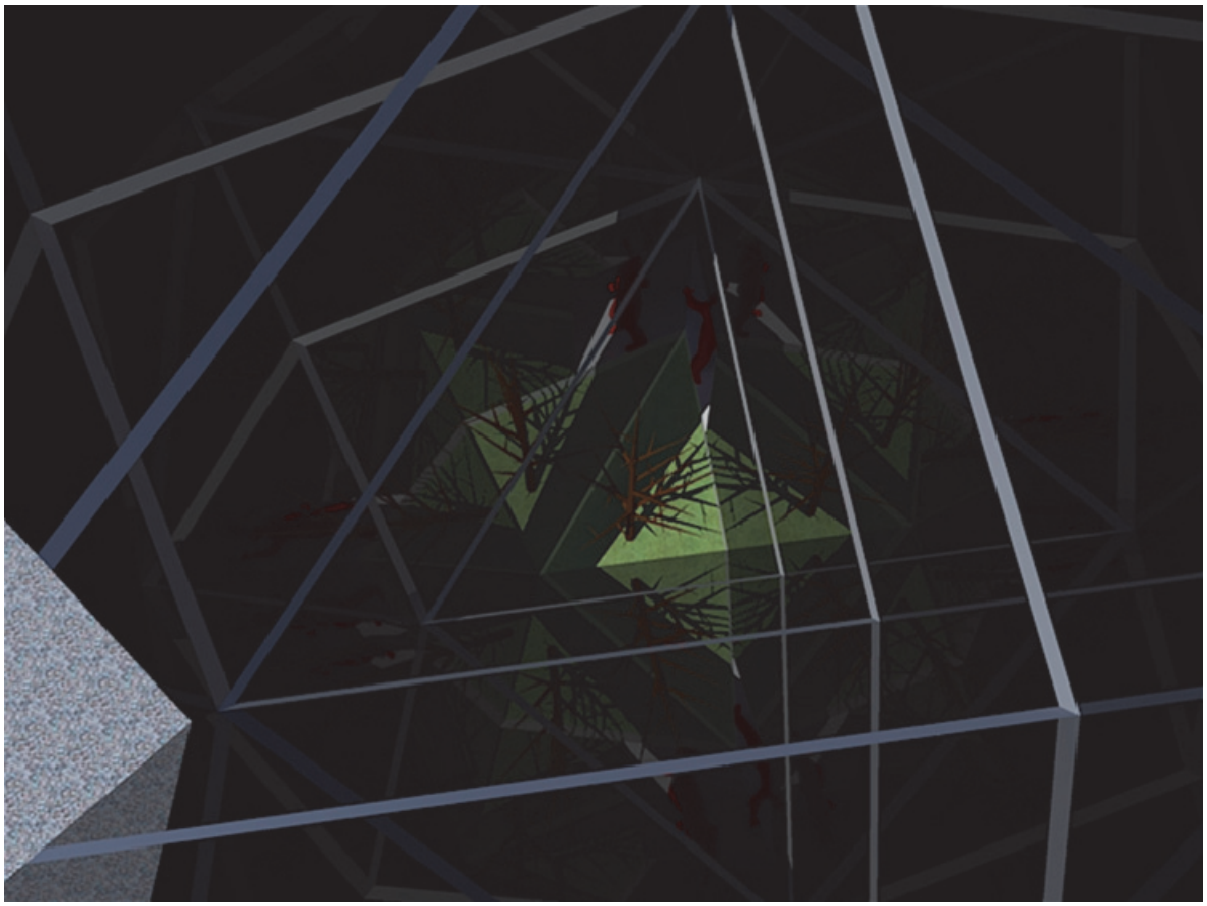


Fig. 7- 2 Rendered image of a pentagonal dodecahedron kaleidoscope garden seen from above. This "pentagonal dodecahedron kaleidoscope garden", which in reality is triangular, consists in just three mirrored planes, inclined in a specific way to create the illusion of a dodecahedron.

What we can say about the effect of abstraction in these cases is that as more abstract our interpretation is, more creative potential it has, and wider possibilities we can consider.

Such interpretations are not subjective nor objective, but creative.

Creative interpretation

The subjectivity and arbitrarily of interpretations, can eventually be overcome in architectural analysis using potentiality, which shows to be different from spatial or form analysis. Basically this means that instead of seeking general rules which according to certain logic should be true for all cases (where interpretation might be difficult to use); in this case we consider the potential of something to be by finding one case in order to show its possibility. Later in order to develop such findings in a more general idea applicable to other cases, depending on how the findings are

elaborated they can be more or less effective, achieving eventually better results than exhaustive analysis or statistical analysis which might be more efficient in other areas. It is very important to note that architectural analysis is not the same as spatial or formal analysis, hence it might not use similar methods; in this case architecture refers to human inhabitation, and its development in space and time.

It is common to hear about modifications of traditional Machiya or other traditional buildings as something abnormal. But at least in the case of Machiya it has been recognized as having evolved in time and moreover such process considered essential in order to fully understand Machiya. Therefore, it is not strange to see that one Machiya might be different or modified compared to other Machiya, but it is our concern how such modification, or because of what reasons such modifications occur. In first place we can make a difference in the methods; traditional Machiya is supposed to evolve within traditions, in other words methods passed from generations to next generations, certainly not all modifications falls in to such condition, moreover it is hard to say which might be absorbed in the ever-changing continuum of tradition, if any.

Independently from what might happen to modifications of Machiya, it will depend on the interpretations given to it if they might or not be incorporated in tradition. For instance any modification can be interpreted as part of the Machiya process or not, and the interpretations might vary for each case and interpreter. Therefore the interpretation is important in the creative process for anyone who might participate in the process of Machiya design.

Particular cases might be very complex; therefore, it will be referred to them as Machiya modifications in general, whether it is Kanban Kenchiku or any other modification or abnormality found in Machiya. In this section we will refer to particular cases first, and later go on to more general conclusions.



Fig. 7- 3 Case of kanban Kenchiku.

In this particular case (Fig. 7- 3), we can see a façade covered with mortar in the first floor and with vinyl siding in the second. In contrast with the other house which keep a much more "traditional look", it might appear that it is just as much Machiya as any new shop. First impression might be not very positive. But without examining in detail, it might be very difficult to appreciate the importance of interpretation for good or for bad.

The next picture shows the same building in a different angle (Fig. 7- 4).



Fig. 7- 4 Same building in a different angle.

Now it is possible to see that there is part of an old roof configuration maintained, but just when we look from upside (Fig. 7- 5) we might discover that behind the façade is remaining eventually as much "Machiyaness" as behind the neighbor house seen as well in Fig. 7- 3.



Fig. 7- 5 Same building seen from above. Image source: **(Google)**.

Now considering the context in which both houses are, still without confirming how much cultural heritage is conserved behind both façades, but assuming that both have similar potential, we still could say that one house is better conserved than the other from outside, but as well one is updated to the modern context more than the other (without judging the quality of such adaptation). In the domain of subjectivity we could not progress much with such approach, but there s still something what can be settled down after such an apparently arbitrary simple analysis. The shown case might be difficult to classify or judge, but that was not the intention right from the beginning, what the case shows is that the alteration of a Machiya can *potentially* help the building to adapt to different contexts, and actually can *potentially* conserve important part of its traditional heritage behind such alteration. And as well it is important to clarify that for such *potentiality* does not depend on the quality of the example case of the alteration. Also without analyzing more cases or deepen in statistics or other exhaustive methods, we can accept such *potentiality*. On the other hand, it is also known that it will never become absolute; neither can it escape its context, since the potential in design of such *potentiality* will be applicable depending on the context of each case.

Still there is something else to be understood from such case: buildings which look well from the outside might as well hide another reality behind the façade, rendering superficial wide range survey eventually less accurate than an apparently speculative interpretation of a single case, and eventually also having less design potential than such simple single case analysis. In other words, what might appear as arbitrary and subjective from the point of view of formal or spatial analysis might be relevant for an architectural interpretation, just it is not very clear what that is.

In the next case we see an altered cityscape, with some remaining of Machiya in between. In the picture taken from a parking lot we can see the back side of some houses (Fig. 7- 6).



Fig. 7- 6 Backside of houses revealing adaptations for clothes drying.

A closer look at the center of the picture (Fig. 7- 7) we see that there is what seems to be a Machiya and other houses mixed together, most of them equipped with a certain type of terrace provided with the necessary for drying clothes. Without judging the functional capacity of such devices, we can see that they are designed to work in a similar way, and as well that they are used in different buildings at the same time, and also that such buildings not necessarily are Machiya. We can say that a system for drying clothes exists, and that its coverage can spread among several buildings, even we cannot deduce where it has originated. But we can see it apparently in a static condition.



Fig. 7- 7 Close-up to the structures used for clothes drying shared among different houses.

But let's consider the other building on the next picture (Fig. 7- 8):

We can see that a similar device has been integrated into the roof of this building, without knowing if this is related in its design with the previous, we still can interpret it as a variation of something similar because of the way such devices are related to the inhabitants of each of the buildings according to their function and position. As well we can imagine more variations of the device, as well as imagine all buildings with each of the different variations and possible combinations. In other words the devices constitute part of a system which can spread on different buildings, and it can vary (or evolve). Also we might notice that such devices might vary

or evolve in a single building as well, without the need to spread out among different buildings. Moreover as such devices are related to inhabitation they fall into the domain of architecture, therefore we can see the *potentiality* of "architectural systems" to develop independently of the boundaries of individual buildings, and vary or evolve into new variations, defined by their inhabitation, more than physical parameters. We cannot yet clarify if all architectural systems have these characteristics, but as some have, we already know that buildings themselves are not necessarily architectural systems, but rather such systems whatever they could be can spread through the city and vary or evolve.



Fig. 7- 8 Roof terrace, which as well is used for clothes drying.

After considering this second case and reconsidering the first case, we can also imagine that the modification seen in the first case can as well be different in physical aspect and as well spread through other buildings, whether such idea would be appropriate or not, will depend on the context of the given cases. Still interpretation in such way overlaps directly with design process, being interpretation a design stage as well. But as interpretation to work as in these cases, we have to be aware that in both cases the interpretation is not done in a way that it depends on similarity, but more abstract relations. As such we can actually make an experiment of trying to interpret a space without recollecting any visual information at all, but other interpretations. As such interpretations are at the same time creation, we basically continue a cycle of interpretation

of interpretations as a method of infinite development.

In all the described cases, the key is not to discuss blindly which system is better or worse. As well we should not waste time in discussing if the terraces in the previous case are really intentionally connected or not, or if the continuity of the absent eave of Kawai's house is intentional or not. On one hand, as explained in the case of the "pentagonal dodecahedron kaleidoscope garden", it is about our capacity to make abstract links in order to be able to appreciate the potential of the cases; and on the other hand the coherence, which will be given by the analyses explained in chapter 5 and 6, but not a problem of subjectivity or objectivity or being more or less true. Architecture is at the end made by creative interpretation, and not discoveries.

Regarding the analyses done in chapters 5 and 6, more than validity, we can assess coherence of the interpretations and space, and such coherence will be supported by semantics. Therefore, all architecture belongs to a shared knowledge, that is to say, architecture depends on the possibility to be shared among various interpreters, and at the same time, open to development of any existing architecture (*semiotic streams*). In such respect architecture would be considered a kind of language.

In the case of Fig. 7- 8 and Fig. 7- 7, instead of deciding based on the supposition of a better system based on functionality, the analyses done in chapters 5 and 6 can give us a clue about the semantic character of "clothes drying", and such information can help to make the most coherent decisions. Any problem of functionality or other technical nature should be solved afterwards. If on the contrary we take the technical problem in hand, without dealing with the semantic problem first, we would just increase all the problems described at the beginning of this dissertation; we would just disregard from the context of inhabitation and ignore all differences between architecture and machinery.

Moreover we can make the exercise of creative interpretation in existing Machiya. Considering Fig. 7- 9 we can realize the following things:

In the formal side elements are disposed in a symmetrical way and aligned with other objects such as the tatami, as well we can find elements such as the tokonoma where decorative elements might be placed; in the informal side elements are more dispersed and asymmetrical instead of symmetrical and aligned, decorations are hung directly on a wall and concrete floor is being used.

We might not know if such situation is intentional, but we can know if it is coherent with the context. Therefore we can consider such elements as representing formality and informality (as symbols) because of their coherence, instead of intention. As well even if such situation might be not intentional we still consider them in further spatial language if they are coherent enough. In other words, we might care about if we can share such idea in form of interpretants.

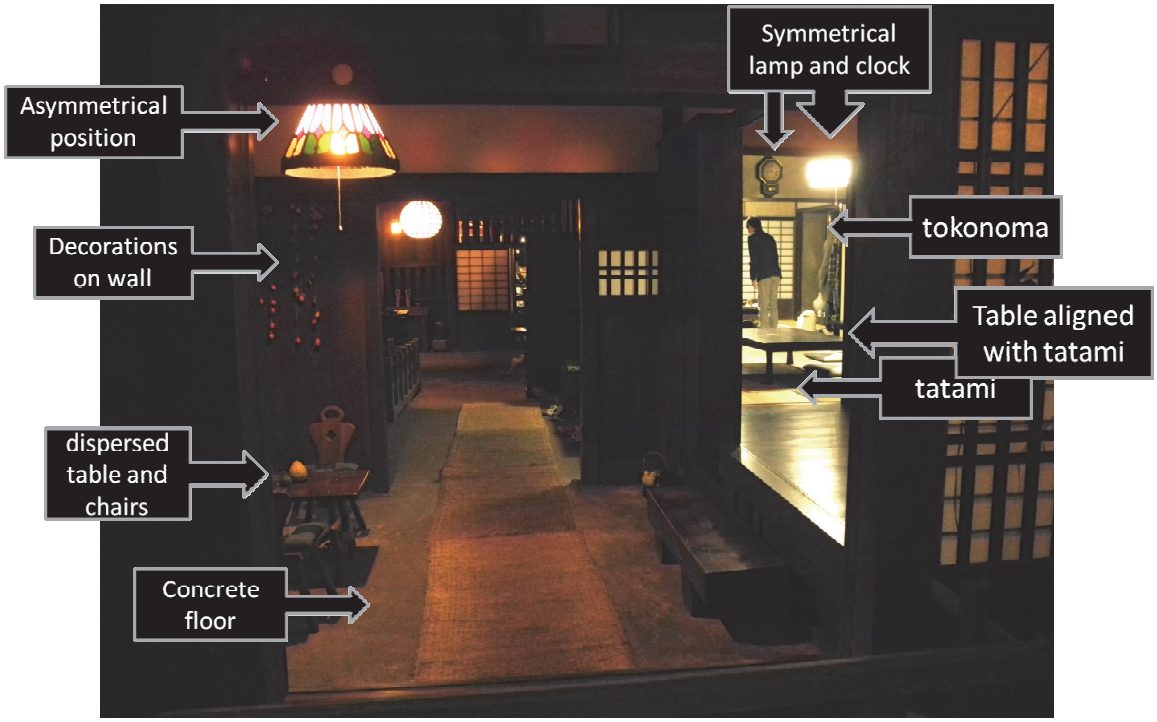


Fig. 7- 9 Differentiation of formal (right) and informal (left) side in Machiya.

7.2 Conclusions

This dissertation deals in part with the difficulties that arise in the field of architecture caused by the lack of any axioms which would allow us to make any reasonable logic construction and understanding. As we could see in after reviewing related research (section 1.5 Related research), none of all the reviewed related research include a base of definitions radical enough to be considered as an axiomatic base for architecture. The lack of axioms in architecture repeatedly undermines every effort to create a solid theory of architecture.

As this dissertation started focusing on Machiya, the huge gap in architectural theory is not directly covered nor solved. However, in an attempt to react to the problem, in the theoretical framework of this dissertation, denying most of the assumptions made so far about architecture, to the point to deny all physical materiality of architecture, we made an effort to avoid several of the logical leaps discovered in previous and related researches, showing that it is possible to analyze architecture with the only premises that humans inhabit some space and might interpret it affecting its inhabitation. But instead on focusing on the physical form and assuming that the form itself has a meaningful interpretation which cannot be separated from the object itself, we consider that the meaning independent from which the physical object might be, is enough. From a semiotic point of view, architecture would exist as long as space becomes meaningful in a Peircian way, manifesting itself in form of secondness from the view point of inhabitation.

Therefore, we discovered that it is not necessary to assume anything about neither shapes nor forms. But rather than considering this as an axiomatic construction of architectural theory we just consider it as one step towards such type of definitions. Nevertheless, it would require to be discussed worldwide to reach an agreement first, before to even attempt to call anything as an axiom.

However the resulting research of Machiya showed us several interesting points about Machiya and architecture in general, mainly because of such effort to find an alternative to the lack of axiomatic definitions in architecture.

The importance of inhabitation and secondness

As we could expect based on chapter 2, and as we found out in chapter 4, the indexical indicators explained better the context of Machiya. As well throughout the whole dissertation we reaffirm the importance of inhabitation for our analyses. The importance of inhabitation as a causal relation defining an Index (secondness) is that it is the only requirement to explain most of our dissertation. Basically all the results we got in the analyses are product of inhabitation, and such inhabitation seen as an interpretation of space.

In our experiments, as inhabitation might only be really affected by secondness, we could show that the use of iconic content only was useful as part of an index, while symbols without containing any indexical content, cannot be determined as really affecting inhabitation.

The relevance of semantics and the pragmatic level

In our semantic analysis in chapter 5 we could reveal the perceived semantic description of Machiya based on the inhabitants interpretations. We could show that such description is consistent with the theoretical interpretation we could infer from the Machiya layout, and differentiate it from other dwelling typologies.

But in the analysis in chapter 6, we not only verified that the syntactical analysis has a less relevant role than the semantic analysis since it was possible to find syntactically different Machiya; we also showed that the semantic description of Machiya case by case has also variations. However the variation of syntactic schemes is a creative opportunity to generate new Machiya with infinite possibilities, while the semantic variations are still somehow connected to their context (for example in the case of Kojima´s house in chapter 6, her semantic interpretation corresponds to her perception of *omote* and *ura*, joining both main semantic dimensions (informal-formal and public-private), which is also part of the Machiya context), and if not connected to the context, we cannot recognize them as Machiya anymore, therefore not offering the opportunity to create new types of Machiya. Hence the typology is defined by a whole of varied cases sharing a semantic context.

About who creates architecture

Throughout the analyses in this thesis we can find an important role of the inhabitant in defining what is what. Moreover, we can trace in the semantic analyses in chapter 5, that the context of the inhabitants also has strong influence, as in the way of *semiotic streams*, where each sign is created by interpreting a previous one, or in this case eventually more than one previous sign.

For such reason, we could not give all the credit of some architecture to one person, but rather attribute collaboration to a person who collaborates in such *semiotic streams*. The implications of this are that it would be morally correct to give credit to someone for his collaboration, but the use of each of such collaborations as a functional part of such processes should not be restricted in any way, as doing so might hinder the free development of a cultural identity, as the so called vernacular processes are still ongoing as *semiotic streams*, even as if such *semiotic streams* as coined by Alexander might correspond to *unselfconscious* processes.

Assimilating the collaborative nature of architecture would as well have great impact in architecture learning and architectural practice. Both are usually carried out in the most competitive way, especially concerning competitions, where an image (icon) can become one of the most powerful tools.

About what is to be created

Certainly, regarding this dissertation, to create architecture is not to create a form, a shape not even to build a building, but to create inhabitation. Only with the complete negation of physical construction of forms as architecture, we can put architecture on par with the advancements achieved in other arts such as music and painting, if we consider as for example the impact of John Cage´s silent music (4'33") or Rauschenberg´s white paintings (see section 2.1.6 In the case of architecture:).

After such process of negation, and being able to interpret inhabitation into space, we can reconsider the forms and materials, but then in the creative process the aim is the inhabitation experience and not the physical space.

In the analyses we could find out, different cases that not only the inhabitation can be described as essential part of architecture but as well it is an ongoing continuous process, and is in fact affecting the architecture of existing buildings. As for example, in each of the analyzed cases, each of the inhabitants is creating the reality of the space he inhabits. This means, for example, that if for any reason the semantic dimensions of all Machiya would be interpreted in a way completely in disregard of Machiya semantic context, then at that moment there would be no Machiya remaining, in the same way as when abandoned buildings from past civilizations are discovered, such buildings are not anymore what they were supposed to be unless someone is

capable to inhabit and interpret them as what they were supposed to be.

About what is happening with Machiya

Based on the previous points we can describe severe treats to Machiya in the modern context.

-Many buildings which look like Machiya are not Machiya. This might be quite evident in the case of some crude imitations, but in fact it extends much further. Even some very detailed imitations, are not Machiya unless interpreted as such, but not just by recognizing the iconic similarity, but the semantic description of its inhabitation as in we could see in chapter 5. Therefore, even real Machiya, but currently uninhabited, are also currently no Machiya, but at least in some cases museums, art galleries or restaurants. But on the other hand, new and different Machiya can be discovered (or modified Machiya such as case 5 in chapter 6), and explained as real Machiya based on such analysis, opening infinite new possibilities for Machiya.

-Many approaches to new Machiya cannot create new Machiya. This mainly happens because of the individualistic approach of building making used to create new Machiya. Neither individual proposals by architects nor the results of competitions can efficiently create new Machiya. As long as the *unselfconscious* vernacular processes is replaced by the modern design methods without including the semantic context of Machiya, the efforts of creating new Machiya might result meaningless.

The main problem is that the vernacular process not just stopped, but as well too many years have passed and too many new semantic values have been introduced.

Therefore, on one hand it is not enough just trying to continue any vernacular process by encouraging the communities to design their new Machiya; even if operating collectively, what once would have created new Machiya in an *unselfconscious* way, might not create new Machiya now after so many new semantic values conscious or unconsciously integrated into the *semiotic streams* of each inhabitant. As it can be seen in chapter 5, no matter how many inhabitants say they would like to live in Machiya, what they semantically prefer is much different.

On the other hand, even talented architects if they do not have an understanding of semantic context, are not likely to successfully create any connection with the *semiotic streams* of Machiya. Some will be limited to the exact replica of existing Machiya, and others limited by the fact that if they use more complex ways to refer to Machiya than iconic content (which is easier to understand but is not defining architecture) that inhabitants might not grasp the meaning, as they would as Bonta said, "*read their own meanings into space"*. Therefore most of the more complex than the replica approaches might result in individual cases, mainly only understood by experts who have the *selfconcious* knowledge required to do so, and success might be achieved perhaps by chance or any unpredictable reason. In such cases, projects not intended to be new Machiya could eventually be successful as well if we consider processes such as the

Pseudo architecture (see Pseudo architecture in section 2.1.7 Work of architecture:).

The complications arise as the semantic dimensions, especially the formality, might be considered as symbol (hence the many symbolic elements in Machiya). This is a big problem as pragmatically such dimension might therefore as in words of Joseph Margolis, not exists but be real (Margolis, 1995). This would mean that as Symbol, the formality itself does not exist, but might be real in the way as it affects the inhabitant; or in the case of our framework, only the inhabitation of formality brings it into existence as Index (Secondness).

The virtue of semantic analysis, regarding the previously explained treats, is that using semantic analysis we can define what Machiya is at any given moment. Such information we can use to create new architecture aiming to the same semantic identity we identified as Machiya, and as well to monitor the results, not only of new projects, but as well the several existing attempts of new Machiya. This means that the strength of the strategy would be the feedback, since the axiomatic problem of architecture makes it yet impossible to predict the results, but at least this first step would help to set a goal defined by the semantic analysis.

Such method would help to make the *unselfconscious* process visible for those who attempt to create new Machiya, whether a community engaged in architectural design or an individual architect. Such method we call *"Culturally Friendly Design Method based on Machiya System of Kyoto"*. In the case of this dissertation we created a semantic definition of Machiya based on the relations of activities and spatial values associated to cultural values (semantic dimensions) (Fig. 7- 10). Such semantic definition can be used in design in an abstract level, allowing us to create new evolved signs/spaces. Note that in the case of this dissertation we focus on a creative interpretation rather than a cause and effect study of behavior.

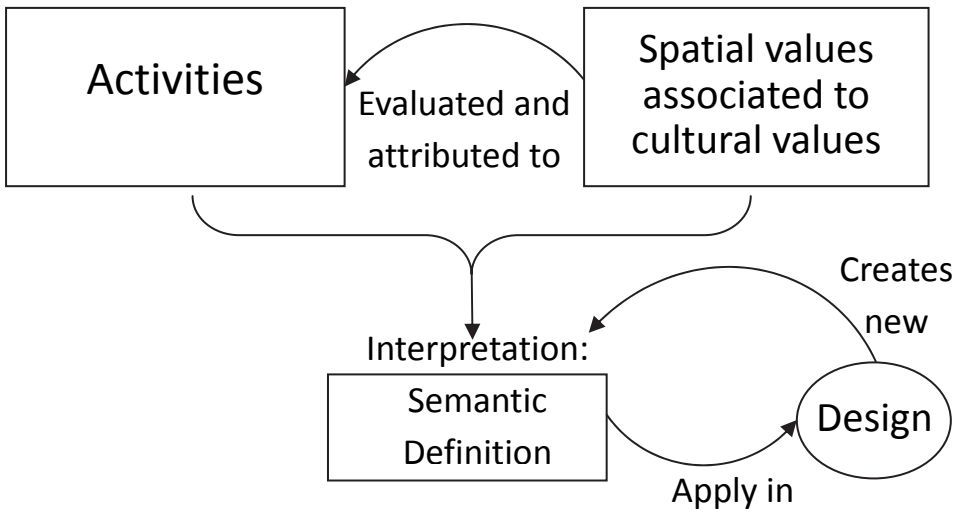


Fig. 7- 10 "Culturally Friendly Design Method based on Machiya System of Kyoto" process as explained in this dissertation. We created a semantic definition of Machiya based on the relations of activities and spatial values associated to cultural values (semantic dimensions).

We address our first objective "To improve design methods quality" by elaborating the explained framework integrating inhabitation and design process. Our second objective "Favorable management of the context for existing Machiya" is addressed by our clarification of Machiya context explaining what is being created and who creates it. Finally with the framework developed in this dissertation we can integrate inhabitation and design process continuously and we used it to research Machiya at deep levels of abstraction. With such an understanding of a more abstract level of Machiya, we can create more new alternatives without destroying its context (third objective "To create new alternatives within the existing context of Machiya"). We are not limited to imitate original Machiya without possibility to integrate any new system into it.

7.3 Relation with other areas and further applications

In this section we explain how the framework of this dissertation could be applied in other areas, and which implication we could find if we would consider such framework in other areas.

In Fig. 7- 10 we considered the cultural background of Machiya, where we can find an established relation of spatial values associated to cultural values; however, we can expand the diagram in Fig. 7- 10 as in Fig. 7- 11 and analyze or construct if necessary a relation of ethic and esthetic values in order to apply this framework to other cases and fields.

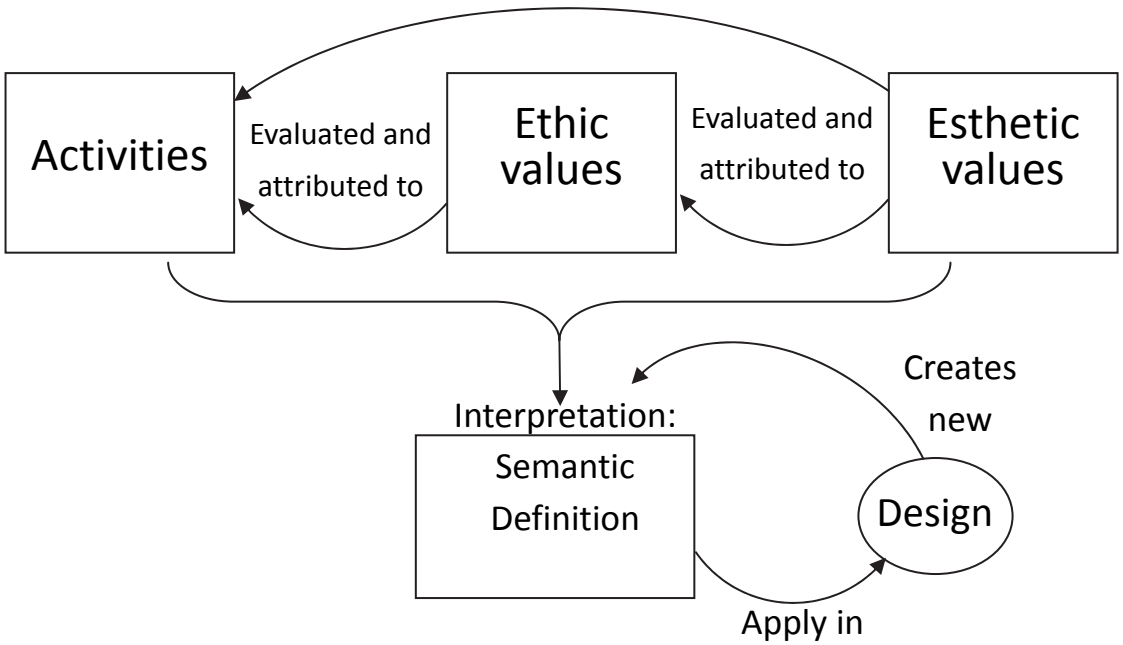


Fig. 7- 11 Extended Diagram of "Culturally Friendly Design Method based on Machiya System of Kyoto". In this case instead of considering a preexisting set of spatial values associated to cultural values, the relation in between ethics and esthetics is also being investigated. Note that the relation between activities and ethic values might be an indexical construct (as the ethics and activities are affecting each other), but if we include esthetic values it becomes a symbolic construct.

Design-Architecture-urbanism

Inhabitation is not limited to the scale of dwelling as it is being used in this dissertation. We could eventually apply the same framework at any other inhabitable scale.

In the case of design of smaller objects such as furniture, we could straight forward use much of the data collected in this research. We could use the semantic information of each activity inside of the dwelling to have in consideration for designing various types of objects and furniture for each activity.

In the case of urban scale, it might be necessary to extend the data with activities corresponding to urban spaces. But the method of getting such data and analyzing it would be more or less the same as in this dissertation.

Esthetics and ethics

Considering the semantic dimensions as values chosen as appropriated or preferred for each activity, we can consider the contextual relative morality. This is to say, we can recognize certain right and wrong according to a given context. Therefore some parameters would be preferred for some activity but not for another, as seen in section "3.1.2 In the case of the semantic level".

In this case, the ethic function of right or wrong, would take the sense of an esthetic position as well of preference or appeal.

Additionally the combination of such parameters makes it possible to appreciate and create new signs (in this case Machiya), suggesting that the semantic dimensions, conceived as traditional values reflect in fact also ethical values in an abstract way. This is to say interpretations to inhabited space are giving by recognizing abstract "correctness" represented by the "correct" semantic parameter, being "preferred" by the inhabitant according to his/her cultural background. From this point of view, this framework would bring esthetics and ethics close together, combining moral and beauty. Considering traditional values, we could in fact consider moral and beauty almost the same, where beauty would correspond to a very abstract form of a moral value.

Other arts

The semantic dimensions can be used also for other arts, but in such case we need to consider as well other relations of interpreters with the signs apart from inhabitation and activities. Depending of what kind of art we might focus on the use of different senses. Art itself might be understood in such case as explained previously in the section "Esthetics and ethics".

Intellectual property

As already explained in the conclusions, this framework would suggest that the creations

have a collaborative nature, where we can give credit for collaboration but no authorship or ownership of creations.

List of Published Papers

1) [##] *Semantic Analysis of Machiya Inhabitation Context,* Journal of Architecture and Planning, Transactions of AIJ, Vol. 78, No. 685, 573-583, March 2013

2) [#]*Analysis of Architectural Space of Machiya using Semantic Dimensions comparing Case Studies with Dwelling Typologies*, Design symposium, Kyoto University, 2012

3) *Analysis of Architectural space using semantic dimensions*, Architecture Institute of Japan, Summary of Technical Papers of Annual Meeting 2012

4) *Analysis of Architectural space using semantic dimensions: a case study*, Architecture Institute of Japan, Summary of Technical Papers of Annual Meeting 2012

5) *Analysis of Architectural Space of Machiya Using Semantic Dimensions*, Architecture Institute of Japan, Summary of Technical Papers of Annual Meeting, Kinki Branch, 2012

6) [##]*Parametric Analysis of Machiya Context using Semiotic Indicators*, Journal of Architecture and Planning, Transactions of AIJ, Vol. 77, No. 676, 1343-1353, June 2012

7) *Creative Interpretation of Machiya System Modifications -Contextual Friendly Design Method based on Machiya System of Kyoto Part2-*, Architecture Institute of Japan, Summary of Technical Papers of Annual Meeting 2011

8) *Parametric Analysis of Machiya System -Contextual Friendly Design Method based on Machiya System of Kyoto Part1-*, Architecture Institute of Japan, Summary of Technical Papers of Annual Meeting 2011

9) *From Physical Parametric Analysis towards Architectural Parameters and Context*, Architecture Institute of Japan, Summary of Technical Papers of Annual Meeting, Kinki Branch, 2011

10) [#]*Parametric Data Analysis of Machiya System in Kyoto for Contextual Friendly Design Method*, Design symposium, Advanced Institute of Industrial Technology, 2010

[#]Abstract refereed papers [##]Full refereed papers

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Sources of figures

Source of each figure is indicated in the caption of the figure in case of figures not made by the author. All figures without indicated source are made by the author.

Glossary

Butsudan	Buddhist altar used in houses, usually in form of cabinet
Byobu	Folding screen used as space divider, usually with artistic paintings
Cho	Urban unit of Kyoto, first corresponding to one of the blocks and later on to the opposing sides of two blocks along a street.
Chonin	Inhabitants of the Cho
Daidoko	see daidokoro
Daidokoro	In the case of Machiya, the room next to the cooking space in the tooriniwa, used for eating or living room.
Daikoku	Prosperity god
Daikokubashira	Main column, located dividing the formal public and informal private spaces.
Degoshi	Protruding lattice window in the front façade of Machiya
Doma	Earthen floored area of the house corresponding to informal use
Engawa	Verandah used as boundary element between tatami rooms and gardens
Fusuma	Sliding partitions used in houses made of thick paper on wooden frames
Genkan	Entrance space
Hanare	Additional building at the rear of a plot
Hare	Concept referring to the formal or extraordinary events, opposite of ke
Hashira	Column
Heian	Historical period corresponding to 794 to 1185 named after Heiankyo
Heiankyo	Name of Kyoto, when founded as capital in 794
Hisashi	Eaves
Hisashi no shita	Space under the eave
Ido	Water well
Ie	House, household, family system
Ikebana	Art of flower arrangement
Inuyarai	Protective curved fence located at the lower part of the façade of Machiya
Kamidana	Shelf for the gods used in the interior of houses (Shinto)

Kanban	Sign board
Kanban Kenchiku	Name given to Machiya with modified flat façades, the term comes from the sign boards (see Kanban)
Ke	Informal, ordinary, everyday, unclean, opposite of Hare
Ke niwa	Informal working garden
Koshi	Wooden lattice
Kura	Storage house, usually with white plaster and few windows, intended to resist fires to protect the stored goods
Machi	See Cho
Machiya	Literally means urban house
Mado	Window
Minka	Vernacular houses, including farmhouses (noka minka) and Machiya
Mise	Shop in front of Machiya
Miseniwa	Garden corresponding to the Mise
Mushikomado	Characteristic window of the front of the second floor of some Machiya, made of vertical clay columns
Nagaya	Row houses located at the inner side of blocks, usually used as rentals
Nakanoma	Middle room, may correspond to daidoko
Niwa	Garden
Nokishita	Space under the eaves
Noren	Short curtain like element used in door openings
Oku	Backside, rear
Omote	Front, face
Omoteya	Building at the front side (omote)
Oshiire	Built-in closet
Raku	Earthen embankment
Rakuchu	Name given to the inner area of medieval Kyoto
Rakugai	Name given to the outer part of medieval Kyoto
Roji	Narrow alley ways conducing to the inner side of the blocks, also name given to tea gardens.
Shoji	Sliding panel with wooden lattice and translucent paper
Soan	Esthetic ideal and grass hut style
Sudare	woven blinds used for sun protection
Sudo	Interior straw or reed sliding panel replacing panels in summer

Sukiya zukuri	Architectural style based on tea architecture
Takayuka	Raised floor
Tatami	Straw mats used as floor cover
Tooriniwa	earthen floored corridor connecting the front and back of Machiya, corresponding to doma space and ke activities
Tsubo	Measure unit corresponding roughly to 182cm x 182cm (s square of two tatami mats)
Tsuboniwa	Small inner garden
Udatsu	Projected gable parapet of the roof and part of the second floor
Uraya	Rear house
Zashiki	Tatami room for more formal uses than the doma such as receiving guests

Appendix

Questionnaire and its answers

Question 1:

1-Mark one alternative with a circle "○".

1-1. - Type of dwelling where you live:

1) Single house: Machiya
2) Single house: Other than Machiya
3) Row house: Machiya
4) Row house: Other than Machiya
5) Apartment or similar
6) Other:_____

1-2. - Regarding to your dwelling you are…

1) Owner of the dwelling.
2) Renting the dwelling.

1-3. - Which type of building do you prefer to live?

1) Single house: Machiya
2) Single house: Other than Machiya
3) Row house: Machiya
4) Row house: Other than Machiya
5) Apartment or similar
6) Other:_____

Answers:

Answer number	1-1.	1-2.	1-3.
1	1	1	1
2	1	1	5
3	2	1	2
4	2	1	5
5	2	1	
6	1	1	1
7	2	2	1
8	2	1	2
9	5	2	1
10	5	2	5
11	5	2	2
12	5	2	2
13	2	1	2
14	5	2	1
15	5	2	1
16	5	2	1
17	3	2	2
18	5	2	2
19	5	1	1
20	5	2	1
21	2	1	2
22	2	1	2
23	5	2	2
24	1	2	1
25	2	1	2
26	5	2	1
27	5	2	2

Answer number	1-1	1-2.	1-3.
57	5	2	2
58	5	2	4
59	5	2	5
60	4	2	1
61	5	2	1
62	5	2	1
63	5	2	1
64	2	1	2
65	5	2	2
66	5	2	2
67	5	2	1
68	2	1	5
69	6	2	1
70	5	2	5
71	5	2	2
72	5	2	5
73	2	1	2
74	2	1	2
75	2	1	2
76	2	1	2
77	5	2	1
78	2	1	2
79	2	1	2
80	2	1	2
81	5	2	2
82	5	2	5
83	5	1	5

Answer number	1-1.	1-2.	1-3.
113	4	1	1
114	5	1	1
115	1	2	1
116	2	2	2
117	5	1	5
118	2	1	2
119	5	2	5
120	2	1	1
121	1	1	
122	3	2	1
123	2	2	2
124	2	1	1
125	5	2	2
126	5	2	2
127	5	1	2
128	2	1	2
129	5	1	5
130	5	2	
131	2	2	2
132	5	2	1
133	5	2	2
134	5	2	5
135	5	2	5
136	5	1	5
137	5	2	2
138	1	1	
139	1	1	6

Answer number	1-1.	1-2.	1-3.
169	5	2	2
170	5	2	2
171	5	2	1
172	5	1	1
173	5	2	1
174	2	1	3
175	2	2	1
176			2
177	6	2	4
178	1	1	5
179	1	2	1
180	1	2	1
181	1	1	1
182		1	1
183	1	1	1
184	1	1	1
185	2	1	2
186	1	1	1
187	1	1	1
188	2	1	2
189	1	1	1
190	1	1	2
191	1	1	1
192	5	2	3
193	1	2	6
194	5	1	2
195	5	1	2

28	5		1
29	2	1	5
30	5	1	2
31	5	2	2
32	5	2	1
33	2	1	2
34	1	2	1
35	2	2	1
36	5	1	5
37	5	2	1
38	5	2	2
39	5	2	5
40	2	1	1
41	5	2	2
42	2	1	2
43	2	1	1
44	5	2	1
45	2	1	2
46	2	1	1
47	2	2	1
48	2	1	1
49	5	2	2
50	5	2	1
51	2	1	2
52	4	2	5
53	5	2	2
54	5	2	1
55	5	1	1
56	2	1	2

84	5	2	2
85	5	2	5
86	1	2	5
87	2	1	2
88	5	2	
89	5	2	2
90	2	1	2
91	5	2	2
92	1	2	2
93	2	1	5
94	5	2	4
95	5	2	2
96	2	1	1
97	5	2	5
98	5	2	5
99	5	1	5
100	5	2	1
101	2	1	2
102	6	2	2
103	5	2	5
104	2	1	2
105	2	1	2
106	2	1	2
107	2	1	2
108	2	1	1
109	2	2	2
110	5	1	
111	2	1	2
112	5	2	5

140	2	1	
141	1	2	1
142	1	2	2
143	2	2	1
144	5	2	2
145	1	2	1
146	5	2	1
147	5	2	2
148	5	2	2
149	5	2	4
150	5	2	
151	5	2	3
152	5	2	1
153	2	1	2
154	5	2	2
155	6	2	5
156	2	1	6
157	5	2	1
158	5		3
159	5	2	1
160	5	2	2
161	4	2	2
162	1	1	1
163	1	1	
164	1	2	2
165	3	2	1
166	5	2	2
167	5	2	1
168	5	2	2

196	1	1	1
197	2	1	2
198	5	1	2
199	5	1	2
200	2	2	1
201	1	1	4
202	5	1	5
203	1	1	1
204	2	1	2
205	1	1	1
206	1	1	1
207	2	1	2
208	5	2	2
209	5	1	2
210	2	1	2
211	1	1	1
212	5	2	1
213	5	2	2
214	1	1	1
215	1	1	1
216	1	2	1
217	1	1	1
218	1	1	1
219	1	1	1
220	1	1	1
221	2	1	1
222	2	1	
223	5	2	4

Question 2:

2-1. - Amount of each type of spaces, please fill out a number in between the brackets "( )", use "0" in case of absence of such type of room.

Kitchen ( )

Bathroom ( )

Bedroom ( )

Living room ( )

Garden ( )

Balcony ( )

Storage room ( )

Shop or workspace ( )

Answers:

Answer number	2-1. Kitchen	2-1. Bathroom	2-1. Bedroom	2-1. Living room	2-1. Garden	2-1. Balcony or verandah	2-1. Storage room	2-1. Shop or workspace	Answer number	2-1. Kitchen	2-1. Bathroom	2-1. Bedroom	2-1. Living room	2-1. Garden	2-1. Balcony or verandah	2-1. Storage room	2-1. Shop or workspace
1	1	1	3	1	1	0	2	>3	113	1	1	1	1	1	1	1	1
2	1	1	3	>3	1	0	2	1	114	1	1	1	1	1	1	2	
3	2	2	1	2	0	1	1	1	115	1	1	1	1	1	1	1	1
4	1	1	>3	1	0	2	1	0	116	1	1	3	1	1	0	1	0
5	1	1	1		1		1	1	117	1	1	1	1	0	1	2	1
6									118	1	1	3	2	1	1	1	0
7	1	1	>3	1	1	2	1	1	119	1	1	0	1	0	1	0	0
8	1	1	3	1	1	1	>3	0	120	1	1	>3	1	1	1	3	0
9	1	1	1	1	0	1	2	0	121	2	1	>3	2	1	0	1	1
10	1	1	0	1	0	1	0	0	122	1	1	0	1	1	0	1	2
11	1	1	0	1	0	1	2	0	123	1	1	3		1		1	1
12	1	1	2	0	0	1	0	0	124	1	1	3	2	1	2	>3	1
13	1	2	>3	2		1			125								
14	1	1	1	0		1	0	0	126	1	1	0	1	0	1	0	0
15	1	1	0	1	0	0	0	0	127	1	1	1	1	0	2	1	1
16	1	1	1	1	0	1	0	0	128	1	1	2	1	1	2	1	0

17	1	1	1	1	0	1	1	0	129	1	1	2	1		2		1
18	1	1	1	1	1	0		0	130	0	1	1	1	0	1	0	0
19	1	1	1	1	0	1	0	1	131	1	1	1	1	1	1	1	1
20	1	1	1	0	0	1	0	0	132	1		1		1	1		
21	1	1	2	1	1	0	2	0	133	1	1	1	1	0	1	0	0
22	2	1	>3	1	0	1	1		134	1	1	1	0	0	1	0	0
23	1	1	0	1	0	1	1	0	135	1	1	1	0	0	1	0	0
24	1	1	1	2	2	1	1	1	136	1	1	1	3	0	2	0	0
25	1	1	3	1	1	1	0	0	137	1	1	0	1	0	1	0	0
26	1	1	1	1	0	1	1	0	138	1	1	1	1	1		1	1
27	1	1	2	0	0	1	0	0	139	1	1	1	>	1	>3	2	1
28	1	1	1	1	0	1	0	0	140	1	1	1	1	1	1	>3	
29	1	1	>3	1	1	1	2	0	141	1	1	1	1	1	1	0	1
30	1	1	2	1	0	2	0	0	142	1	0	1	1	1	0	2	1
31	1	1	1	1	0	1	0	0	143	1	1	3	1	1	1	1	
32	1	1		1	0	1	0	0	144	1	1	1	0	0	1	0	0
33	1	1	>3	1	1	3	1	0	145	1	1	1	0	0	0	0	0
34	1	1	1	1	1	1	>3	1	146	1	1	1		1	1	1	
35	1	1	2	1	1	1	2	1	147	1	1	0	1	0	1	0	0
36	1	1	3	1	0	1	1	0	148	0	0	1		1	0	0	0
37	1	0	1	0	0	0			149	>3	3	>3	>	3	0	3	0
38	1	1	1	1	0	1	1	1	150	>3	0	>3		2		3	0
39	1	1	0	1	0	1	0	0	151	1		1	1	0	0	0	
40	1	1	1	1	1	0	1	0	152	0	0	1	0	1	1	0	0
41	1	1	1	1	0	1	1	0	153	1	1	2	>	1	1	3	1
42	1	1		1		2	1		154	1	1	2	1	0	1	1	0
43	1	1	>3	1	1	1	1	0	155	>3	0	>3	2	2	>3	>3	0
44	1	1	1	1	0		1	0	156	1	1	1	1	0	0	0	0
45	1	1	3	1	0	2	1	0	157	1	1	0	1	0	1		
46	1	1	2	1	1	2	1	1	158	1	1	1	3	0	1	0	0
47	1	1	2	1	1	0	2	0	159	1	1	1	2	1			
48	1	1	>3	1	1	2	1	1	160	1	1	1	0	0	1	0	0
49	1	1	1	1	0	1	2	0	161	1	1	1	1			2	
50	1	1	1	1	0	1	0	0	162	1	1	3	1	0	0	0	1
51	1	1	3	1	1	1	>3	0	163								
52	1	1	0	1	0	1	0	0	164	1	1			1		1	
53	1	3	>3	>3	>3	>3	>3	0	165	1	1	2	1	1	1	1	0
54	1	1	0	1	0	2	0	0	166	1	1	1	0	0	2	1	0
55	1	1	2	1	0	2	0	0	167	1	1	1	0	0	1	0	0
56	1	1	3	1	2	0	2	0	168	1	1	1	1	0	1	0	0
57	1	1	1	0	0	1	0	0	169	1	1	0	1	0	1	0	0
58	1	1	1	1	0	0	0	0	170	1	1	0	1	0	1	0	0
59	1	1	2	1	1	2	1	1	171	1	1	1	0		1	0	0
60	1	1	1	1	0	1	2	0	172	1	1	3	1		1	3	
61	1	1	1	1	1	0	3	0	173	1	2	>3	1	1	>3	1	1
62	1	1	1	1	0	1	0	0	174	1	1	3	1	1	0	1	0
63	1	1	1	1	0	1	0	0	175	1	1	1	1	1			
64	1	1	>3	1	1	0	2	0	176	1	1	3	1	1	0	2	1
65	1	1	0	1	0	1	0	0	177	1	1	1	1	1	1	0	0
66	1	1	3	1	0	1	0	0	178	1	1	1	1	0	0	0	1
67			1						179	1	1	1	1	1	1	0	1
68	1	1	>3	1	1	0	1	0	180	1	0	0	0	1	0	1	1
69	0	0	1	1	0	0	2	0	181	1	1	1	1	2	1	1	1
70	>3	3	1	2	2	0	0	0	182					2			1
71	1	1	2	1	0	1	3	0	183	1	1		1	1	1	1	2
72	1	1	0	1	0	1	0	0	184	1	1	2	1	0	1	0	1
73	1	1	2	1	1	1	0	1	185	1	1	1	1	1	0	1	0
74	1	1	3	1	1	1	1	0	186	1	1	1	1	1	0	2	0
75	1	1	2	1	1	1	1	1	187	1	1	1	1	1	1	1	
76	1	1	3	1	1	0	>3	0	188	1	1	>3	1	1	2	2	0
77	1	1	1	0	0	1	1	0	189	1	1	1	1	1	0	1	1
78	1	1	2	2	1	2	0	0	190	1	1	3	1	1	0	1	0
79	1	1	3	1	1	1	2	1	191	2	1	2	2	1	1	2	3
80	1	1	3	1	1	2	2	0	192	1	1	1	0	0	0	0	0
81	1	1	0	1	0	1	0	0	193	2	1	>3	2	1	1	1	0
82	1	1	1	0	0	1	0	0	194	1	1	2	1	0	1	1	0
83	1	1	1	1	0	2	0	0	195	1	1	2	1	0	1	0	0
84	1	1	0	1	0	0	0	0	196	2	2	2	2	1	2	1	2
85	1	1	1	1	0	1	0	0	197	1	1	2	1	1	1	1	0
86	2	2	3	>3	0	>3	2	1	198	1	1	1	1	0	1	0	0
87	1	1	>3	1	1	1	1		199	1	1	3	2	0	1	0	0
88	1	1	1	1	0	0	0	0	200	2	1	>3	2	1	1	2	0
89	1	1	3	2	0	0	0	0	201	1	1	2	2	0	1	1	2
90	1	1	1	1	1	2	2		202	1	1	3	1	0	2	1	0
91	1	1	1	1	0	1	0	0	203	1	1	1	0	1	0	1	1
92	1	1	1	1	1	0	0	0	204	2	2	2	2	1	1		
93	1	1	2	1	1	1	1	0	205	1	1	>3	1	2	1	2	
94	1	1	1	0	0	1	0	0	206	1	1	1	1	1	0	1	1
95	1	1	1	1	0	1	1	1	207	1	1	>3	1	1	0	1	0
96	1	1	3	1	1	0	>3	1	208	1	1	1	1	0	1	1	0
97	1	1	1			1	1		209	1	1	2	1	0	1	1	0

98	1	1	0	1	0	1	0	0	210	1	1	3	1	1	0	>3	0
99	1	1	1	1		1			211	1	1	2	2	1	0	0	0
100	1	1	1	0	0	1	0	0	212	3	3	1	1	3	1	2	0
101	1	1	1	1	1	0	1	0	213	0	0	0	1	0	0	0	0
102	1	0	1	0	1	0	3	0	214	2	1	2	1	3	1	3	1
103	1	1	0	1	0	1	0	0	215	1	1	>3	1	2	0	2	0
104	2	2		2	1	2	1	1	216	1	1	2	2	1	1	2	0
105	1	1	0	>3	2	0	1	0	217	1	1	1	0	1	1	0	3
106	1	1	2	1	1	0	1	0	218	1	1	1	2	2	0	2	1
107	1	1	>3	1	1	0	0	1	219	1	1	3	1	2	0	1	1
108	1	1	2	0	0	1	1	0	220								
109	1	1	1	1	1	1	3	0	221	1	1	1	>	1	1	1	0
110	1	1	3	1	1	2	0	0	222	1	1	2	1	1	1	1	0
111	1	1	3	3	1	2	>3	0	223	1	1	1	0	0	1	0	0
112	1	1	1	0	0	0	1	0									

Question 3:

3. - Place for laundry.

1) Inside of own home.
2) In shared area of the same building.
3) Outside the residence buildings property.

Answers:

Answer number	3. - Place for laundry.
1	3
2	2
3	1
4	1
5	1
6	1
7	1
8	1
9	1
10	1
11	1
12	1
13	1
14	1
15	2
16	1
17	1
18	2
19	1
20	1
21	1
22	1
23	1
24	1
25	1
26	3
27	1
28	1
29	1
30	1
31	3
32	1

Answer number	3. - Place for laundry.
33	1
34	1
35	1
36	1
37	3
38	3
39	1
40	1
41	1
42	1
43	1
44	1
45	1
46	1
47	1
48	1
49	1
50	1
51	1
52	1
53	2
54	1
55	1
56	1
57	1
58	1
59	1
60	1
61	1
62	1
63	1
64	1

Answer number	3. - Place for laundry.
65	1
66	1
67	2
68	1
69	2
70	2
71	1
72	1
73	1
74	1
75	1
76	1
77	1
78	3
79	1
80	1
81	1
82	1
83	1
84	2
85	1
86	1
87	1
88	1
89	3
90	1
91	1
92	1
93	1
94	2
95	1
96	1

Answer number	3. - Place for laundry.
97	3
98	2
99	1
100	1
101	1
102	3
103	3
104	1
105	1
106	2
107	1
108	1
109	1
110	1
111	1
112	2
113	1
114	1
115	1
116	1
117	1
118	1
119	2
120	1
121	1
122	3
123	3
124	1
125	2
126	1
127	1
128	1

Answer number	3. - Place for laundry.
129	1
130	1
131	1
132	2
133	1
134	1
135	2
136	1
137	2
138	1
139	1
140	3
141	1
142	2
143	1
144	1
145	2
146	2
147	1
148	2
149	2
150	2
151	2
152	2
153	1
154	1
155	3
156	1
157	1
158	1
159	1
160	1

Answer number	3. - Place for laundry.
161	1
162	1
163	
164	
165	1
166	1
167	1
168	1
169	1
170	1
171	1
172	1
173	1
174	1
175	1
176	1
177	3
178	1
179	1
180	3
181	1
182	2
183	1
184	1
185	1
186	1
187	1
188	1
189	2
190	1
191	1
192	2

Answer number	3. - Place for laundry.
193	3
194	1
195	1
196	1
197	1
198	1
199	1
200	2
201	1
202	1
203	1
204	1
205	1
206	1
207	1
208	1
209	1
210	1
211	1
212	2
213	2
214	1
215	3
216	1
217	1
218	1
219	1
220	1
221	1
222	1
223	2

Question 4:

4-1. - What views do you have from the windows of your home? (Select more than one alternative if necessary.

1) To the street
2) To a garden
3) To a building

4-2. - What views do you would like to have from your home? (Select more than one alternative if necessary.

1) To the street
2) To a garden
3) To a building

Answers:

Answer number	4-1. - street	4-1. - garden	4-1. - building	4-1. - other	4-2. - street	4-2. - garden	4-2. - building	4-2. - other
1	1	1	1					
2	1	1	1					
3	1		1		1	1	1	
4	1		1		1	1		
5	1	1	1		1	1	1	1
6	1		1			1		
7	1	1	1		1	1	1	
8	1	1	1		1	1		
9		1			1	1		
10	1		1			1		
11	1		1		1	1		
12		1				1		
13	1		1			1		
14	1		1	1	1	1		1
15	1		1					
16	1	1	1	1	1	1		1
17	1		1		1	1		
18		1				1		
19			1			1		
20	1	1	1			1		
21		1				1		
22	1		1		1			
23			1	1	1	1		
24	1	1	1		1	1		
25	1	1	1			1		
26	1		1			1		
27	1		1			1		
28	1		1			1		
29	1		1			1		
30			1	1		1		
31			1			1		
32	1		1			1		
33	1	1	1		1	1		
34	1	1	1			1		
35	1	1	1			1		
36	1		1		1	1	1	
37			1			1		
38	1		1			1		
39			1			1		
40	1	1	1			1		
41	1		1		1	1		
42	1		1					1
43	1	1	1			1		
44	1		1			1		

Answer number	4-1. - street	4-1. - garden	4-1. - building	4-1. - other	4-2. - street	4-2. - garden	4-2. - building	4-2. - other
113		1				1		
114		1	1			1		
115	1	1				1		
116	1	1	1			1		
117		1				1		
118	1	1	1			1		1
119	1					1		
120	1	1	1	1	1	1		1
121	1	1	1		1	1		
122	1	1	1	1		1		
123	1				1	1		
124	1	1	1		1	1		1
125	1					1		
126	1					1		
127	1	1	1			1		
128	1	1	1			1		
129			1			1		
130				1	1	1		1
131	1	1				1		
132		1				1		
133	1	1	1			1		
134	1		1			1		
135			1			1		
136	1		1			1		
137	1		1			1		
138	1	1	1			1		
139		1				1		
140		1				1		
141	1		1			1		
142	1	1	1		1	1		
143	1	1				1		
144	1					1		
145			1			1		
146		1				1		
147			1			1		
148		1			1	1	1	
149		1	1			1	1	
150		1	1			1		
151	1	1	1			1		
152		1				1		
153	1							
154	1		1		1	1	1	
155		1	1			1		
156	1		1			1		

45	1		1			1		
46		1				1		
47	1	1	1		1	1		
48	1	1	1		1	1		1
49	1		1	1	1	1		
50	1		1		1	1		
51	1	1	1	1		1	1	
52	1		1		1	1		
53		1	1			1		1
54	1		1	1	1	1		
55			1	1		1		1
56		1	1			1		
57				1	1	1	1	
58		1			1			
59	1					1		
60			1			1		
61	1	1	1			1		
62			1			1		
63			1			1		
64	1	1		1	1	1		1
65	1		1			1		
66	1	1	1			1		
67		1				1		
68	1	1	1					
69			1			1		
70		1				1		
71			1			1		
72			1		1			
73	1	1				1		
74	1	1	1			1		
75	1	1	1		1	1	1	
76	1	1	1			1		
77	1					1		
78	1	1	1			1		
79	1	1	1	1	1	1	1	1
80	1	1	1	1		1		1
81	1				1			
82			1			1		
83	1	1	1		1	1	1	
84		1	1			1		
85		1	1			1		
86	1					1		
87	1	1	1					1
88	1		1		1			
89	1		1		1	1		
90	1		1			1		
91	1		1	1		1		1
92	1	1				1		
93	1	1	1			1		
94	1		1			1		
95			1			1		
96	1	1				1		
97	1		1			1		
98			1		1			
99			1			1		
100			1			1		
101	1	1	1			1		
102	1	1				1		
103	1		1		1			
104	1		1			1		
105	1	1	1					
106	1	1	1		1	1		
107	1	1	1		1	1		
108	1	1	1			1		
109	1		1		1	1		
110		1	1	1		1		1
111	1	1	1	1		1		1
112		1	1			1		

157	1		1					1
158	1	1	1		1	1	1	
159		1	1			1	1	
160		1				1		
161			1			1		
162	1					1		
163								
164	1		1		1	1		
165	1	1						
166	1	1	1			1		
167	1		1			1		
168			1			1		
169			1			1		
170	1		1		1	1		
171	1				1	1		
172	1		1			1		
173	1					1		
174		1				1		
175		1				1		
176	1	1	1			1		
177		1	1			1		
178	1		1			1		
179	1	1	1		1	1		
180			1		1			
181	1	1	1		1	1	1	
182	1	1	1			1		
183	1		1					
184			1		1	1		
185	1	1	1			1		
186		1	1		1			
187	1	1				1		
188	1	1	1		1	1		
189		1			1	1		
190	1	1	1		1	1		
191	1	1	1		1	1	1	
192	1		1			1		
193	1		1		1	1	1	
194	1	1	1		1	1		
195	1		1			1		
196	1	1	1		1	1		
197	1	1	1		1	1		
198	1		1		1	1		
199	1	1	1		1	1		
200		1	1		1	1		
201	1		1			1		
202	1	1	1					
203	1	1	1					
204	1	1	1		1	1		
205	1	1	1		1	1		
206	1	1	1		1	1		
207	1	1	1			1		
208	1	1	1			1		
209			1			1		
210	1	1	1			1		
211		1				1		
212	1	1	1		1	1	1	
213		1				1		
214	1	1	1			1		
215		1	1			1		
216	1	1	1		1	1		
217	1	1	1			1		
218	1	1			1	1		
219	1	1	1			1		
220	1	1	1			1		
221	1	1	1			1		
222	1	1	1			1		
223			1			1		

Question 5:

5. - Choose one preference of each pair.

1) a)Bed - b) futon
2) a)Tatami - b)Flooring
3) a)Unit bath - b)Separated bathroom

4) a)Balcony - b)Garden

Answers:

Answer number	5. - [A=bed B=futon]	5. - [A=tatami B=flooring]	5. -[A=unit bath B=separated toilet and bath]	5. - [A=balcony B=garden]
1	B		B	
2	B	A	B	B
3	A	B	A	A
4	A	B	B	B
5	B	A=B	A=B	A=B
6	A	A=B	B	B
7	A	A	B	A=B
8	A	A	B	B
9	A	A=B	A=B	A=B
10	A	B	B	B
11	A	B	B	B
12	A	B	A	B
13	B	A	B	B
14	A	A	B	B
15	A		A=B	B
16	B	A	B	B
17	B	A	A	A=B
18	A	B	B	B
19	A	A=B	B	B
20	B	A	B	B
21	A	A	B	B
22	B	A=B	B	B
23	A=B	A=B	B	B
24	A=B	A=B	B	B
25	A=B	A=B	B	B
26	A=B	A=B	A=B	A=B
27	B	B	B	A
28	A=B	A=B	B	B
29	A	A	B	B
30	B	A	B	B
31	B	A	B	B
32	A=B	A=B	B	A=B
33	A=B	B	B	A
34	B	A	B	B
35	A	B	B	B
36	A	A=B	B	B
37	B	A	B	B
38	A=B	A=B	B	B
39	B	A=B	B	A=B
40	A=B	A=B	B	B
41	B	A	B	B
42	A	B	B	B
43	A=B	A=B	B	B
44	A	A=B	B	A
45	A	A=B	B	B
46	A	A	B	B
47	A	A	B	B
48	A	A=B	B	A=B
49	A	A=B	B	B
50	B	A	B	B
51	A=B	A=B	B	B
52	A	B	B	B
53	A=B	A=B	B	A=B
54	A=B	B	B	B
55	A	A	B	B
56	A=B	A=B	B	B
57	A=B	A	B	A=B
58	A	B	B	B
59	B	B	A	B
60	A=B	A=B	B	A=B
61	A=B	A	B	B
62	A	B	B	B
63	A=B	A=B	B	B
64	A=B	A=B	B	B
65	B	A=B	A=B	B
66	B	A	B	B
67	A	B	A	B
68	B	B	B	B
69	A	A	B	B
70	A	A=B	B	A=B
71	A=B	B	B	B

Answer number	5. - [A=bed B=futon]	5. - [A=tatami B=flooring]	5. -[A=unit bath B=separated toilet and bath]	5. - [A=balcony B=garden]
113	B	B	A	B
114	A=B	A=B	A=B	A=B
115	B	A=B	A=B	B
116	A	A=B	B	B
117	A	B	B	A
118	B	A	B	B
119	B	B	B	A
120	A=B	A=B	B	B
121	A=B	A=B	B	B
122	A	A=B	B	B
123	B	A	B	B
124	A=B	A=B	B	A=B
125	A	B	B	A=B
126	A=B	A	B	B
127	A	B	A=B	B
128	A	B	B	A=B
129	A	B	B	A=B
130	A	A	B	A=B
131	A=B	A	B	B
132	A	A	B	A=B
133	A	A	B	A=B
134	A	B	B	B
135	A	B	B	A=B
136	B	A=B	B	B
137	A=B	A=B	B	B
138	A	A		
139	B	A	B	B
140	A	B	B	B
141	A	A=B	B	A=B
142	B	A	B	B
143	A	B	B	B
144	A=B	A=B	B	B
145	A	B	A	B
146				
147	A	B	B	B
148	A=B	A	B	B
149	A=B	A	B	A=B
150	B	A	B	B
151	A=B	B	A=B	A=B
152	B	B	B	B
153	A	A	B	A=B
154	A	B	B	B
155	B	A	A	B
156	A	A	B	A
157	A	A	B	B
158	A	B	B	A=B
159	A=B	B	B	B
160	A	A	B	B
161				
162	A	A	B	B
163				
164	B	A	B	A
165	B	A=B	B	B
166	A=B	A	A=B	B
167	A=B	B	B	A
168	B	A	B	B
169				
170	A=B	B	B	B
171	A	A	A	B
172	A	A=B	B	B
173	A=B	A	A=B	A=B
174	B	B	B	B
175	A	B	B	B
176	B	A	B	A=B
177	B	A	B	A=B
178	A	A	B	B
179	B	A	B	B
180	B	A	B	B
181	B	A	B	B
182	B	A	B	B
183	B	A	B	B

72	A	B	B	A
73	A=B	A=B	B	B
74	B	A	B	B
75	A	A	B	A=B
76	B	A=B	B	B
77	B	A	A	A
78	A=B	A	B	B
79	A	B	B	B
80	A	A=B	B	A
81	A	A	A	B
82	A	A	B	B
83	A=B	A=B	B	A=B
84	B	A	B	B
85	A	A	B	A=B
86	A	B	A	B
87	A	B	B	A
88	A=B	A=B	A=B	A=B
89	A	A=B	B	A
90	B	A	B	B
91	A	B	B	B
92	A	A=B	B	B
93	B	B	B	B
94	A=B	B	A=B	B
95	A	A	B	B
96	A	A	B	B
97	A	B	A	B
98	A	B	B	A=B
99	A	A=B	B	A=B
100	A=B	A=B	B	B
101	A=B	A=B	B	B
102	A=B	A=B	B	B
103	A	B	B	A
104	A	B	B	B
105	B	A	B	B
106	A=B	A=B		A
107	A	A=B	B	B
108	A=B	A	B	B
109	A	B	B	A
110	B	B	B	B
111	A=B	A	B	A=B
112	A=B	B	A=B	B

184	A=B	A	B	A=B
185	A=B	A=B	A	A=B
186	B	A	B	B
187	B	B	B	A=B
188	A	B	B	B=B
189	B	A	B	B
190	A=B	A=B	A	A=B
191	A=B	A=B	B	A=B
192	A	B	A	B
193	A=B	A=B	B	A=B
194	A=B	A=B	B	A=B
195	A=B	A=B	B	B
196	A	B	B	B
197	A	B	B	A
198	A=B	A=B	B	A=B
199	A	A=B	A=B	B
200	B	A	B	A=B
201	B	A	B	B
202	A=B	A	B	B
203	B	A	B	B
204	A	A=B	B	B
205	A	A=B		A=B
206	A=B	A=B	B	B
207	A	A=B	B	A
208	A	B	B	B
209	A	B	B	A=B
210	A	A	B	B
211	A	A	B	B
212	A	A=B	B	A=B
213	A	A	B	B
214	A=B	A=B	B	B
215	A=B	A=B	B	B
216	B	A	B	A=B
217	A	B	B	B
218	A=B	A=B	B	B
219	B	A	B	B
220	A=B	A=B	B	B
221	A	A=B	B	B
222	A=B	A=B	B	B
223	A	B	B	B

Question 6:

6. – Regarding the context of Machiya houses. Which importance do you consider has each of the following elements regarding Machiya? Please mark with a circle from 1-5. (1 not important at all, 2 little importance, 3 medium importance, 4 very important, 5 essential)

Machiya element	Importance				
Roof	1	2	3	4	5
Lattice windows	1	2	3	4	5
"Mushiko mado"	1	2	3	4	5
"Inu yarai"	1	2	3	4	5
Shop	1	2	3	4	5
"Tooriniwa"	1	2	3	4	5
Tatami room	1	2	3	4	5
"Okuniwa" (backyard)	1	2	3	4	5
"tsuboniwa" (inner garden)	1	2	3	4	5
Eaves	1	2	3	4	5
Space under the eaves	1	2	3	4	5
Warehouse	1	2	3	4	5
Roji alleyways	1	2	3	4	5
Other ( )	1	2	3	4	5

Answers:

Answer number	6. –Roof	6. –Lattice window	6. –Mushiko mado	6. –Inu yarai	6. –Shop	6. –Toori niwa	6. Tatami room	6. –Oku niwa	6. –tsubo niwa	6. –Eaves	6. –Space under the eaves	6. –Warehouse	6. –Roji	6. -Other
1	5					5	5	5						
2	4	3	2	2	3	3	5	4	4	4		2		
3	3	2	4	4	2	1	2	1	3	4		5		
4	4	3		1	1	3	5	1	2	4		1		
5	5	1	1	1	5	1	1	**5**	**5**	5		1		5
6	5	5	1	1	1	5	5	5	5	5		1		
7	5	4	2	2	3	4	3	2	2	4	4	3	3	
8	5	5	5	5	5	4	3	3	2	4	5	1	4	
9	4	5	5	5	5	2	2	2	2	5	5	5	5	
10	4	4	4	4	3	4	3	3	3	4	4	3	4	
11	4	4	4	3	5	5	4	5	5	3	3	4	5	
12	4	3			4	4	5	5	5	4				
13	2	2	4	3	3	2	1	3	4	1		4		
14	5	5	4	3	2	1	2	1	1	5	5	2	5	
15	4	3	3	3	5	5	1	1	1	3	4	1	5	
16	2	4	3	1	4	4	4	5	5	2	5	4	4	
17	4	5	2	2	5	3	5	5	3	5	5	2	4	
18	5	4				5	5	4	5	4		2		
19	5	5	4	4	4	1	1	1	1	5	5	2	3	
20	5	5	4	3	4	3	4	5	5	5	5	5	3	4
21	5	5	4	4	3	5	2	2	3	2	2	1	2	
22	5	5	4	3	3	3	3	3	3	5	5	3	4	
23	4	5	3	2	2	2	4	4	5	5	5	3	4	
24	4	5	4	3	3	2	3	3	3	5		3		
25	5	4	4	3	3	4	5	4	3	5	4	2	2	
26	5	5	5	5	5	5	5	5	5	5	5	5	5	5
27	5	4	5	4	2	3	3	3	3	4		5	5	
28	5	5	4	4	3	4	3	3	3	5	5	3	4	
29	4	5	4	4	3	4	4	3	4	5	5	2	2	
30	5	4	4	4	3	5	4	4	4	5	5	2	2	
31	4	5	5	4	3	4	3	4	4	2	2	2	2	
32	4	5	5	4	3	3	3	3	3	4	5	5	4	
33	4	4	3	3	3	4	3	3	4	4	4	3	3	
34	5	5	4	4	4	4	4	4	4	5	5	4	5	5
35	5	5	5	5	1	4	5	5	2	5	5	1	1	5
36	5	4	4	2	3	2	2	3	3	4	4	3	5	
37	5	4	4		3	3	4	4	3	3		3		
38	4	4	3	2	2	5	3	4	4	4	3	2	2	5
39	5	3	3	3	3	4	4	5	5	3	3	3	3	
40	4	5	4	3	3	4	5	4	4	3	3	3	3	
41	5	5	5	3	3	3	5	3	4	4	4	4	4	
42	5	4					5	5						
43	5	4	3	2	2	2	2	3	3	5	4	1	3	
44	5	4	4	4	4	4	4	4	4	5				
45	4	4	3	2	3	3	3	4	4	4	3	2	3	
46	5	5	3	3	2	3	4	5	5	5	5	1	1	
47	4	5	4	5	5	4	2	2	3	5	5	3	5	
48	5	5	2	2	3	2	3	4	3	5	5	1	3	
49	4	4	4	3	3	4	3	2	3	4	4	3	5	
50	2	1	1	3		2	4	5	4	5	4	2	4	
51	5	5	4	3	3	3	4	4	4	4	3	2	4	
52	5	5	4	4	4	3	2	4	4	5	5	1	4	
53	4	2	2		5	4	2	2			3	3	5	
54	5	3	4	4	3	4	5	3	4	4	3	2	2	
55	4	4	3	1	4	5	2	3	3	4	4	2	4	
56	4	4	4	4	4	5	5	5	5	5	4	2	3	
57	5	4	3	3	4	5	3	5	5	4	4	2	4	
58	5	5	5	3	3	5	4	4	4	5	5	3	4	
59	5	5	5	5	1	5	5	5	5	5	5	5	5	1
60	4	5	5	5	5	3	3	3	3	5	5	5	5	
61	4	4	5	5	5	5	1	1	1	4	4	4	4	
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65	4	3	3	2	1	3	5	3	1	2	2	2	3	
66	2	5	4	4	3	5	5	4	4	5	5	3	5	
67	5	5	4	2	2	2	4		3	3	2	3	1	
68	4	5	5	5	3	4	3	4	4	4	4	5	3	
69	5	4	4	4	3	4	5	3	3	3		3		
70	5	3	2	1	2	4	4	1	1	1		2		

Answer number	6. –Roof	6. –Lattice window	6. –Mushiko mado	6. –Inu yarai	6. –Shop	6. –Toori niwa	6. Tatami room	6. –Oku niwa	6. –tsubo niwa	6. –Eaves	6. –Space under the eaves	6. –Warehouse	6. –Roji	6. -Other
113	2	5	5	4	1	1	1	5	4	4	4	1	3	
114	5	5	2		2	2	2	2	2	4	4	1	5	
115	1	2	4	5	3	2	3	2	2	1	1	5	4	5
116	5						5							
117	4	3	3	1	3	2	4	3	5	5	5	3	3	
118	5	5	5	3	3	3	4	3	5	4	5	4	4	
119	5	5	3	3	3	3	5	4	4	5	5	2	4	
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124	4	5	4	4	4	5	5	5	5	4	4	2	5	
125	4	4						4	5					
126	3	4	5	2	1	4	5	4	5	3	2		4	1
127	2	1	1	3		2	3	3	2	2	2	3	2	
128	4	4	4	4	4	4	4	4	4	4		3		
129	5	5	5	5	1	5	5	5	3			1	2	
130	2	5	3	1	4	4	5	4	4	5	5	1	3	
131	5	5	5	3	4	4	2	3	4	5	5	4	5	
132	4	3	4	2	3	4		2	3	5	2	2	4	
133	5	4	4	4	5		4	5	5			4		
134	5	5	5	4	4	4	4	5	5	4	5	5	5	1
135	2	5	3	3	3	3	2	2	2	3	3	2	3	3
136	2	3	3	3	2	3	4	4	3	3	3	2	3	4
137	4	5	3	1	4	4	1	3	3	4	5	4	5	
138	2	2					2	2	2					
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140	5	3	1			3	3	4	4	4	5	1	2	
141	5	3	2	2	5	5	3	5	5	5	5	5	5	5
142	5	3	4	3	5	5	4	5	5	5	3	3	5	
143	2	1	1		3	1	2	2	1	2			3	
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145	4	4	3	1	1	3	2	4	4	2	3	1	2	
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149	1	4	2	2	4	5	4	5	1	1	1	5	5	
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154	5	5	5	5	3	5	4	4	5	1	3	3	5	
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163														
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165	5	5	4	4	4	4	4	5	5	5	5	3	4	
166	3	3	4	3	3	4	4	4	4	3		3		
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169	4	5	4	3	3	4	3	4	3	3	3	3	3	
170	5	4	3	3	4	5	4	4	5	5	4	1	3	
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172	3	3	2	2	3	2	3	2	3	4	2	5	2	
173	5	4			3		5	5	5	5	4	3	4	
174	5						4					3		
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180	3	3	3	3	3	3	4	3	2	3	4	2	2	
181	5	5	3	3	5	5	5	5	5	5	5	5	5	5
182	5	3	3		3	3	3	3	4		4	3		

71	5	5	3	3	3	1	1	1	1	5	5	1	3	
72	1	2	1	1	1	1	2	1	1	1	1	1	1	
73	5	5	5	3	3	5	3	3	3	5		3		
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75	5	5	5	5	4	4	2	5	1	5	5	1	1	
76	4	4	4	4	3	5	4	4	4	4		3		
77		3					5		5	4				5
78	4	4	3	4	4	4	4	5	3	3		2		
79	5	5	4	3	4	5	4	5	4	5	5	3	5	
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81	2	3	3	3	3	4	5	2	5	4	5	1	3	3
82	5	5	5				5		4					
83	4	3	1	2	3	2	4	4	3	3	3	3	4	
84	4	2	4	3	4	4	4	5	5	2	4	5	5	
85	5	5	3	5	3	5	3	5	5	3		5		
86	3				3		5	5	5			3	1	
87	4	4	4	4	4	4	4	4	4	4	4		3	
88	5	4	4		1	2	5	4	4	3	3	2	3	1
89	4	3	3	4	2	3	5	4	3	3	2	3	2	2
90	5	3	3	3	1	3	5	4	4	4	4	4	3	
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93	5	3	3	4	3	5	4	4	5	4	3	2	2	
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96	3	5	5	3	3	5	5	5	4	5	5	4	5	
97	1	2	3	3	4	3	4	3	3	4	3	3	3	3
98	4				2		3	4	3	4		2		
99	5	3	3	3	2	4	5	4	5	4	4	3	3	
100	4	4	4	4	3	4	4	3	3	2		2		
101	3	4	4	3	3	3	3	4	3	3	3	4	3	
102	4	4	4	3	4	4	3	3	3	4	4	3	4	
103	4	4	4	4	1	4	4	3	3	3		4		
104	2	2	2	3	3	1	1	2	1	4	4	3	2	
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106	5	2	2	3		2	5	4	3	5	5	3	3	
107	3	5	5	5	4	5	3	4	4	3		1		
108	1	2	3	3	3	2	2	2	3	3	3	3	1	
109														
110	5	5	5	5	3	5	5	5	5	5	5	3	3	
111	5	4	3	4	3	5	5	5	5		5	2	1	
112	5	5	4	3	3	5	3	5	5	4	4	3	3	

183	5	3	3	3	4	4	5	4	4	4	4	3	3	
184	5	4	3	3	4	4	5	5	5	3	4	2	3	
185	4	4	4	4	3	4	4	5	5	4	4	4	4	
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187	5	4	1	1	1	1	5	4	3	4	4	1	1	
188	1	5	5	5	5	5	5	3	3	5	5	5	1	
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190	5	1	1	1	1	3	4	4	4	2	3	1	1	
191	4	5	4	5	5	5	4	5	5	3	3	3	3	
192	5	5	3	3	3	5	3	3	5	5	5	1	2	
193	5	4	2	2	2	3	3	2	2	4	4	1	4	
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196	1	3		5	2	5	1	1	5	4	4	2	2	
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200	4	5	5		5		3	3	3		4	4	5	
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202	5	4	3	1		4	5	4	4	5	5	1	1	
203	4	4	4	4	4	4	4	4	4	5	5	4	4	
204														
205	4	1		5		3		2	2					
206	5	4	3	3	3	3	5	5	4		4	3	3	
207	5	5	2	2	3	4	4	5	5	4	4	3	4	
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213	4	5	4	3	4	4	3	2	2	5	5	4	5	
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215	5	5	3	3	1	3	5	4	3	4	4	3	3	
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218	5	4	4	2	3	5	5	5	5	5	5	2	5	
219	1	1	4	5	3	2	2	3	2	3	3	5	5	
220	5	5	3	2	3	5	5	5	3	5	5	3	4	
221	3	5	5	5	3	4	3	3	4	4	3	2	3	4
222	5	2	3	3	4	5	5	5	5	5	4	5	3	
223	5	4	4	1	1	3	5	2	5	2	2	3	3	

Question 7:

7. Question about personal information. Please answer the following items. (Number of household refers to number of people living in the same dwelling, other questions mark with a circle the correct alternative)

Gender	1. Male 2. Female
Age	1. 20-29 2. 30-39 3. 40-49 4. 50-59 5. 60-69 6. 70 and over.
Occupation	1. Office worker 2. Self employed 3. Public employee 4. other
Family constitution	1. Alone 2. Couple only 3. Couple and child(ren) 4. Couple and parents 5. Couple with child(ren) and parents (3 generation house)

	6. Other_____
Number of household	( ) people
You are:	1. Japanese 2. Not Japanese
Where do you live?	_____ Shi _____Ku_____Cho

Answers:

Answer to cho/町 is omitted to avoid possible identification of subjects.

Answer number	7. –Gender	7. –age	7. –occupation	7. –family constitution	7. –number of household	7. –Nationality	7. –address Shi	7. –address Ku
1	male	6	4	3	7	1	京都市	下京区
2	male	5	4	5	4	1	京都市	下京区
3	male	6		2	2	1	京都市	下京区
4	male	5	4	3	3	1	京都市	下京区
5	male	6	2	2	2	1	京都市	下京区
6	male	6	2	4	3	1	京都市	下京区
7	male	1	4	6	7	1	京都市	右京区
8	female	1	4	5	4	1	京都市	
9	female	2	4	1	1	1	京都市	西京区
10	male	1	4	1	1	1	京都市	西京区
11	male	1	4	1	1	1	京都市	西京区
12	female	1	4	2	2	2	京都市	左京区
13	male	6	4	5	5	1	京都市	下京区
14	female	1	4	1	1	1	京都市	西京区
15	male	1	4	1	1		京都市	西京区
16	male	2	4	2	2	2	京都市	下京区
17	female	1	1	2	2	1	京都市	中京区
18	male	2	4	3	2	2	京都市	左京区
19	female	2	4	3	3	1	京都市	上京区
20	female	2	1	1	1	1	宇治市	
21	male	1	3	6	4	1	高槻市	
22	male	4	3	5	8	1	京都市	下京区
23	male	1	4	1	1	1	京都市	西京区
24	female	3	3	3	3	1	京都市	中京区
25	female	3	4	3	3	1	宇治市	
26	female	2	4	1	1	1	京都市	伏見
27	female	2	4	6	4	1	京都府乙訓郡大山崎町	
28	male	1	3	2	2	1	草津市	南草津
29	female	2	3	3	3	1	宇治市	
30	male	3	3	3	3	1	京都市	中京区
31	male	2	3	1	1	1	京都市	上京区
32	female	2	3	1	1	1	京都市	南区
33	female	2	3	3	4	1	京都市	右京区
34	female	2	3	3	5	1	京都市	左京区
35	male	5	2	2	2	1	京都市	上京区
36	female	2	3	1	1	1	京都市	中京区
37	male	2	4	1	1	1	京都市	左京区
38	male	2	1	6	2	1	京都市	左京区
39	male	3	3	1	1	1	京都市	東山区
40	male	1	4	3	3	1		
41	female	2	4	1	1	1	京都市	上京区
42	female	5	2	6	2	1	京都市	左京区
43	female	5	4	3	3	1	京都市	伏見区
44	male	2	3	2	2	1	京都市	上京区
45	male	2	3	3	3	1	京都市	上京区
46	female	4	2	3	3	1		
47	femlae	1	4	3	4	1	豊中市	
48	female	3	2	5	7			
49	male	1	4	1	1	1	京都市	西京区
50	male	2	3	1	1	2	京都市	伏見区
51	female	1	4	5	4	1	kyoto	
52	female	1	4	1	1	1	京都市	西京区
53	male	2	4	6	1	1	京都	
54	female	1	1	1	1	1	osaka	
55	male	3	3	1	1	1	京都市	左京区
56	male	1	1	3	3	1	愛知県	
57	female	1	4	6	1	1	京都市	西京区

58	male	1	1	1	0	1	名古屋市	
59	male	2	4	4	3	2	Kyoto	
60	female	2	4	1	1	1	京都市	西京区
61	female	2	3	2	2	1	京都市	西京区
62	male	2	1	2	2	1	東京都足立区	
63	male	1	1	1	1	1	大阪市	東淀川区
64	male	5	2	4	3	1	茂原市	
65	female	1	4	2	2	2	京都市	下京区
66	male	2	3	3	4	2	京都市	上京区
67	male	2	4	1	2	2	京都市	左京区
68	female	6	4	1	1	1	京都市	左京区
69	male	1	4	1	1	1	京都市	左京区
70	male	1	4	3	3	1	京都市	左京区
71	female	2	3	3	3	1		
72	female	1	1	1	1	1	大阪市	西区
73	female	3	2	6	3	1	京都市	西京区
74	female	6	4	1	1	1	京都市	西京区
75	male	5	2	2	2	1	京都市	伏見区
76	female	2	4	3	2	1	京都市	右京区
77	male	2	4	1	1	2	京都市	左京区
78	female	1	4	6	4	1		
79	male	3	2	3	3	1	京都市	
80	male	2	3	3	3	1	京都市	上京区
81	female	2	4	1	1	2	京都市	北区
82	male	2	4	1	1	2	京都市	左京区
83	female	3	4	2	2	1	京都市	上京区
84	female	1	4	1	1	1	京都市	左京区
85	female	2	1	1		1	京都市	左京区
86	male	2	4	1	1	2	摂津市	新在家
87	female	5	4	2	2	1	京都市	西京区
88	female	1	4	1	1	2	Osaka prefecture,	Minoh city,
89	male	1	4	1	1	2	京都市	中京区
90	male	5	4	2	2	1	京都市	左京区
91	female	1	1	3	4	1	京都市	
92	male	1	1	1	1	1	京都市	伏見区
93	female	5	2	2	2	1	宇治市	
94	female	1	4	1	1	2	京都市	上京区
95	male	2	4	2	2	2	大阪市	東淀川区
96	female	2	4	3	3	1	豊中市	
97	female	1	4	1	1	2	京都市	北区
98	male	1	4	1	1	2	京都市	左京区
99	female	6	3	1	1	2	京都市	左京区
100	female	1	4	1	1	1	京都市	上京区
101	male	4	2	2	2	1	京都市	左京区
102	male	1	4	1	1	1	京都市	上京区
103	female	2	4	1	1	1	京都市	上京区
104	female	5	2	6	8	1	京都市	左京区
105	female	5	4	6	2	1	京都市	左京区
106	male	4	1	6	2	1	京都市	左京区
107	female	2	1	6	4	1	京都市	右京区
108	female	4	3	3	3	1	京都市	左京区
109	female	1	3	6	2	1	京都市	左京区
110	female	5	4	2	2	1	大阪府三島郡島本町	
111	male	6	4	2	2	1	京都市	北区
112	female	1	4	1	1	2	京都市	左京区
113	female	5	2	1	1	2	京都市	上京区
114	female	5	4	2	2	1	三島郡島本町	
115	male	1	1	1	1	2	京都市	上京区
116	female	6	4	1	1	1	京都市	右京区
117	female	5	4	1	1	1	茨木市	
118	female	4	2	3	3	1	大津市	
119	female	1	4	1	1	1	京都市	西京区
120	female	1	4	3	4	1	京都市	北区
121	male	3	1	5	5	1	京都市	中京区
122	male	2	2	1	1	1	京都市	上京区
123	female	5	3	3	3	2	京都市	北区
124	male	3	2	3	4	1	京都市	伏見区
125	female	1	4	1	1	2	京都市	
126	male	1	4	1	1	2	京都市	左京区
127	female	5	2	1	1	1	京都市	右京区
128	female	1	3	3	3	1	京都市	伏見区
129	female	4	4	3	2	2	京都市	
130	female	3	2	3	3	1	京都市	左京区
131	male	4	4	3	3	1	西宮市	
132	female	1	4	1	1	2	京都市	左京区
133	male	2	4	1	2	2	大阪市	東淀川区
134	female	1	4	2	2	2	京都市	中京区
135	male	1	4	1	1	2	京都市	左京区
136	male	3	1	2	2	2	草津市野路町	
137	male	1	4	1	1	1	京都市	西京区
138	male	6	2	3	3	1	京都市	左京区
139	male	5	2	3	6	1	京都市	左京区

140	female	5	4	2	2	1	京都市	左京区
141	female	1	1	6	3	1	京都市	東山区
142	male	5	2	3	3	1	京都市	中京区
143	female	4	4	3	3	1	西宮市	
144	male	1	4	1	1	1	京都市	左京区
145	female	1	4	1	1	2	京都市	左京区
146	male	4	4	3	3	2	京都市	左京区
147	female	1	4	3	4	1	名古屋市	西区
148	male	1	4	1	1	1	京都市	左京区
149	male	2	4	1	1	1	京都市	左京区
150	male		4			1	京都市	左京区
151	male	1	4	1	1	1	京都市	左京区
152	male	1	4	1	1	1	京都市	左京区
153	male	5	2	3	2	1	京都市	左京区
154	female	4	4	6	2	1	京都市	左京区
155	male	1	4	1	1	1	京都市	左京区
156	male	5	1	3	3	1	京都市	中京区
157	female	1	4	1	1	1	京都市	南区
158	female	5	4	3	3	1	京都市	左京区
159	male	2	1	2	2	1	加東市	
160	male	1	4	1	1	1	京都市	西京区
161								
162	female	5	2	2	2	1		
163	male	6	2	2	2	1	京都市	下京区
164	female	2	4	2	2	1	京都市	北区
165	male	4	2	1	1	1	大津市	
166	male	3	4	2	2	2	京都市	左京区
167	female	1	4	1	1	2	京都市	西京区
168	male	1	4	6	2	1	京都市	西京区
169	female	1	4	1	1	1	京都市	左京区
170	male	1	4	1	1	2	京都市	西京区
171	male	1	4	2	2	2	京都市	中京区
172	female	2	4	1	3	2	京都市	下京区
173	male	2	4	1	1	2	京都市	北区
174	female	2	1	6	2	1	原良	
175	female	5	4	1	1	1	京都市	上京区
176	male	6	2	2	2	1	京都市	下京区
177	male	1	4	1	1	1	京都市	左京区
178	male	5	2	2	2	1	京都市	下京区
179	male	1	2	1	5	1	京都市	左京区
180	male	1	4	1	5	1	京都市	左京区
181	female	3	4	3	3	1	京都市	下京区
182	female	6	2	2	2	1	京都市	右京区
183	male	5	2	2	3	1	京都市	下京区
184	male	6	4	5	5	1	京都市	下京区
185	female	5	4	3	3	1	京都市	左京区
186	male	6	4	2	2	1	京都市	下京区
187	male	6	4	2	2	1	京都市	下京区
188	male	4	1	3	3	1	京都市	下京区
189	male	6	2	2	2	1	京都市	下京区
190	male	6	4	3	3	1	京都市	下京区
191	male	4	4	6	3	1	京都市	下京区
192	female	1	4	1	1	2	京都市	左京区
193	male	1	4	6	4	1	京都市	東山区
194	female	3	1	3	4	1	市川市	
195			1	3	3	1	柏市	
196	male	6	4	2	2	1	京都市	下京区
197	male	5	1	2	2	1	東京都	練馬区
198	male	2	1	3	3	1		品川
199	male	4	1	3	4	1	東京都	世田谷区
200	female	1	1	1	1	1	京都市	東山区
201	male	5	2	3	3	1	京都市	下京区
202	male	5	1	2	2	1	京都市	山科区
203	male	6	4	1	1	1	京都市	下京区
204	female	6	2	6	5	1	京都市	下京区
205	female	6	4	6	6	1	京都市	下京区
206	male	5	2	2	2	1	京都市	下京区
207	male	5	3	4	3	1	日本福岡県大牟田	
208	male	2	1	3	4	1	熊本市	
209	female	1	1	6	3	1	名古屋市	西区
210	female	2	1	6	4	1	春日井市	
211	male	6	4	3	3	1	京都市	下京区
212	male	1	4	1	1	1	熊本市	
213	female	1	4	1	1	1	京都市	左京区
214	female	5	4	3	3	1	京都市	下京区
215	female	5	4	2	2	1	京都市	左京区
216	male	5				1	京都市	下京区
217	male	4	2	2	2	1	京都市	下京区
218	male	6	2	3	3	1	京都市	左京区
219	female	6	2	3	3	1	京都市	左京区
220	female	4	2			1	京都市	中京区

221	female	5	4	2	2	1	交野	松市
222	female	5	4	2	2	1	八幡市	
223	female	1	4	1	1	2	Kyoto	sakyouku

Question 8:

8.1 - Is your home used for any of the following special festivals?

Select one or more.

1) Gion Festival.
2) Hinamatsuri (doll festival).
3) Byoubu Matsuri (Folding Screen Festival).
4) None
5) Other:_____

8.2 - Would you like your home to be used for any of the following special festivals?

Select one or more.

1) Gion Festival.
2) Hinamatsuri (doll festival).
3) Byoubu Matsuri (Folding Screen Festival).
4) Other:_____
5) None

Answers:

Answer number	8.1	8.2
1	5	5
2	2	2
3	5	5
4	5	5
5	5	4
6	5	5
7	5	5
8	5	5
9	5	5
10	5	5
11	5	5
12	5	5
13	5	5
14	5	5
15	5	5
16	5	5
17	5	5
18	4	5
19	5	4
20	5	5
21	4	4
22	5	5
23	5	1
24	4	
25	5	5
26	5	5
27	5	5
28	5	5
29	5	5
30	5	5
31	5	5
32	5	5
33	5	5
34	5	5
35	5	5

Answer number	8.1	8.2
46	2	2
47	5	5
48		
49	5	5
50	5	5
51	5	5
52	5	5
53	5	5
54	5	5
55	5	5
56	5	5
57	5	5
58	5	5
59	5	5
60	5	5
61	5	2
62	5	4
63	5	5
64	5	5
65	5	5
66	5	5
67	4	1
68	5	5
69	5	5
70	4	4
71	5	5
72	5	5
73	5	5
74	5	5
75	2	2
76	5	5
77	5	5
78	5	5
79	5	5
80	5	5

Answer number	8.1	8.2
91	5	5
92	5	5
93	5	5
94	5	5
95	5	5
96	5	5
97	5	5
98	5	5
99	5	5
100	5	5
101	5	5
102	5	5
103	5	5
104	5	5
105	5	5
106	5	5
107	5	5
108	5	5
109	5	5
110	5	5
111	5	5
112	5	5
113	5	5
114	5	5
115	5	5
116	5	5
117	5	5
118	2	2
119	5	5
120	2	2,4
121	1,3	1,2,3
122	5	4
123	5	5
124	2,4	2,3,4
125	5	5

Answer number	8.1	8.2
136	5	5
137	5	5
138	5	5
139	5	5
140	5	5
141	4	5
142	1,4	3,4
143	5	5
144	5	5
145	5	1
146	5	5
147	4	4
148	4	5
149	4	4
150	4	5
151	4	5
152	4	5
153	5	5
154	5	5
155	4	4
156	5	5
157	5	5
158	5	5
159	5	5
160	5	5
161	5	5
162	5	5
163	1,3	1,3
164	1	
165	5	5
166	5	5
167	5	5
168	5	5
169	4	5
170	5	5

Answer number	8.1	8.2
181	5	5
182	5	
183	5	5
184	5	5
185	5	5
186	2	5
187	4	5
188	5	5
189	5	5
190	5	5
191	5	5
192	5	5
193	5	1
194	2	2
195	5	5
196	5	4
197	2	5
198	5	5
199	5	5
200	5	1
201	5	5
202	5	5
203	4	1,3
204	5	5
205	2	2
206		
207	5	5
208	5	5
209	5	5
210	5	5
211	4	
212	5	1
213	5	5
214	5	5
215	5	5

36	5	5
37	5	5
38	5	5
39	5	5
40	5	5
41	5	5
42	5	5
43	2	2
44	5	1
45	2	5

81	5	5
82	5	5
83	2	2
84	5	5
85	5	5
86	5	5
87	5	5
88	5	5
89	5	5
90	5	5

126	5	5
127	5	5
128	5	5
129	5	5
130	5	5
131	5	2
132	5	5
133	5	5
134	5	5
135	5	5

171	5	5
172	1	1
173	4	5
174	5	5
175	5	5
176	5	5
177	5	5
178	1	1
179	5	5
180	4	5

216	4	1
217	5	5
218	5	5
219	5	5
220	1,2,3,4	1,2,3,4
221	5	5
222	5	5
223	4	2

Question 9:

9.1 - In your home, are there some of the following elements being used for ceremonies or special occasions?

Select one or more.

1) Tokonoma.
2) Butsudan
3) Ojizōsan
4) Other:_____
5) None

9.2 - In your home, would you like to use some of the following elements for ceremonies or special occasions?

Select one or more.

1) Tokonoma.
2) Butsudan
3) Ojizōsan
4) Other:_____
5) None

Answers:

Answer number	**9.1 –**	**9.2 –**
1	1,2	5
2	1,2,4	
3	5	5
4	1,2	1,2
5	1,2	1,2
6	1,2	5
7	5	5
8	1,2	5
9	5	1
10	5	5
11	5	5
12	5	5
13	1,2	
14	5	5
15	5	1
16	5	1
17	5	1
18	1	5
19	5	1
20	5	1

Answer number	**9.1 –**	**9.2 –**
46	1	1
47	1	5
48		
49	5	1
50	5	5
51	1,2	1,2,3
52	5	5
53	5	5
54	5	5
55	5	5
56	1	
57	4	4
58	5	5
59	5	5
60	5	5
61	5	5
62	5	5
63	5	5
64	1,2	1,2
65	5	5

Answer number	**9.1 –**	**9.2 –**
91	5	1
92	5	5
93	1	5
94	5	5
95	5	5
96	1,2	5
97	5	5
98	5	5
99	5	5
100	5	5
101	2	5
102	2	5
103	5	5
104	5	5
105	5	5
106	2	5
107	1,2	5
108	2	5
109	2	5
110	5	5

Answer number	**9.1 –**	**9.2 –**
136	5	5
137	5	5
138	5	5
139	2	5
140	2	5
141	1	4
142	1,4	2,4
143	1,2	5
144	5	5
145	5	3
146	5	5
147	5	5
148	5	5
149	3,4	1,4
150	5	5
151	1	5
152	5	5
153	1,2	5
154	5	1,2
155	5	5

Answer number	**9.1 –**	**9.2 –**
181	1,2,4	5
182	1	1
183	2	
184	1,2	1,2
185	1	5
186	1,2	5
187	1,2,3	1,2
188	5	5
189	1,2	5
190	5	5
191	1,2	5
192	5	5
193	1	1
194	5	1
195	5	5
196	5	5
197	1,2	1,2
198	5	1
199	5	5
200	5	1

21	1,2	5
22	1,2	1,2
23	5	5
24	1,2	
25	1	5
26	5	5
27	5	5
28	5	5
29	1,2	1
30	5	5
31	5	5
32	4	1,2
33	1	5
34	5	5
35	2	5
36	5	1
37	5	5
38	5	1
39	5	5
40	1	1
41	5	5
42	2	
43	1	1
44	5	1
45	5	5

66	5	5
67	1	3
68	1,2	
69	5	5
70	5	1
71	5	4
72	5	5
73	1,2	5
74	1,2	1,2
75	5	5
76	1,2	5
77	5	5
78	2	5
79	1	5
80	5	2
81	5	5
82	5	5
83	2	5
84	5	1
85	5	5
86		5
87	2	1
88	5	5
89	5	5
90	1,2	5

111	1,2,3	
112	5	4
113	1	2
114	5	2
115	5	1
116	5	5
117	2	5
118	1,4	5
119	5	5
120	5	1
121	2,3	2,3
122	3,4	1
123	2	5
124	1,4	1,2,4
125	5	
126	5	5
127	5	5
128	5	1
129	5	5
130	5	5
131	1,2	
132	5	5
133	5	5
134	5	5
135	5	5

156	2	5
157	5	5
158	2	5
159	5	5
160	5	5
161	5	5
162	1,2	5
163	1,2	2
164		
165	5	1
166	5	5
167	5	5
168	5	5
169	5	5
170	5	5
171	5	5
172	5	5
173	5	1
174	1,2	5
175	5	5
176	5	5
177	4	5
178	1,2	5
179	5	3
180	5	5

201	1	1,4
202	2	1
203	1,2,3,	
204	1,2	4
205	2	1
206	1,2	1,2
207	1,2	1,2
208	5	5
209	5	2
210	5	2
211	1,2,3	1,2
212	5	1
213	5	5
214	1,2	5
215	1,2,4	5
216	2	2
217	1,2	5
218	1,2	1,2
219	2	5
220	1,2,4	1,2,4
221	5	5
222	1,2	4
223	5	1,2,3

Question 10:

10.1 Formality of activities you do in the dwelling of a typical day, mark with a circle "O".

Rate each activity marking according to the existing space for each of the given parameters from casual to formal. Casual means fewer requirements of established manners, schedule and settings. Formal means an established procedure or settings. (For activities not realized at home leave in blank)

Activities	1-casual	2-slightly casual	3-half casual half formal	4-slightly formal	5-formal
1 Entering (main entrance)					
2 Breakfast					
3 Lunch					
4 Dinner, supper					
5 Cooking					
6 Sleeping					
7 Washing (shower)					
8 Bathing					
9 Clothes washing					
10 Clothes drying					
11 Leisure					
12 Study, reading					
13 Work					

Answers:

Answer number	Formality Entering	Formality Breakfast	Formality Lunch	Formality Dinner, supper	Formality Cooking	Formality Sleeping	Formality Washing (shower)	Formality Bathing	Formality Clothes washing	Formality Clothes drying	Formality Leisure	Formality Study, reading	Formality Work
1	1	1	1	1	1	1	1	1	1	1	3	1	1

Answer number	Formality Entering	Formality Breakfast	Formality Lunch	Formality Dinner, supper	Formality Cooking	Formality Sleeping	Formality Washing (shower)	Formality Bathing	Formality Clothes washing	Formality Clothes drying	Formality Leisure	Formality Study, reading	Formality Work
113	4	1	1	2	2	3	2	2	2	1	2	2	3

2	4	4	4	4	4	3	3	3	2	2	3	3	3
3	1	1	1	1	2	1		1	2	2	3	2	3
4	2	2	2	2	1	1	1	1	1	1	4	2	
5	1	1	1	1	1	1	1	1	1	1		1	1
6	1	4	4	1	5	1	1	1	1	1		1	1
7	2	1	1	1	1	1	1	1	1	1	3	2	3
8	1	1	1	1	1	1	1	1	1	1	3	2	4
9	4	2	2	2	1	1	1	1	1	1	1	1	4
10	1	2	2	2	2	1	1	3	1	1	3	2	3
11	2	3	3	3	2	1	2	2	2	2	3	2	3
12	5	3		2	4	5	5	5	5	5	1	1	1
13	1	1	1	1	1	1	3	1	1	1	1	1	2
14	1	1	1	1	1	1	1	1	2	2	2	2	5
15	1	4	4	4	3	1	3	3	1	1	1	1	1
16	3	2	3	2	2	2	2	2	2	2	2	2	2
17	1	1	4	3	1	1	2	4	1	1	2	3	3
18	1	1	2	1	4	5	5		2	2	1	1	1
19	1	1	1	2	1	1	1	1	1	1	4	2	1
20	1	1	1	1	1	1	1	1	1	1	1	1	1
21	1	1	1	1	1	1	1	1	1	1	1	1	1
22	1	1	1	4	1	1	1	1	1	1	1	1	5
23	1	2	1	1	2	1	1	2	1	1	3	3	3
24	1	1	1	1	1	1	1	1	1	1	1	1	1
25	1	1	1	1	2	1	1	1	1	1	2	2	
26	1	1	1	1	1	1	1	1	1	1	1	1	1
27	1	1	1	1	1	1	1	1	1	1	1	1	3
28	1	2	2	2	3	2	2	2	3	2	1	2	3
29	2	2	2	2	2	1	1	1	1	1	1	1	1
30	1	1	1	1	1	1	1	1	1	1	1	1	1
31	3	3	3	3	3	3	3	3	3	3	3	3	4
32	1	2	4	3	1	2	1	1	2	2	4	3	5
33	1	1	1	1	1	1	1	1	2	2	3	3	5
34	1	1	1	1	1	1	1	1	1	2	1	1	1
35	1	1	1	1	1	1	1	1	1	1	1	1	1
36	1	1	1	1	1	1	1	1	1	1	1	1	3
37	1	2	2	1	2	1	1	1	1	1	1	1	3
38	1	1	1	1	1	1	1	1	1	1	3	1	1
39	1	1	3	3	3	1	1	1	1	1	2	3	4
40	1	1	1	1	1	1	1	1	1	1	1	1	1
41	1	1	1	1	1	1	1	1	1	1	2	2	5
42	1	1	1	1	1	1	1	1	1	1	1	1	
43	1	1	1	1	1	1	1	1	1	1	1	1	3
44	2	1	1	1	1	1	1	1	1	1	1	2	1
45	1	4	4	4	3	1	1	2	2	2	1	1	5
46	2	1	1	2	1	1	1	1	1	1	1	1	1
47	1	1	2	2	3	1	2	2	1	1	4	1	5
48													
49	2	2	3	3	4	2	4	4	4	4	1	3	3
50	2	3	1	3	4	3	4	2	3	3	1	3	3
51	1	1	1	1	1	1	1	1	1	1	3	1	4
52	1	1	1	1	1	1	1	2	1	1	4	1	3
53	1	1	1	1	1	1	1		1	1	1	1	
54	1	2	3	2	2	1	3	1	1	1	3	1	2
55	1	1	1	1	1	1	1	1	1	1	1	1	3
56	1	1	1	1	1	1	1	1	1	1	1	1	
57	1	1	1	1	1	2	5	1	5	4	1	1	4
58	1	1	1	1	3	1	1	1	1	1	1	1	3
59	1	1	3	3	3	3	3	3	3	3	1	3	3
60	1	2	2	2	2	1	1	1	1	1	2	2	4
61	1	1	1	1	1	1	1	1	1	1	5	1	5
62	1	2	1	1	1	2	1	1	1	1	1	1	1
63	1	4	5	2	3	4	5	2	4	3	1	2	4
64	1	1	1	1	1	1	1	1	1	1	4	2	1
65	1	5	5	5	4	5	5	5	5	3	1	1	1
66	2	2		3	3	2	2	3	1	2	2	4	
67	1	1	2	2	3	1	3	2	2	1	2	2	1
68	1	1	1	1	1	1	1	1	1	1	2	2	
69	1	2	2	2	2	1	2	2	4	2	2	2	3
70	1	1	1	1	2	1	1	5	2	2	5	2	5
71	4	4	5	1	1	5	4	4	5	5	1	4	5
72	1	1	1	1	1	1	2	1	2	2	4	1	1
73	1	4	2	4	4	1	1	1	1	4	1	1	5
74	1	1	1	1	1	1	1	1	1	1	1	1	
75	1	1	1	1	2	1	1	1	5	5	2	2	1
76	4	1	1	1	1	1	1	1	1	1	1	1	1
77	1	2	3	3	3	3	3	3	2		1	1	1
78	4	4	2	4	1	4	4	4	2	2	1	1	5
79	4	4	4	4	3	1	2	2	1	1	1	1	1
80	1	1	1	1	1	1	1	1	1	1	3	1	3
81	2	1	1	1	1	1	1	1	1	1	1	3	3
82	1	1	1	1	1	1	1	1	1	1	1	4	

114	1	1	1	1	1	1	1	1	1	1	1	1	1
115	4	1	1	1	1	1	1	1	1	1	1	1	2
116	1	1	1	1	1	1	1	1	1		1	1	1
117	3	3	4	4	3	3	3	3	3	2	2	3	4
118	1	1	1	1	1	1	1	1	1	1	1	1	4
119	1	1	3	1	1	1	1	1	1	1	2	1	1
120	1	1	1	1	1	1	1	1	1	1	3	1	1
121	1	1	1	1	1	1	1	1	1	1	1	1	1
122													
123	4	3	3	3	3	4	3	3	3	3	3	3	5
124	1	1	1	1	1	1	1	1	1	1	1	1	
125	3	1	3	1	2	3	1	4	3	1	4	5	5
126	2	1	1	1	3	2	4	4	4	2	2	1	1
127	1	1	1	1	1	1	1	1	1	1	1	1	2
128	1	1	1	1	1	1	1	1	1	1		2	3
129	1	1	1	1	1	1	1	2	1	1	1	1	1
130	1	1	1	1	1	1	1	1	1	1	1	1	1
131	1	1	3	1	1	1	3	1	2	3	4	2	2
132	2	4	2	2	4	2	2	4	2	2	1	4	3
133	1	1	1	1	1	1	1	1	1	1	1		
134	1	1	1	1	1	1	1	1	1	1	1	3	3
135	5	5	5	5	3	5	5	3	4	3	4	4	4
136	1	2	3	2	1	2	2	3	2	3	1	2	2
137	3	2	2	2		2	3	3	4	4	1	1	3
138	2	2	2	2	2	2							
139	1	3	1	1	1	1	2	1	1	1	3	1	1
140	1	1	1	1	1	1	1	1	1	1	2	2	
141	4	1	1	1	1	1	1	1	1	1	1	1	4
142	1	3	3	3	4	3			3	3	5	3	1
143	1	1	2	1	1	1	3	1	1	1	3	1	2
144	1	1	1	1	1	1	1	1	1	1	1	1	1
145	1	4	4	1	1	1	1	5	1	5	5	2	
146	5	5	5	5	5	5	5	1	5	1	3	2	2
147	1	1	1	1	1	1	1	1	1	1	3	5	5
148	1	1	1	1	1	1	4	4	3	4	2	5	5
149	1	4	3	2	1	1	5	5	5	4	4	1	2
150	1	1	1	1	3	1	4		3	2		1	1
151	1	2	2	2		1	3	5	3	3	5	1	1
152	1	1	1	1	1	1	1	1	1	1	1	1	1
153	2	3	3	3	3		1	3	2	2	3	3	3
154	1	1	1	1	1	1	1	1	1	1	1	1	1
155	1	1	1	1	1	1	1	1	1	1	1	1	1
156	1	1	1	1		1		1					1
157	1	1	1	1	1	1	1	1	1	1	1	2	3
158	3	4	4	4	4	4	3	3	4	4	3	3	5
159	4	4	4	4	3	2	2	3	3	3	2	3	5
160	1	1	1	1	1	1	1	1	1	1	1	1	1
161													
162	1	1	1	1	1	1	1	1	1	1	1	1	4
163													
164	4	2	2	4	1	1	1	1	2	4	4	4	4
165	1	1	1	1	1	1	1	1	1	1	3	2	1
166	4	3	3	3	2	3	2	2	2	2	2	4	4
167	1	2	2	2	2	2	2	2	2	2	3	2	2
168	1	1	1	1	1	1	1	1	1	1	1	1	1
169	1	3	3	3	3	1	1	1	1	1	1	1	4
170	1	1	1	1	1	1	1		1	1	1	1	1
171	1	2	2	2	2	3	1	1	2	2	1	2	2
172	1	1	3	3	1	1	1	1	1	1	1	3	3
173	2	1	1	1	1	1	1	1	1	1	1	1	1
174	1	1	1	1	1	1	1	1	1	1	1	1	1
175	1	1	1	1	1	1	1	1	1	1	1	1	1
176	1	1	1	1	1	1	1	1	1	1	3	1	1
177	2	1	1	1	1	2	4		3	2	1	1	
178	1	1	1	1	1	1	1	1	1	1	1	1	1
179	1	3	2	2	3	1	1	3	2	2	1	3	2
180	1	1	1	1	1	1	1	1	1	1	3	1	3
181	5	5	1	1	1	1	1	1	1	1	1	1	1
182		1	1	1	1	1		1	1	1			1
183	2	2	2	2	2	1	2	2	2	2	2	2	1
184	1	1	1	1	1	1	3	1	1	1	1	1	1
185	4	1	1	1	1	1	1	1	1	1	3	2	2
186	2	1	2	4	1	1	2	2	2	2	1	1	4
187	1	1	1	1	1	1		1	1	1	1	1	
188	1	1	1	1	1	1	3	1	1	1	4	1	3
189	1	1	1	1	2	1	2	2	2	2	2	2	2
190	1	1	1	1	1	1	3	1	1	1	3	2	5
191	2	2	2	2	2	1	3	2	1	1	3	2	1
192	1	1	1	1	1	1	1	1	1	1	1	1	1
193	1	1	1	1	1		1	1	1		1	1	1
194	1	1	2	2	2	2	2	2	2	2	2	2	2

83		1	2	1	1	1	1	1	1	1	3	3	4
84	1	4	4	2	3	4	2	2	1	1	1	2	2
85	1	1	3	3	1	1	1	1	1	1	3	3	3
86	3	1	4	4	1	1	1	1	1	1	1	2	3
87	1	1	1	1	1	1	1	1	1	1	1	1	1
88	1	1	1	1	1	1	1	1	1	1	1	1	1
89	2	3		3	5	5	4	4	5	4	5	5	5
90	1	1	1	1	2	1	2	1	2	2	2	1	1
91	1	1	1	1	1	1	1		1	1	1	1	1
92	1	4	4	2	3	1	1	4	1	1	3	3	1
93	1	1	1	1	1	1	1	1	1	1	1	1	4
94	3	1	2	2	1	2	2	2			2	1	1
95	1	1		1	1	1	1	1	1	1	1	1	1
96	1	1	1	1	1	1	1	1	1	1	1	2	2
97	1	2	1	1	4	3	3	3	4	5	5	3	3
98		1	1	1	1	1	1	1	1	1	1	1	
99	1	1	1	1	1	1	1	1	1	1	1	1	1
100	1	1	1	1	1	1	1	1	1	1	1	1	1
101	1	1	1	1	1	1	1	1	1	1	1	1	3
102	2	1	1	1	1	3	2	3	2	2	3	3	3
103	1	1	1	1	1	1	1	2	1	1	1	2	2
104	1	1	1	1	1	1	1	1	1	1	2	1	1
105	1	1	1	1	1	1	1	1	1	1	1	1	1
106	1	1	2	1	1	1	2	1	1	1	1	2	1
107	1	1	1	1	1	1	1	1	1	1	1	1	1
108	1	1	2	1	1	1	3	3	3	3	3	3	3
109	1	2	4	4	1	1	1	1	1	1	1	2	4
110	1	1	1	1	1	1	1	1	1	1	1	1	
111	1	1	1	1	1	1	1	1	1	1	1	2	3
112	1	2	2	1	1	1	1	1	2	1	4	1	4

195	1	3	3	3	3	1	1	3	2	2	3	3	5
196	5	1	4	1	5	1	5	1	5	5	5	5	5
197	5	5	4	5	4	3	3	3	4	4	2	2	2
198	1	1	1	1	1	1	1	1	1	1	1	1	1
199	1	1	1	1	1	1	1	1	1	1	3	1	1
200	1	1	1	1	1	1	1	3	1	1	1	1	
201	1	1	1	1	1	1		1	1	1	3	3	1
202	1	1	1	1	1	1		1	1	1	1	2	1
203	1	1	1	1	1	1	1	1	1	1	1	1	1
204	1	1	1	1	1	1	1	1	1	1	1	1	1
205	3	3	3	3	3	1	3	3	3	3	3	3	3
206	2	4	4	4	4	4	4	4	4	4	2	2	4
207	1	1	1	1	1	1	1	1	1	1	2	1	2
208	5	2	2	2	4	4	5	5	4	4	1	1	3
209	1	1	1	1	1	1	1	1	1	1	1	1	5
210	3	3	2	3	3	3	4	4	4	4		3	
211	1	1	1	1	1	1	1	1	1	1	1	1	1
212	1	1	1	1	3	1	2	4	2	2	3	1	4
213	1	3	1	1	1	1	4	3	2	2	1	1	4
214	5	1	1	1	1	1	1	1	1	1	1	1	1
215	4	4	3	4	2	2	2	2	2	2	3	2	
216	1	1	1	3	3	1	1	1	4	4	4	4	5
217	4	2	4	2	2	1	1	1	1	1	1	3	4
218	1	1	1	1	1	1	1	1	1	1	1	1	1
219	2	1	1	1	1	1		1	1	1			
220	3	3	3	3	2	3	1	1	1	1	3.5	3	3
221	1	1	1	1	1	1		1	1	1	4	4	5
222	2	1	1	2	2	1	1	1	1	2	2	1	
223	1	1	1	2	2	2	2	2	1	1	2	3	3

10.2 Privacy of activities you do in the dwelling of a typical day, mark with a circle "O".

Rate each activity marking according to the existing space for each of the given parameters from public to private. (For activities not realized at home leave in blank)

Public/private: How much privacy has the space in which the activity is realized.

Activities	1-public	2-slightly public	3-half public half private	4-slightly private	5-private
1 Entering (main entrance)					
2 Breakfast					
3 Lunch					
4 Dinner, supper					
5 Cooking					
6 Sleeping					
7 Washing (shower)					
8 Bathing					
9 Clothes washing					
10 Clothes drying					
11 Leisure					
12 Study, reading					
13 Work					

Answers:

Answer number	Privacy Entering	Privacy Breakfast	Privacy Lunch	Privacy Dinner, supper	Privacy Cooking	Privacy Sleeping	Privacy Washing (shower)	Privacy Bathing	Privacy Clothes washing	Privacy Clothes drying	Privacy Leisure	Privacy Study, reading	Privacy Work
1	5	5	5	5	5	5	5	5	5	3	5	5	5
2	3	3	3	3	4	5	5	5	5	4	4	3	3
3	5	5	5	5	5	5	5	5	5	5	5	5	5
4	2	2	2	2	4	4	5	2	2	2	4		2
5	5	5	5	5	5	5	5	5	5		5	1	5
6	5	5	5	5	5	5	5	5	5		5	5	5
7	3	3	3	3	5	5	5	4	4	2	4	4	3
8	5	5	5	5	5	5	5	5	5	3	4	1	5
9	5	3	2	5	5	5	5	5	5	3	3	1	5
10	4	4	4	4	5	5	3	5	5	3	4	3	4
11	3	3	3	4	5	5	5	4	3	1	5	4	3
12	4		4	4	5	5	5	5	5	5	5	5	4
13	5	5	5	5	5	5	5	5	5	4	3	3	5
14	5	5	4	5	5	5	5	5	5	2	2	1	5
15	4	2	2	5	5	5	4	5	5	3	2	1	4
16	4	4	4	4	4	4	4	4	2	4	4	4	4
17	5	4	3	4	5	5	5	5	5	2	3	3	5
18	3	3	3	1	4	3		1	1	1	3	3	3
19	5	4	4	5	5	5	5	5	5	3	5	2	5
20	5	5	5	5	5	5	5	5	2	5	5	1	5
21	5	5	4	5	5	5	5	5	5	4	5	5	5
22	2	2	2	2	5	5	5		3	1	5	1	2
23	5	4	4	5	5	5	5	5	5	4	4	4	5
24	5	5	5	5	5	5	5	5	4	5	5	5	5
25	5	5	5	5	5	5	5	5	5	5	5		5
26	5	5	5	5	5	5	5	5	5	5	5	5	5
27	5	5	5	5	5	5	5	5	5	5	3	1	5
28	5	2	5	5	5	5	5	5	4	3	5	2	5
29	4	4	4	4	5	5	5	5	5	5	5	3	4
30	5	5	5	5	5	5	5	5	5	5	5	1	5
31	5	5	5	5	5	5	5	5	5	2	5	5	5
32	5	1	3	5	5	5	5	5	4	3	4	1	5
33	5	5	5	5	5	5	5	4	4	4	4	1	5
34	5	5	5	5	5	5	5	5	5	5	5	5	5
35	5	5	5	5	5	5	5	5	5	5	5	5	5
36	5	5	5	5	5	5	5	5	5	4	5	5	5
37	4	4	4	3	5	2	1	3	4	4	4	2	4
38	5	5	5	5	5	5	5	5	5	5	5	1	5
39	4	4	4	4	5	5	5	5	5	3	2	1	4
40	5	5	5	5	5	5	5	5	5	5	5	5	5
41	5	5	5	5	5	5	5	5	5	5	5	3	5
42	5	5	5	5	5	5	5	5	5	5	5		5
43	5	5	5	5	5	5	5	5	5	5	5	3	5
44	5	2	5	5	5	5	5	5	4	3	4	2	5
45	5	5	5	5	5	5	5	5	5	3	3	1	5
46	5	5	5	5	5	5	5	5	5	5	5	5	5
47	5	2	3	3	5	5	5	5	2	2	3	1	5
48													
49	4	3	3	5	5	5	5	5	5	3	4	4	4
50	4	4	4	3	5	5	5	2	2	3	4	4	4
51	5	5	5	5	5	5	5	5	5	3	5	2	5
52	5	5	5	5	5	5	5	5	4	1	2	1	5
53	5	5	5	5	5	5	5	5	5	5	5		5
54	5	5	5	5	5	5	5	5	5	5	5	3	5
55	5	5	5	5	5	5	5	5	5	5	5	2	5
56	5	5	5	5	5	5	5	5	5	4	5	5	5
57	5	4	4	4	5	5	3	5	5	2	3	2	5
58	5	5	5	5	5	5	5	5	5	5	5	5	5
59	5	5	5	5	5	5	5	4	4	5	5	5	5
60	5	5	5	5	5	5	5	5	5	4	5	4	5
61	5	5	5	5	5	5	5	5	1	2	5	1	5
62	3	3	3	5	5	5	5	5	4	1	5	5	3
63	3	1	5	5	5	5	5	4	4	3	4	1	3
64	4	4	4	4	5	5	5	3	3	4	4	4	4
65	4	4	4	4	5	5	5	5	3	4	4	4	4
66	4		4	4	5	5	5	4	4	4	4		4
67	1	2	2	1	1	2	2	3	1	1	2	1	1
68	5	5	5	5	5	5	5	5	5	5	5		5
69	5	5	5	5	5	3	3	3	4	5	3	3	5
70	5	5	5	4	5	5	5	4	5	5	4	1	5
71	5	2	5	4	5	5	5	5	5	5	4	1	5
72	5	1	5	5	5	5	5	5	5	1	5	1	5

Answer number	Privacy Entering	Privacy Breakfast	Privacy Lunch	Privacy Dinner, supper	Privacy Cooking	Privacy Sleeping	Privacy Washing (shower)	Privacy Bathing	Privacy Clothes washing	Privacy Clothes drying	Privacy Leisure	Privacy Study, reading	Privacy Work
113	5	5	5	5	5	5	5	5	5	5	5	3	5
114	5	5	5	5	5	5	5	5	5	5	5	5	5
115	2	2	2	2	5	5	5	2	2	3	4	2	2
116	5	5	5	5	5	5	5	5		5	5	5	5
117	4	3	3	3	5	5	5	4	4	2	2	2	4
118	5	5	5	5	5	5	5	5	5	5	5	2	5
119	5	5	5	5	5	5	5	5	5	4	5	5	5
120	5	5	5	5	5	5	5	5	5	5	5	5	5
121	5	5	5	5	5	5	5	5	5	1	5	1	5
122													
123	5	4	5	5	5	5	5	5	5	5	5	5	5
124	2	5	1	4	5	4	4	1	1	3	5	3	2
125	5	3	5	5	5	5	5	3	4	3	5	5	5
126	5	5	5	5	5	5	5	2	2	2	3	3	5
127	5	5	5	5	5	5	5	5	4	3	3	4	5
128	5	5	5	5	5	5	5	5	5		5	3	5
129	5	5	5	5	5	5	5	5	5	3	3	3	5
130	5	5	5	5	5	5	5	5	5	5	5	5	5
131	4	4	4	4	5	5	5	5	5	5	5	5	4
132	4	2	2	1	5	4	5	2	4	2	2	1	4
133	5	5	5	5	5	5	5	4	4	5			5
134	5	5	5	5	5	5	5	3	3	5	5	5	5
135	5	5	5	3	5	5	4	3	3	4	4	4	5
136	2	2	2	2	3	5	4	2	2		4	4	2
137	4	3	3		5	5	5	3	3	1	3	1	4
138													
139	5	5	5	5	5	5	5	5	5	5	5	5	5
140	5	5	5	5	5	5	5	5	5	5	5		5
141	1	1	1	1	1	1	1	1	1	1	1	4	1
142	3	3	3	2	4	4		4	4	3	4	2	3
143	5	5	5	5	5	5	5	5	5	3	5	2	5
144	5	5	5	5	5	5	5	5	5	3	2	2	5
145	5	5	5	5	5	5	5	1	1	1	5		5
146	5	5	5	5	5	5	5	5	5	5	5	5	5
147	5	5	5	5	5	5	5	5	5	3	1	1	5
148	2	2	2	1	4	1	1	2	5	3	2	2	2
149	2	3	5	5	5	2	4	2	5	4	5	5	2
150	4	4	4	3	4	1		1	4		5	5	4
151	1	1	1		3	5	3	4	4	2	1	2	1
152	5	5	5	5	5	5	5	5	5	5	5	5	5
153	3	3	3	3	4	4	3	4	3	3	3	3	3
154	5	5	5	5	5	5	5	5	5	5	5	1	5
155	2	2	2	2	4	2	4	4	2	2	3	2	2
156	1	1	1		1		1					1	1
157	5	5	5	5	5	5	5	5	5	4	5	3	5
158	4	4	4	4	5	5	5	3	3	5	4	1	4
159	4	4	4	4	5	5	5	3	3	5	5	2	4
160	5	3	3	5	5	5	5	5	5	2	2	1	5
161													
162	5	5	5	5	5	5	5	5	5	5	5	2	5
163													
164	5	5	5	5	5	5	5	5	5	5	5	1	5
165	5	3	4	4	5	5	5	5	5	3	4	1	5
166	4	4	4	3	5	5	5	4	4	3	2	2	4
167	5	4	4	4	4	4	4	4	4	3	4	4	5
168	1	1	1	2	5	5	5	3	3	4	4	4	1
169	5	3	3	4	5	5	5	5	5	4	5	2	5
170	5	5	5	5	5	5		5	5	5	5	5	5
171	5	5	5	5	5	5	5	4	3	4	4	4	5
172	4	4	4	4	4	4	4	4	4	3	4	4	4
173	5	5	5	5	5	5	5	3	2	5	5	5	5
174	5	5	5	5	5	5	5	5	5	5	5	2	5
175	5	5	5	5	5	5	5	5	5	5	5	5	5
176	5	5	5	5	5	5	5	5	5	5	5	1	5
177	4	4	5	2	5	2		3	4	5	5		4
178	5	5	5	5	5	5	5	5	5	5	5	5	5
179	3	3	5	5	5	5	3	4	4	5	4	1	3
180	3	3	3	3	5	5	5	5	5	3	5	3	3
181	5	5	5	5	5	5	5	5	5	5	5	5	5
182	5	5	5	5	5		5	5	5			5	5
183	4	4	4	4	5	5	5	5	5	4	4	2	4
184	5	5	4	5	5	3	5	5	4	5	5	5	5

73	2	2	2	4	5	5	5	4	4	4	5	1	2
74	5	5	5	5	5	5	5	5	5	5	5		5
75	4	4	4	4	5	5	5	5	5	1	5	1	4
76	5	5	5	5	5	5	5	5	5	5	5	5	5
77	4	3	4	4		5	5	3	2	3	3	3	4
78	5	5	4	5	5	5	5	4	4	1	3	1	5
79	5	5	5	5	5	5	5	5	4	4	3	2	5
80	5	5	4	4	5	5	5	5	5	4	5	1	5
81	5			5	5	5	5	5	3		5		5
82	5	5	5	5	5	5	5	4	4	5	5		5
83	5	3	5	5	5	5	5	5	5	3	3	1	5
84	5	1	3	5	5	5	5	1	1	2	4	1	5
85	5	3	3	5	5	5	5	5	5	3	3	3	5
86	5		5	5	5	5	5	5	5	5	5		5
87	5	5	5	5	5	5	5	5	5	5	5	5	5
88	5	5	5	5	5	5	5	4	4	5	5	5	5
89	5	5	4	4	5	5	5	4	2	4	5	5	5
90	5	5	5	5	5	5	5	5	5	5	5	5	5
91	4	4	4	4	4	5		2	1	1	4	1	4
92	2	2	4	4	5	5	5	5	5	4	3	2	2
93	5	5	5	5	5	5	5	5	5	5	4	3	5
94	5	3	3	5	5	5	5	5	5	2	5	4	5
95	4	4	4	4	4	4	4	4	4	1	4	4	4
96	1	1	1	1	5	5	5	2	2	1	4	5	1
97	3	3		3	3	2	2	4	4	3	3		3
98	5	5	5	5	5	5	5	2	2	5	5		5
99	5	5	5	5	5	5	5	5	5	3	5	5	5
100	5	5	5	5	5	5	5	5	5	5	5	1	5
101	5	5	5	5	5	5	5	5	5	5	5	5	5
102	4	4	4	4	5	4	4	5	5	4	3	3	4
103	5	5	5	5	5	5	5	5	5	5	5	5	5
104	5	5	5	5	5	5	5	5	5	5	5	5	5
105													
106	5	5	5	5	5	5	5	5	5	5	5	5	5
107	5	5	5	4	5	5	5	5	5	3	4	1	5
108	5	5	5	5	5	5	5	5	5	5	5	5	5
109	5	5	5	5	5	5	5	5	5		4	1	5
110	5	5	5	5	5	5	5	5	5	5	5		5
111	5	5	5	5	5	5	5	5	5	5	5	5	5
112	5	5	5	4	5	5	5	4	5		4	4	5

185	5	5	5	5	5	5	5	5	5	5	5	5	5
186	5	5	5	5	5	4	4	4	4	5	5	2	5
187	4	4	4	4	5		5	5	5	4	4		4
188	1	1	1	1	1	3	1	1	1	4	1	3	1
189	5	5	5	5	5	5	5	5	5	5	5	5	5
190	5	5	5	5	5	4	5	5	5	1	5	3	5
191	2	2	2	2	1	3	2	1	1	3	2	1	2
192	4	4	4	4	5	5	5	4	4	3	4	4	4
193	1	1	1	1	5	5	5	1	1	1	4	4	1
194	2	2	2	2	3	2	2	2	2	3	2	2	2
195	5	5	5	5	5	5	5	5	5	5	5	3	5
196													
197	5	5	5	5	5	5	5	5	5	3	5	5	5
198	4	4	4	4	4	4	4	4	4	4	4	4	4
199	5	5	5	5	5	5	5	5	5	4	5	4	5
200	2	2	2	2	4	5	5	1	1	1	2		2
201	4	4	4	4	4	5	5	5	5	5	5	2	4
202	5	5	5	5	5		5	5	5	5	5	5	5
203	5	5	5	5	5	5	5	5	5	5	5	5	5
204	5	5	5	5	5	5	5	5	5	2	5	5	5
205	3	3	3	3	5	5	5	3	4	2	4	1	3
206	5	4	4	5	5	5	5	5	5	4	5	2	5
207	5	5	5	5	5	5	5	5	5	5	5	5	5
208	1	1	1	2	2	5	5	2	2	1	2	2	1
209	5	2	5	5	5	5	5	5	5	3	5	1	5
210	5	5	5	5	5	5	5	5	5		5	1	5
211	5	5	5	5	5	5	5	5	5	5	5	5	5
212	1	5	1	5	4	4	4	4	4	5	5	5	1
213	5	5	5	2	5	2	2	1	5	1	3	4	5
214	5	5	5	5	5	5	5	5	5	5	5	5	5
215	4	4	4	4	4	4	4	4	4	4	4		4
216	4	4	2	2	5	5	5			5	2	2	4
217	5	2	5	5	5	5	5	5	4	5	4	2	5
218	5	5	5	5	5	5	5	5	5	5	5	5	5
219	5	5	5	5	5		5	5	5				5
220	3	3	3	4	3	5	5	5	5	2.5	3	3	3
221	5	5	5	5	5		5	5	5	4	4	1	5
222	5	5	4	5	5	5	5	5	5	3	4		5
223	4	4	4	4	5	5	5	2	3	4	4	4	4

10.3 Brightness of activities you do in the dwelling of a typical day, mark with a circle "O".

Rate each activity marking according to the existing space for each of the given parameters from dark to bright. (For activities not realized at home leave in blank)

Dark/bright: How much light has the space in which the activity is realized.

Activities	1-dark	2-slightly dark	3-half dark half bright	4-slightly bright	5-bright
1 Entering (main entrance)					
2 Breakfast					
3 Lunch					
4 Dinner, supper					
5 Cooking					
6 Sleeping					
7 Washing (shower)					
8 Bathing					
9 Clothes washing					
10 Clothes drying					
11 Leisure					
12 Study, reading					
13 Work					

Answers:

Answer number	Brightness Entering	Brightness Breakfast	Brightness Lunch	Brightness Dinner, supper	Brightness Cooking	Brightness Sleeping	Brightness Washing (shower)	Brightness Bathing	Brightness Clothes washing	Brightness Clothes drying	Brightness Leisure	Brightness Study, reading	Brightness Work
1	4	2	2	2	2	2	3	3	4	2	3	2	2
2	4	4	4	4	4	4	4	4	4	4	5	5	4
3	5	4	4	4	4	5	5	5	5	5	5	4	4
4	4	5	5	5	4	2	3	3	3	5	3	4	5
5	5	5	5	5	5	5	1	1	1	1		5	5
6	5	5	5	5	5	5	5	5	5	5		5	5
7	2	3	3	3	3	2	3	3	3	4	3	3	4
8	4	4	4	4	4	1	2	2	4	4	5		2
9	1	5	5	5	5	1	5	5	5	5	3	3	4
10	2	4	4	4	4	1	2	3	4	4	3	2	3
11	3	3	3	3	4	1	3	3	2	4	5	2	1
12	5	4		4	4	4	3	3	2	2	4	5	5
13	3	4	4	5	4	4	4	5	4	3	4	4	3
14	2	5	5	5	5	2	4	4	4	4	5	5	5
15	1	4	3	3	4	2	4	4	1	2	4	3	3
16	2	3	4	3	2	2	4	4	2	5	4	4	4
17	4	4	4	4	3	2	3	3	2	5	4	4	4
18		5	5	3	4	1	4		5	5	3		
19	1	4	4	4	4	1	5	5	4	2	3	5	5
20	5	5	1	1	1	5	2	2	1	5	5	5	1
21	4	4	4	4	4	4	4	4	4	4	4	4	4
22	2	4	4	4	4	1	3	2	3	3	4	4	4
23	1	3	4	4	3	1	5	5	3	3	5	4	4
24	4	4	4	4			4	4	3	3	5	4	4
25	5	5	5	5	5	1	4	4	5	5	3	4	
26	5	5	5	5	5	5	5	5	5	5	5	5	5
27													
28	2	4	5	5	3	4	4	4	3	4	4	4	4
29	2	4	4	4	3	2	2	2	2	2	3	3	3
30	5	5	5	5	4	3	4	4	3	3	5	3	3
31	2	3	3	3	3	1	2	2	4	5	5	3	3
32	2	5	2	5	5	1	4	4	3	3	3	5	5
33	4	5	5	5	5	1	3	3	3	2	4	4	4
34	5	2	2	2	2	1	2	2	2	5	2	2	3
35	4	5	5	5	5	1	5	5	5	3	5	5	5
36	5	4	4	2	3	2	1	1	2	2	4	4	4
37	5	4	4	4	3	2	4	4	4	3	4	4	4
38	2	3	4	3	5	1	4	4	3	3	3	2	2
39	2	3	3	3	3	1	3	3	3	3	4	4	4
40	5	5	5	5	5	5	5	5	5	5	5	5	5
41	2	5	3	4	3	1	2	2	2	2	4	4	2
42	5	5	5	5	5	4	4	4	4	5		5	
43	4	4	4	4	4	2	3	3	4	4	4	4	3
44	2	2	5	4	4	1	2	2	2	4	4	2	4
45	2	4	4	4	4	2	4	4	4	3	5	5	5
46	3	3	4	5	5	5		5	4	4	5	4	4
47	5	5	5	3	4	2	2	2	2	5	5	2	1
48													
49	3	4	4	4	4	3	4	4	2	3	4	4	4
50	2	4	5	2	4	1	2	2	4	4	4	4	3
51	5	5	5	4	4	1	2	2	3	4	5	3	3
52	1	3	4	4	5	1	4	4	2	4	5	5	5
53	5	3	3	3	3	1	2		5	5	5	2	
54	2	4	4	4	2	1	2	2	2	4	3	4	4
55	2	4	4	3	3	2	3	3	3	3	4	3	3
56	2	4	5	3	3	1	2	4	2	4	3	2	2
57	3	4	4	4	4	1	4	4	4	4	3	3	4
58	3	5	5	5	5	5	5	5	5	5	5	5	3
59	3	3	4	1	3	1	3	3	3	3	3	4	4
60	1	4	4	4	4	1	3	3	5	5	3	5	5
61	2	5	5	5	5	1	5	5	2	5	4	2	3

Answer number	Brightness Entering	Brightness Breakfast	Brightness Lunch	Brightness Dinner, supper	Brightness Cooking	Brightness Sleeping	Brightness Washing (shower)	Brightness Bathing	Brightness Clothes washing	Brightness Clothes drying	Brightness Leisure	Brightness Study, reading	Brightness Work
113	3	3	2	2	3	2	3	3	4	4	4	3	3
114	3	3	3	3	3	3	3	3	3	3	4	4	4
115	3	2	2	2	5	4	5	5	5	5	3	2	2
116	5	5	5	5	5	1	5	5	5		5	5	5
117	3	4	4	3	4	1	2	2	3	3	5	5	5
118	2	5	5	4	3	1	2	2	3	4	5	3	4
119	2	5	5	5	4	1	5	5	4	5	5	4	4
120	5	5	5	5	5	5	5	5	5	5	5	5	5
121	5	5	5	5	5	5	5	5	5	5	5	5	4
122													
123	4	4	4	4	4	2	4	4	4		5	4	4
124	4	4	3	5	3	4	4	4	4	4	5	5	4
125	2	3	4	3	3	1	3	3	3	4	5	4	
126	2	4	4	3	2	1	2	2	3	3	3	3	3
127	3	5	5	5	5	4	2	2	2	5	3	5	5
128	2	5	5	5	4	1	4	4	4	3		4	3
129	2	5	5	3	5	2	4	4	5	5	3	5	5
130	5	5	5	5	5	5	5	5	5	5	5	5	5
131	5	5	5	5	4		3	3	3	3	4	5	5
132	4	4	4	4	3		2	2	4	1	4	5	5
133													
134	3	5	5	1	3	1	4	5	4	4	5	3	3
135	4	4	4	4	4	2	3	3	3	3	4	4	4
136	1	3	5	5	5	3	5	5	5	4		5	
137	2	3	4	4	2	2	2	2	2	5	5	5	3
138													
139	5	5	5	5	5	5	5	5	5	5	5	5	5
140	5	5	5	5	5	1	5	5	5	5	5	5	
141	4	4	4	4	3	3	4	4	3	3	4	3	3
142	4	2	2	3	3	4			2	2	3	2	2
143	3	5	5	4	5	3	4	4	4	5	3	5	5
144	2	4	4	4	4	1	5	5	4	5	5	5	5
145	4	4	5	5	5	1	4	4	5	5	5	4	
146	2	4	4	4	4	3	1	1	1	1	3	4	4
147	2	2	5	2	3	1	2	2	2	5	5	5	5
148	2	5	5	5	3	1	2	3	3	2	3	4	4
149	2	5	5	5	4	4	1	4	4	4	5	4	4
150	3	3	3	3	3	2	3		3	4		3	3
151	3	3	3	4		3	3	3	3	3	4	3	2
152	5	5	5	5	1	1	5	5	3	5	5	5	5
153	3	3	3	3	3	1	3	3	3	4	3	3	3
154	5	5	5	5	5	5	5	5	5	5	5	2	5
155	1	4	4	4	2	1	4	4	2	3	4	4	4
156	5	5	5	5				5					5
157	4	5	5	5	5	1	5	5	4	5	5	5	5
158	3	4	4	4	4	1	4	4	4	4	4	5	5
159	4	3	3	3	4	2	3	3	4	4	4	4	5
160	1	4	3	3	2	4	5	5	3	4	5	4	4
161	3	4	4	4	3	1	3	3	3	3	3	4	4
162	4	4	4	4	4	2	4	4	4	4		2	3
163													
164	1	5	5	5	2	1	4	4	2	2	4	4	5
165	2	3	3	3	3	3	2	2	2	2	4	3	3
166	5	4	4	4	5	1	2	2	3	3	5	5	5
167	2	4	4	4	4	2	4	4	4	4	4	4	4
168	2	4	4	4	2	2	3	3	3	2	4	4	4
169	3	4	5	4	4	5	5	5	4	5	5	5	4
170	2	5	5	5	4	1	4		3	3	5	5	5
171	2	3	5	5	4	1	4	4	4	5	4	5	5
172	5	5	4	4	4	2	4	4	4	4	4	5	5
173	3	4	4	3	3	1	5	5	4	5	4	5	5

62	4	5	5	5	5	2	3	2	1	4	5	5	3
63	4	4	4	4	3	1	4	4	3	3	5	2	5
64	5	5	5	5	5	3	5	5	5	5	5	5	5
65	3	3	3	3	1	4	1	1	1	5	3	3	3
66	2	4		3	4	1	3	3	3	3	5	5	
67	2	1	1	2	3	1	1	2	2	3	3	2	1
68	5	5	5	5	5	5	5	5	5	5	5	5	
69	4	4	4	4	4	1	4	4	3	3	5	4	4
70	3	4	4	4	2	1	4	4	4	4	5	5	5
71	2	5	5	5	4	1	2	2	2	4	5	4	4
72	2	4	5	4	4	1	5	5	4	4	5	4	5
73	2	4	4	4	4	1	4	4	4	5	4	3	3
74	3	4	4	4	4	4	4	4	3	5	4	4	
75	5	5	5	5	4	1	4	4	5	5	5	4	5
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77	3	4	4	4	4	1	3	3	3	3	3	4	4
78	5	5	5	5	5	1	5	5	5	2	3	5	5
79	2	4	4	4	5	1	4	4	2	5	3	3	4
80	4	5	5	4		1	4	4	4	4	5	5	2
81	3	5				2	5	5	5	3	4	5	
82	5	5	5	5	5	1	5	5	5	5	3	5	5
83	4	4	4	4	4	1	4	4	3	3	3	4	4
84	2	4	5	5	4	1	2	2	2	4	5	4	4
85	1	5	3	3	3	1	5	5	5	5	3	3	3
86	2	5	2	5	5	1	5	5	4		5	5	5
87	4	5	5	5	4	4	4	5	4	5	4	4	4
88	3	3	3	3	5	4	1	1	5	5	3	3	3
89	4	4	4	4	4		3	3	5	5	4	5	5
90	5	4	4	4	4	3	4	4	4	4	4	5	5
91	2	4	4	4	4	1	4		2	5	5	2	5
92	1	4	5	1	4	2	4	4	5	5	4	2	2
93	5	5	5	5	5	1	4	4	4	5	4	5	5
94	2	5	5	4	4	1	3	3			4	5	4
95	5	5	5	5	5	1	4		4	5	5	5	5
96	4	5	5	5	5	2	4	4	4	4	4	5	5
97	3	4	4	4	4	3	1	1	5	5	4	3	
98		3	3	3	3	1	4	4	2	4	3	3	
99	4	5	5	5	5	4	4	4	5	4	5	5	4
100	4	4	4	4	4	3	4	4	4	4	4	4	2
101	3	4	4	1	3	1	3	3	3	3	5	4	3
102	1	3	3	3	3	1	3	3	3	3	3	3	3
103	3	3	3	3	3	3	3	3	3	3	3	3	3
104	5	5	5	5	5	1	4	4	5	5	5	2	4
105													
106	4	4	4	4	4	1	2	2	4	4	4	4	4
107	5	5	5	5	5	1	5	5	5	5	5	4	5
108	3	5	3	3	4	3	3	3	3	3	3	3	3
109	4	5	5	5	4	1	4	4	4	5		5	5
110	3	5	5	5	5	1	5	5	5	5	5	5	
111	5	4	4	4	2	5	4	4	3	5	5	4	4
112	3	4	3	4	4	5	4	4	3	3	1	4	3

174	3	5	5	5	5	1	5	5	5	5	5	5	5
175	5	5	5	5	5	5	5	5	5	5	5	5	5
176	3	5	5	5	5	3	5	5	5	5	4	5	5
177	2	4	4	2	2	1	2		3	5	3	2	
178	5	5	5	5	5	1	1						
179	4	3	4	4	4	1	5	5	5	5	3	4	4
180	5	5	5	5	5	3	3	3	3	3	5	3	4
181	2	3	3	3	3	3	4	4	3	5	5	3	5
182	3	4	4	4	4	3		4	5	5			2
183	4	3	3	3	3	3	4	4	4	4	4	4	4
184	3	4	4	4	5	4	2	4	3	3	5	4	4
185	4	5	5	5	5	2	4	4	4	4		4	
186	5	4	4	4	5	4	3	4	3	4	4	4	3
187	3	4	4	4	5	2		3	3	4	3	4	
188	2	4	4	4	5	2	4	4	4	4	2	4	4
189	4	4	4	4	4	4	4	4	4	4	4	4	4
190	2	4	4	4	4	2	3	4	4	4	3	4	3
191	3	3	3	3	3	3	4	4	4	4	3	5	4
192	2	4	4	4	4	1	4	4	4	4	4	4	4
193	2	5	5	4	4	2	3	3	5	5	5	3	2
194	2	4	4	1	1	4	2	2	2	2	3	3	3
195	2	2	4	4	4	1	2	2	2	4	4	3	3
196													
197	4	5	5	5	4	1	4	4	4	5	4	4	5
198	3	5	5	5	5	3	4	4	3	3	5	4	3
199	2	5	5	5	5	4	2	2	2	3	5	5	5
200	3	5	5	5	5	2	5	5	3	3	5	5	
201	4	4	4	4	4	1	3	3	3	5	4	4	5
202	2	4	4	2	3	1		4	4		5	3	4
203	5												
204	5	5	5	5	5	5	5	5	5	5	5	5	5
205	3	4	4	4	4	2	3	3	3	5	5	4	4
206	4	4	4	4	4	5	5	5	4	4	5	4	4
207	2	5	5	5	5	4	4	4	4	5	4	2	2
208	1	3	3	3	4	2	3	3	4	5	4	4	4
209	2	5	5	4	4	1	5	5	3	5	5	4	5
210	4	5	5	3	3	1	3	3	3	5		4	
211	4	5	5	5	5	1	5	5	5	5	5	5	5
212	3	4	4	4	4	2	3	3	4	4	5	3	3
213	2	4	4	4	2	1	2	5	2	4	5	4	4
214	4	5	5	5	5	2	5	5	5	5		5	5
215	2	5	5	5	5	5	5	5	5	5	5	5	
216	2	2	2	2	2	4	2	2	1	5	2	4	4
217	2	4	2	2	3	2	1	1	1	2	4	3	2
218	5	5	5	5	5	1	5	5	5	5	5	5	5
219	3	4	4	4	4	4		4	4	4			
220	3	3	3	1	4	1	5	5	5	5	4	3.5	2
221	4	4	4	4	4	1		4	3	3	5	5	5
222	5	5	5	5	4	5	4	4	4	5	5	5	
223	1	2	3	2	2	1	4	4	5	5	3	4	4
112	3	4	3	4	4	5	4	4	3	3	1	4	3

10.4 "Naturalness" of activities you do in the dwelling of a typical day, mark with a circle “O”.

Rate each activity marking according to the existing space for each of the given parameters from artificial to natural. Artificial means that the spaces does not evoke natural environment. Natural means that the space evokes or is connected natural environment. (For activities not realized at home leave in blank)

Activities	1-artificial	2-slightly artificial	3-half artificial half natural	4-slightly natural	5-natural
1 Entering (main entrance)					
2 Breakfast					
3 Lunch					
4 Dinner, supper					

5 Cooking					
6 Sleeping					
7 Washing (shower)					
8 Bathing					
9 Clothes washing					
10 Clothes drying					
11 Leisure					
12 Study, reading					
13 Work					

Answers:

Answer number	Naturalness Entering	Naturalness Breakfast	Naturalness Lunch	Naturalness Dinner, supper	Naturalness Cooking	Naturalness Sleeping	Naturalness Washing (shower)	Naturalness Bathing	Naturalness Clothes washing	Naturalness Clothes drying	Naturalness Leisure	Naturalness Study, reading	Naturalness Work
1	4	2	2	2	2	2	2	2	2	2	3	2	2
2	5	5	5	5	5	5	5	5	5	5	5	5	5
3	2	2	2	2	2	2	2	2	2	2	2	2	2
4	2	2	2	2	1	3	1	1	1	5	3	4	4
5	1	5	5	5	5	5	1	1	1	1		5	2
6	2	1	1	1	1	1	1	1	1	1		1	1
7	3	3	3	3	3	3	3	3	3	4	3	3	3
8	2	1	1	1	1	1	1	1	1	5	5	1	2
9	1	2	2	2	2	2	4	4	4	5	3	3	2
10	1	3	3	3	3	3	3	3	2	4	3	3	3
11	1	3	3	3	1	1	1	1	1	2	4	2	2
12	1	3		1	1	1	2	1	3	3	2	1	1
13	4	4	4	4	4	5	4	4	4	4	4	4	3
14	1	3	3	3	2	2	1	1	1	1	3	3	3
15	2	2	2	2	2	3	1	1	2	4	5	3	3
16	1	1	1	1	1	2	1	1	1	4	3	2	2
17	4	3	3	3	2	3	1	1	2	5	3	3	3
18		2	2	2	4	4	4		4	5	4		
19	1	1	1	1	1	1	1	1	1	3	3	1	1
20	2	5	5	5	1	5	1	1	1	5	4	5	1
21	1	1	1	1	1	1	1	1	1	3	4	1	2
22	2	2	2	2	2	2	2	2	2	2	4	2	2
23	5	4	4	4	3	5	5	4	4	4	4	3	3
24	4	4	4	4	4	5	4	4	4	5	4	4	4
25	4	5	5	5	5	1	4	4	4	5	3	4	
26	3	3	3	3	3	3	3	3	3	3	3	3	3
27	3	3	3	1	3	1	1	1	5	5	5	3	1
28	2	4	5	3	2	4	2	2	3	4	4	3	3
29	3	4	4	4	3	4	2	2	2	2	3	3	3
30	5	5	5	5	4	5	5	5	2	2	2	1	1
31	3	3	3	3	3	3	3	3	3	3	3	2	2
32	1	2	2	2	1	1	1	1	3	4	4	2	3
33	4	5	5	1	2	5	1	1	1	5	5	2	1
34	4	2	2	2	2	5	1	1	2	5	2	2	2
35	3	1	1	1	1	1	1	1	1	3	5	1	1
36	2	3	3	3	3	2	1	1	1	2	3	3	3
37	5	3	3	2	3	2	1	1	2	2	3	2	3
38	1	2	2	2	2	2	2	2	2	2	3	2	2
39	1	1	3	3	1	5	1	3	3	3	2	1	1
40	5	4	4	4	4	4	3	3	3	4	4	4	3
41	1	2	2	2	2	2	2	2	2	2	4	2	2
42													
43	3	3	3	3	3	3	3	3	3	5	5	3	3
44	2	1	2	2	2	3	1	1	1	4	4	2	3
45	3	3	3	3	3	3	3	3	3	3	3	3	3
46	2	5	5	5	3	3		5	4	5	4	4	4
47	5	5	5	3	4	4	3	3	4	5	5	3	2
48													
49	4	3	3	3	2	3	2	2	2	4	3	3	3
50	3	4	3	3	4	5	2	3	2	4	3	4	3
51	5	2	2	1	3	1	1	1	1	5	5	1	1
52	1	1	1	1	1	1	1	1	1	1	5	1	1
53	5	5	5	5	5	5	5	5	3	5	5	1	

Answer number	Naturalness Entering	Naturalness Breakfast	Naturalness Lunch	Naturalness Dinner, supper	Naturalness Cooking	Naturalness Sleeping	Naturalness Washing (shower)	Naturalness Bathing	Naturalness Clothes washing	Naturalness Clothes drying	Naturalness Leisure	Naturalness Study, reading	Naturalness Work
113	3	4	4	4	3	4	4	4	5	5	3	3	3
114	5	5	5	5	5	5	5	5	5	5	5	5	5
115	2	2	2	2	2	4	5	5	3	3	3	3	3
116	5	5	5	5	5	5	5	5	5		5	5	5
117	2	4	3	3	4	4	4	3	3	3	5	2	3
118	2	2	2	2	2	2	2	2	2	2	4	1	1
119	1	4	4	4	1	1	1	1	5	5	3	2	2
120	5	4	4	4	5	5	5	5	5	5	5	2	2
121	5	5	5	5	5	5	5	5	5	5	5	5	2
122													
123	5	5	4	4	4	4	4		3	3	5	4	5
124													
125	2	2	2	2									
126	1	2	2	2	1	2	1	1	1	4	4	3	1
127	1	2	2	2	1	2	1	1	1	2	5	2	1
128	3	2	2	2	2	2	2	2	2	4		2	2
129	1	3	3	3	3	3	1	1	1	3	4	3	3
130	5	5	5	5	5	5	5	5	5	5	5	5	5
131	5	5	5	5	5	5	5	5	5	5	5	5	5
132	4	2	2	2	4	4	2		2	5	5	2	2
133	5	5	5	5	5	5	5	5	5	5	5		
134	2	1	1	1	1	1	1	1	2	2	1	1	1
135	3	4	4		3	2	2	3	3	3	4	3	3
136	1	2	2	2	1	4	1	1	1	1	3	3	3
137	2	2	2	2		2	2	2	4	4	5	3	1
138	5	5	5	5	5	5	5	5	5	5	5	5	5
139	3	3	3	3	3	5	5	5	3	3	5	5	3
140	5	5	5	1	2	1	1	1	5	5	5	3	
141	5	1	1	1	1	1	1	1	1	1	1	1	1
142	5	3	3	3	4		3	4	4	4	2	3	2
143	3	4	4	1	3	2	3	3	3	3	2	3	3
144	1	1	1	1	1	2	1	1	1	4	4	1	1
145	3	4	5	3	2	2	1	1	5	5	5	3	
146	3	4	4	4	2	2	1	1	1	1	1	3	3
147	1	1	1	1	1	1	1	1	1	5	3	4	4
148	4	2	2	2	3	3	1	3	2	4	3	3	3
149	2	2	4	5	5	5	5	4	5	1	2	5	4
150	4	2	2	2	2	2	1		3	4		2	2
151	5	3	3	3		4	1	3	2	2	4	1	1
152	5	5	5	5	5	5	5	5	5	5	5	5	5
153	2	3	3	3	3	1	3	3	3	4	3	3	3
154	1	1	1	1	1	1	1	1	1	5	5	1	3
155	4	1	1	1	1	1	1	1	2	5	4	1	1
156	1	1	1	1				1					1
157	1	1	1	1	1	1	1	1	1	4	2	1	1
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160	1	2	3	3	1	2	1	1	1	4	4	3	3
161													
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89	1	4	4	4	5	5	4	5	4	3	4	4	4
90	3	1	1	1	1	1	3	1	1	1	3	1	1
91	2	5	5	5	4	5	1		1	5	5	2	2
92	3	3	3	3	2	5	2	2	2	2	3	3	3
93	4	4	4	4	4	3	4	4	4	5	5	4	3
94	1	3	3	3	4	3	2	2				2	2
95	1	1	1	1	1	2	1	1	1	3	2	1	1
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97	3	2	2	3	3	3	2	4	3	3	3	3	
98		1	1	1	1	1	1	1	1	1	1	1	
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103	3	3	3	3	3	3	3	3	3	3	3	3	3
104	4	4	4	2	2	1	2	2	3	4	4	2	3
105													
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176	5	1	2	5	5	5	5	5	5	5	4	2	5
177	4	4	4	3	3	4	1		2	4	4	4	
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181	5	5	5	5	2	5	2	2	2	5	2	5	5
182	4	3	3	3	3	3		1	5	5			3
183	2	3	3	3	4	3	3	3	3	3	3	3	4
184	3	4	4	4	4	5	2	4	3	3	2	2	4
185	4	4	4	4	4	3	4	4	4	4	4	4	
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187	2	3	3	3	2	4		2	2	3	3	2	
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189	4	4	4	4	4	4	4	4	4	4	4	4	4
190	4	4	4	4	4	5	3	5	5	5	1	4	1
191	3	3	3	3	3	3	3	2	4	2	3	4	3
192	1	1	1	1	1	1	1	1	1	1	2	2	2
193	1	2	2	2	1	3	2	2	2	2	2	2	2
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195	3	3	3	2	3	1	1	1	1	4	3	3	3
196	2	5	5	5		5	5	5					
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198	3	3	3	3	3	3	3	3	4	5	4	2	3
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202	1	4	1	4	2	1		1	1	5	3	1	3
203	5	4	4	1	2	4	2	2		5	5	2	2
204	5	4	4	4	4	5	4	4	4	5	4	5	5
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207	3	4	4	4	4	4	4	4	4	5	4	3	2
208	1	2	2	2	2	2	2	2	2	4	3	4	4
209	1	1	1	1	1	1	1	1	1	4	4	1	1
210	4	2	2	2	2	2	2	2	2	5		3	
211	5	5	5	5	5	5	5	5	3	3	3	5	5
212	4	4	4	4	4	3	3	3	3	3	4	3	3
213	4	2	2	2	4	2	2	2	4	2	4	2	3
214	5	3	5	5	4	3	1	1	1	5		3	3
215	5	5	5	5	5	5	5	5	5	5	5	5	
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217	2	4	2	4	4	4	2	2	2	3	4	3	2
218	5	5	5	5	5	5	5	5	5	5	5	5	5
219	5	5	5	5	5	5		5		5	4	4	4
220	5	5	5	5	5	5	5	5	5	5	5	5	5
221	4	4	4	1	4	1		2	2	4	5	1	1
222	4	5	5	3	4	3	4	4	4	5	5	3	
223	3	2	2	2	3	3	3	3	1	4	3	2	2

10.5 "Suitability" of space activities you do in the dwelling in a typical day, mark with a circle “O”.

Rate each activity marking according to the existing space for each of the given parameters from unsuitable to suitable. Unsuitable means that the spaces are not practical and adequate for the optimal realization of the activity as you would like to do it. Suitable means that the space suits your expectations for doing the activity well. (For activities not realized at home leave in blank)

Activities	1-unsuitable	2-slightly unsuitable	3-half unsuitable half suitable	4-slightly suitable	5-suitable
1 Entering (main entrance)					
2 Breakfast					
3 Lunch					
4 Dinner, supper					
5 Cooking					
6 Sleeping					
7 Washing (shower)					
8 Bathing					
9 Clothes washing					
10 Clothes drying					
11 Leisure					
12 Study, reading					
13 Work					

Answers:

Answer number	Suitability Entering	Suitability Breakfast	Suitability Lunch	Suitability Dinner, supper	Suitability Cooking	Suitability Sleeping	Suitability Washing (shower)	Suitability Bathing	Suitability Clothes washing	Suitability Clothes drying	Suitability Leisure	Suitability Study, reading	Suitability Work
1	4	4	4	4	4	4	4	4	4	4	3	4	4
2	5	5	5	5	5	5	5	5	5	5	5	5	5
3	2	2	2	2	2	2	2	2	2	2	2	2	2
4	4	4	4	4	5	4	5	5	4	5		3	
5	5	5	5	5	5	3	5	3	5	5		5	5
6	5	5	5	5	5	5	5	5	5	5		5	5
7	4	4	4	4	4	4	2	2	3	3	3	2	4
8	5	4	4	4	4	5	5	5	4	4	3	4	3
9	5	5	5	5	5	4	5	5	5	4	5	5	5
10	5	4	4	4	2	4	2	1	2	4	3	3	3
11	4	3	3	3	4	5	5	4	4	4	3	5	4
12	4	4		4	4	4	4	4	2	2	5	5	5
13	3	5	5	5	4	4	4	4	4	4	4	3	3
14	5	5	5	5	5	5	5	5	5	5	5	5	5
15	4	2	2	2	2	3	4	4	3	4	5	4	4
16	3	3	3	3	1	2	4	4	4	3	3	4	4
17	4	4	4	4	3	4	2	2	2	5	3	3	3
18		5	5	5	5	3	5		5		5		
19	5	4	4	4	5	5	5	5	5	2	4	2	2
20	3	2	2	2	1	1	2	2	3	5	4	4	3
21	5	5	5	5	5	5	5	5	5	5	5	5	5
22	2	4	4	4	4	4	4	4	2	2	4	4	3
23	5	4	5	5	3	5	4	4	3	3	5	4	4
24	5	5	5	5	5	5	5	5	5	5	5	5	5
25	5	5	5	5	5	5	5	5	5	5	5	5	
26	5	5	5	5	5	5	5	5	5	5	5	5	5
27	5	5	5	5		2	5	5	5	5	3	1	1
28	5	5	5	5	4	5	4	4	4	4	3	4	3
29	3	4	4	4	3	4	4	4	4	3	3	3	3
30	5	5	5	5	5	5	5	5	5	5	5	5	5
31	3	2	3	3	3	3	4	4	4	4	3	2	3
32	5	5	5	5	5	5	5	3	4	4	3	5	5
33	5	5	5	5	5	5	5	5	5	4	5	5	5
34	2	4	4	4	4	5	4	4	4	4	4	4	4

Answer number	Suitability Entering	Suitability Breakfast	Suitability Lunch	Suitability Dinner, supper	Suitability Cooking	Suitability Sleeping	Suitability Washing (shower)	Suitability Bathing	Suitability Clothes washing	Suitability Clothes drying	Suitability Leisure	Suitability Study, reading	Suitability Work
113	5	5	5	5	5	5	5	5	5	5	5	5	5
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115	3	5	5	5	4	4	5	5	5	3	5	5	5
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117	2	5	5	5	5	5	4	4	4	3	4	5	5
118	5	5	5	5	5	5	5	5	5	5	5	5	4
119	4	5	5	5	4	5	4	4	4	5	5	5	5
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121	5	5	5	5	5	5	5	5	5	5	5	5	5
122													
123	4	4	4	4	4	4	4	4	3	3	4	4	
124													
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127	5	5	5	5	5	5	5	5	5	5	5	5	5
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132	4	2	2	2	2	5	4		4	2	5	4	4
133	5	3	3	3	2	4	5	5	5	4	5		
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136	3	4	5	5	4	5		4	4		5	5	5
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47	5	5	4	4	2	3	4	4	1	5	5	4	3
48													
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105													
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111	5	5	5	5	4	5	5	5	3	5	5	4	4
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149	1	1	2	5	5	5	5	4	4	2	2	5	4
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151	3	3	3	3	1	2	3	1	2	2	3	2	2
152	1	1	1	1	1	1	1	1	1	1	5	1	1
153	3	3	3	3	3	4	4	3	4	4	3	3	3
154	5	5	5	5	5	5	5	5	5	5	5	5	5
155	4	4	2	4	3	5	3	2	4	4	3	2	2
156	5	5	5	5				5					5
157	5	5	5	5	5	5	5	5	5	5	4	3	3
158		4	4	4	2	4	4	4	3	3	5	5	5
159	4	5	5	5	5	5	5	5	5	4	4	3	3
160	2	4	4	4	2	4	5	5	3	3	4	4	4
161													
162	4	4	4	4	4	4	4	4	4	4	4	4	4
163	5	5	5	5	5	5	4	5	5	5	2	2	5
164	5	5	5	5	5	5	5	5	5	5	5	5	5
165	4	3	3	3	3	4	3	4	3	3	3	4	5
166	5	4	4	4	4	4	4	4	4	4	4	2	2
167	4	4	4	4	4	4	4	4	4	4		4	4
168	3	3	3	3	4	2	4	4	2	3	3	3	3
169	2	1	3	4	2	4	4	4	3	1	3	2	1
170	5	5	5	5	5	5	5		5	5	4	4	4
171	2	4	3	3	4	4	3	3	3	4	2	3	3
172	5	5	4	4	4	5	5	5	5	5	5	3	3
173	3	3	3	3	2	5	4	4	3	2	4	4	4
174	5	5	5	5	5	5	5	5	5	5	5	5	5
175	5	5	5	5	5	5	5	5	5	5	5	5	5
176	5	5	5	5	5	5	5	5	5	5	5	5	5
177	5	4	4	2	2	3	3		4	5	2	3	
178	5	5	5	5	5	5	5	5	5	5	5	5	5
179	5	1	2	4	5	5	5	4	5	5	5	2	5
180	5	5	5	5	5	2	5	5	5	5	5	5	3
181	4	5	5	5	5	3	5	5	5	5	5	5	5
182													
183	2	3	3	3	4	4	3	3	3	3	3	4	4
184	5	5	5	5	4	5	2	4	3	3	5	4	3
185	2	5	5	5	5	5	5	5	5	5	5	5	
186	5	5	5	5	5	5	4	4	4	5	4	4	4
187	4	4	4	4	4	4		4	4	5	4	5	
188	4	4	4	4	5	5	4	4	4	4	3	4	4
189	5	5	5	5	4	5	4	5	5	5	4	4	4
190	4	4	4	4	4	5	2	4	4	4	2	4	2
191	3	3	3	3	3	3	3	3	4	4	4	4	3
192	5	5	3	4	4	5	5	2	5	4	4	4	4
193	4	5	5	5	4	5	4	4	4	4	5	5	5
194	2	4	4	4	2	2	2	2	4	4	3	2	2
195	5	5	5	5	5	5	5	5	5	5	5	5	5
196	2	5	5	5	1	5	5	5	1	1	1	1	1
197	4	5	5	5	4	4	5	5	4	4	2	2	2
198	5	5	5	5	5	5	5	5	5	5	5	5	5
199	2	5	4	4	2	4	4	4	3	2	3	2	2
200	4	4	4	4	4	4	4	4	5	5	5	4	
201	5	5	5	5	5	5	4	4	5	5	3	3	5
202	5	3	3	4	3	5		4	4	5	4	4	3
203													
204	5	5	5	5	5	5	5	5	5	5	5	5	5
205	5	5	5	5	5	5	5	5	5	5	5	5	5
206	4	4	4	4	4	4	4	4	4	4	4	4	4
207	5	5	5	5	5	5	5	5	5	5	5	5	5
208	2	2	2	2	2	2	2	2	2	4	2	3	3
209	5	5	5	5	5	5	5	5	5	5	5	5	5
210	5	5	5	5	5	5	5	5	5	5		5	
211	5	5	5	5	5	5	5	5	5	5	5	5	5
212	3	4	4	4	3	4	2	2	2	2	3	3	3
213	4	3	4	4	2	5	2	3	2	2	4	4	4
214	4												
215	4	5	5	5	5	5	5	5	4	4	5	5	
216	4	4	4	4	3	4	4	4	4	2	2	2	4
217	4	4	2	4	4	4	2	2	2	2	4	3	4
218	5	5	5	5	5	5	5	5	5	5	5	5	5
219	5	5	5	5	5	5		5	5	5			
220	5	5	5	5	5	5	5	2	5	5	5	5	5
221	4	5	5	5	5	4		4	4	4	2	4	2
222	5	5	5	5	5	5	5	5	5	5	5	4	
223	2	2	2	2	3	4	5	4	3	4	2	2	1

Question 11:

11.1 Formality for the list of activities you would like to do in the dwelling, mark with a circle "O".

Rate each activity according to the given parameters from casual to formal according of how you would like it in a home. Casual means fewer requirements of established manners, schedule and settings. Formal means an established procedure or settings. (You can include activities not realized at home; otherwise leave such activities in blank)

Activities	1-informal	2-slightly informal	3-half informal half formal	4-slightly formal	5-formal
1 Entering (main entrance)					
2 Breakfast					
3 Lunch					
4 Dinner, supper					
5 Cooking					
6 Sleeping					
7 Washing (shower)					
8 Bathing					
9 Clothes washing					
10 Clothes drying					
11 Leisure					
12 Study, reading					
13 Work					

Answers:

Answer number	Formality Entering	Formality Breakfast	Formality Lunch	Formality Dinner, supper	Formality Cooking	Formality Sleeping	Formality Washing (shower)	Formality Bathing	Formality Clothes washing	Formality Clothes drying	Formality Leisure	Formality Study, reading	Formality Work
1	2	2	2	2	2	2	2	2	2	2	3	2	2
2	4	4	4	4	4	3	3	3	3	3	3	3	3
3	2	2	3	2	1	1	2	1	2	2	3	3	3
4	2	2	2	2	2	3	2	2	2	2		3	
5	1	1	1	1	1	1	1	1	1	1		1	1
6													
7	2	1	1	1	1	1	1	1	1	1	2	2	2
8	1	1	1	1	1	1	1	1	1	1	3	2	4
9	1	1	1	1	1	1	1	1	1	1	1	1	1
10	1	2	2	2	2	1	1	3	1	1	3	2	3
11	2	2	2	2	2	1	2	1	1	1	1	1	1
12	5	4	4	4	5	5	5	5	4	4	1	3	3
13	1	1	1	1	1	1	1	1	1	1	2	2	3
14	1	1	1	1	1	1	1	1	1	1	5	1	5
15	4	4	4	4	2	1	1	5	2	2	5	1	1
16	3	2	3	4	4	2	2	2	3	3	4	4	4
17	1	1	4	4	1	1	4	2	1	1	2	2	1
18	1	3	3	5	5	5	3	3	5	5	4	5	1
19	1	1	1	1	1	1	1	1	1	1	3	3	3
20	1	1	1	1	1	1	1	1	1	1	1	1	1
21	1	1	1	1	1	1	1	1	1	1	1	1	1

Answer number	Formality Entering	Formality Breakfast	Formality Lunch	Formality Dinner, supper	Formality Cooking	Formality Sleeping	Formality Washing (shower)	Formality Bathing	Formality Clothes washing	Formality Clothes drying	Formality Leisure	Formality Study, reading	Formality Work
113	2	2	2	2	2	2	2	2	2	2	4	2	2
114	1	1	1	1	1	1	1	1	1	1	1	1	1
115	5	1	1	3	1	1	1	1	1	1	1	3	4
116	1	1	1	1	1	1	1	1	1		1	1	1
117	4	3	3	5	4	3	3	4	3	3	2	4	4
118	1	1	4	1	1	1	1	1	1	1	1	1	4
119	1	1	1	1	1	1	1	1	1	1	1	1	1
120	1	1	1	1	1	1	1	1	1	1	1	1	1
121	1	1	1	1	1	1	1	1	1	1	1	1	1
122													
123	3	3	3	4	3	4	3		3		4	4	
124													
125	1	1	2	5	5	5	5	5	5	5	5	5	5
126	4	2	4	4	5	4	5	5	4	3	1	2	2
127	1	1	1	1	1	4	1	1	1	1	1	1	4
128	2	2	2	2	2	2	2	2	2	2		2	2
129	1	1	1	1	1	1	1	2	1	1	1	1	2
130	1	1	1	1	1	1	1	1	1	1	1	1	1
131	1	1	1	1	1	1	2	1	3	3	1	1	1
132	1	1	1	1	1	1	1	1	1	1	2	1	1
133	1	1	1	1	1		1	1	1	1	1	1	1

22													
23	1	1	1	1	1	1	2	1	1	2	1	1	1
24													
25	1	1	1	1	1	1	1	1	1	1	1	1	
26	1	1	1	1	1	1	1	1	1	1	1	1	1
27												1	
28	1	1	1	1	1	1	1	1	1	1	1	1	1
29	2	2	2	2	2	2	2	2	2	2	2	2	2
30	1	1	1	1	1	1	1	1	1	1	1	1	1
31	3	3	3	3	3	3	3	3	3	3	3	3	4
32	1	1	1	1	1	1	1	1	1	1	3	1	3
33	1	1	1	1	1	1	1	1	1	1	1	1	5
34													
35	1	1	1	1	1	1	1	1	1	1	1	1	1
36	3	1	1	1	1	3	1	2	1	1	3	2	2
37	1	1	1	1	1	1	1	1	1	1	3	2	4
38	1	1	1	1	1	1	1	1	1	1	1	1	1
39	1	1	1	1	1	1	1	1	1	1	1	1	1
40	1	1	1	1	1	1	1	1	1	1	1	1	1
41	1	1	1	1	1	1	1	1	1	1	2	2	1
42													
43	1	1	1	1	1	1	1	1	1	1	1	1	3
44	1	1	1	1	1	1	1	1	1	1	1	1	1
45	3	3	3	3	3	3	3	3	3	3	3	3	3
46	4	1	1	1	1	1		1	1	1	1	1	4
47	1	1	1	3	4	1	1	1	2	2	3	1	5
48													
49	2	2	2	2	2	2	4	4	4	4	1	2	2
50	4	4	2	3	4	4	4	2	5	5	1	4	5
51	1	1	1	1	1	1	1	1	1	1	3	3	4
52	1	1	1	5	3	1	1	1	1	1	1		3
53	1	1	1	1	1	1	1	1	1	1	1	1	3
54	1	1	1	1	1	1	1	1	1	1	1	2	
55	1	1	1	1	1	1	1	1	1	1	1	1	1
56	1	1	1	1	1	1	1	1	1	1	1	1	3
57	1	4	4	3	2	1	1	1	3	3	1	1	2
58	1	1	1	1	1	1	1	1	1	1	1	1	3
59	3	3	3	3	3	3	2	2	3	3	3	3	3
60	1	1	1	1	1	1	1	1	1	1	1	1	4
61	1	1	1	1	4	1	4	4	4	4	4	1	
62	1	1	1	1	1	1	2	2	4	4	1	1	1
63	4	3	2	2	4	3	4	3	5	5	1	1	1
64	4	3	3	3	3	1	1	1	1	1	2	1	1
65	5	3	3	3	4	5	5	5	5	3	1	3	3
66													
67	1	1	2	1	2	1	2	2	3	1	4	2	1
68	1	1	1	1	1	1	1	1	1	1	1	1	
69	4	4	4	4	1	2	2	4	2	2	2	4	4
70	1	1	1	1	2	1	1	5	2	2	5	2	5
71	5	1	1	1	2	1	1	1	5	5	1	1	1
72	1	1	4	1	1	1	1	1	1	1	1	1	4
73	4	3	3	3	3	1	1	1	3	3	3	3	4
74	1	1	1	1	1	1	1	1	1	1	1	1	
75	5	5	5	5	5	5	5	5	5	5	5	5	5
76	3	3	3	3	3	3	3	3	3	3	3	3	3
77	2	2	2	2	2	2	2	2	2	2	2	2	2
78	4	4	4	4	1	4	3	3	2	2	1	2	5
79	4	4	4	4	4	1	1	1	1	1	1	1	1
80											1		
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82	1	1	1	1	1	1	1	1	1	1	1	5	
83	3	1	2	2	1	1	1	1	1	1	3	3	4
84	1	4	4	4	4	5	4	4	4	4	1	4	4
85	1	1	1	1	1	1	1	1	1	1	3	3	3
86	1	4	1	4	4	4	4	4	1	3		1	3
87	1	1	1	1	1	1	1	1	1	1	1	1	1
88	1	1	1	1	1	1	1	1	1	1	1	1	1
89	3	5	5	5	5	5	5	5	4	4	4	4	
90	1	1	1	1	1	1	1	1	1	1	1	1	1
91	1	4	4	4	1	4	1	1	2	2	1	4	1
92	1	4	3	2	2	1	1	1	1	1	2	2	1
93													
94	3	1	2	2	2	1	1	1	1	1	2	3	4
95	1	1	1	1	1	1	1	1	1	1	1	1	1
96	2	1	1	1	1	1	4	4	4	1	1		4
97	2	2	2	3	2	2	2	3	4	4	3	3	3
98													
99	1	1	3	4	3	1	1	1	1	1	3	1	1
100	1	1	1	1	1	1	1	1	1	1	1	1	5
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102	4	2	2	2	2	4	2	3	2	2	3	4	4
103	3	3	3	3	3	3	3	3	3	3	3	3	3

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135	4	4	4	4	4	4	4	3	3	3	4	4	4
136	1	2	3	3	1	3	4	4	3	4	1	2	2
137	2	2	2	2	2	2	3	3	3	3	1	1	3
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142	4	2	2	2	4	2	2	2	2	2	4	2	4
143	4												4
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145	1	2	1	1	1	1	1	4	2	2	2	1	3
146	1	2	2	2	2	1	1	1	1	1	2	2	2
147	1	1	1	1	1	1	1	1	1	1	3	1	1
148	1	1	1	1	1	1	1	1	5	5	1	5	5
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150		2	2	2	2	2	4	4	4	2	1	1	2
151	3	1	1	1	1	2	1	2	2	2	3	1	1
152	1	1	1	1	1	1	1	1	1	1	1	1	1
153	3	3	3	3	3	1	1	3	2	2	3	3	3
154	3	1	1	4	4	1	1	1	1	1	1	1	1
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156	1	1	1	1				1					1
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159	4	4	4	4	3	2	2	2	4	4	2	2	5
160	1	1	1	1	1	1	1	1	1	1	1	1	1
161													
162	2	2	2	2	2	2	2	2	2	2	2	2	4
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167	1	1	1	1	1	1	1	1	1	1	1	1	1
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172	1	2	2	2	2	2	2	2	2	2	2	3	3
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175	1	1	1	1	1	1	1	1	1	1	1	1	1
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178													
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181	5	1	1	1	1	1	1	1	1	1	1	1	1
182													
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185	1	1	1	1	1	1	1	1	1	1	3	2	2
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187	2	2	2	2	2	1		2	2	2	2	2	
188	1	1	1	1	1	1	2	1	1	1	2	1	2
189	2	2	2	2	2	2	3	2	3	3	3	3	2
190	2	2	2	2	2	1	3	2	2	2	4	2	4
191	3	2	4	2	3	3	3	2	4	2	3	4	3
192	1	1	1	1	1	1	1	1	1	1	1	1	1
193	1	1	1	1	1	1	1	1	1	1	1	1	1
194	3	2	2	2	2	2	2	2	2	2	2	2	2
195	1	1	1	1	1	1	1	1	1	1	1	1	1
196	4	1	1	1	5	1	2	1	4	4	4	4	4
197	5	5	4	5	4	3	3	3	4	4	2	2	3
198	3	3	3	3	3	3	3	3	3	3	3	3	3
199	3	1	1	2	2	1	1	1	1	1	1	1	1
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203	1	1	1	1	1	1	1	1	1	1	1	1	1
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205	2	2	2	2	2	2	2	2	2	3	3	4	5
206	2	4	4	4	4	4	3	3	4	4	2	2	4
207	1	1	1	1	1	1	1	1	1	1	2	1	2
208	3	2	2	2	4	1	4	4	4	4	1	1	1
209	1	1	1	1	1	1	1	1	1	1	1	1	5
210	3	4	4	4	3	1	1	1	2	3		2	
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212	2	2	2	2	3	1	2	2	3	3	3	2	2
213	1	2	2	2	4	4	4	4	4	4	2	2	4
214	4	1	1	1	1	1	1	1	1	1	1	1	1
215	3	3	3	3	3	3	3	3	3	3	3	3	3

104	1	1	1	1	1	1	1	1	1	1	1	1	1
105													
106	1	1	1	1	1	1	1	1	1	1	1	1	1
107													
108	1	1	2	1	2	2	3	3	3	3	4	3	4
109	1	2	2	2	1	1	1	2	1	1		2	3
110	1	1	1	1	1	1	1	1	1	1	1	1	
111	1	1	1	1	1	1	1	1	1	1	2	3	3
112	1	1	2	1	1	1	1	1	2	2	3	2	5

216	4	1	1	4	4	1	1	1	1	1	4	4	4
217	4	2	2	2	2	1	1	1	1	1	1	2	2
218	1	1	1	1	1	1	1	1	1	1	1	1	1
219	1	1	1	1	1	1		1	1	1			
220	3	3	3	3	2	3	1	1	1	1	3.5	3	3
221	1	1	1	1	1	1		1	1	2	2	2	5
222	2	1	1	2	2	1	1	1	1	2	2	1	
223	3	3	3	4	3	3	2	4	2	2	3	5	5

11.2 Privacy for the list of activities you would like to do in the dwelling, mark with a circle "O".

Rate each activity according to the given parameters from public to private according of how you would like it in a home. (You can include activities not realized at home; otherwise leave such activities in blank)

Activities	1-public	2-slightly public	3-half public half private	4-slightly private	5-private
1 Entering (main entrance)					
2 Breakfast					
3 Lunch					
4 Dinner, supper					
5 Cooking					
6 Sleeping					
7 Washing (shower)					
8 Bathing					
9 Clothes washing					
10 Clothes drying					
11 Leisure					
12 Study, reading					
13 Work					

Answers:

Answer number	Privacy Entering	Privacy Breakfast	Privacy Lunch	Privacy Dinner, supper	Privacy Cooking	Privacy Sleeping	Privacy Washing (shower)	Privacy Bathing	Privacy Clothes washing	Privacy Clothes drying	Privacy Leisure	Privacy Study, reading	Privacy Work
1	2	3	3	3	3	4	4	3	4	4	3	4	4
2	5	5	5	5	5	5	5	5	5	5	5	5	5
3	2	2	2	2	2	2	2	2	2	2	2	2	2
4	4	4	4	4	4	5	5	5	3	3	3	4	
5	5	5	5	5	5	5	5	5	5	5		5	1
6													
7	2	3	3	3	3	5	5	5	4	4	3	5	4
8	5	5	5	5	5	5	5	5	5	5	2	5	1
9	3	5	5	5	5	5	5	5	5	5	3	3	3

Answer number	Privacy Entering	Privacy Breakfast	Privacy Lunch	Privacy Dinner, supper	Privacy Cooking	Privacy Sleeping	Privacy Washing (shower)	Privacy Bathing	Privacy Clothes washing	Privacy Clothes drying	Privacy Leisure	Privacy Study, reading	Privacy Work
113	4	5	5	5	5	5	5	5	5	5	4	5	5
114	5	5	5	5	5	5	5	5	5	5	5	5	5
115	1	3	3	5	5	5	5	5	5	5	3	4	3
116	3	5	5	2	5	5	5	5	5		5	5	5
117	3	3	3	3	3	5	5	5	5	5	3	3	2
118	5	5	5	5	5	5	5	5	5	5	5	3	2
119	4	5	5	5	5	5	5	5	5	4	4	5	5
120	5	5	5	5	5	5	5	5	5	5	5	5	5
121	1	1	1	1	1	1	1	1	1	1	1	1	1

10	5	4	4	4	4	5	5	5	5	5	2	3	3
11	3	3	3	3	3	5	5	5	4	4	2	5	5
12	3	4	4	4	5	5	5	5	4	5	3	5	5
13	5	5	5	5	4	4	4	5	4	4	4	3	3
14	5	5	2	4	5	5	5	4	5	5	2	4	2
15	1	4	1	1	1	5	5	2	5	5	1	1	1
16	2	4	4	5	4	5	5	5	5	4	4	5	4
17	1	5	5	5	5	5	5	5	5	5	2	2	2
18	5	3	3	4	4	5	5	5	4	4	3	5	5
19	5	5	5	5	5	5	5	5	5	5	5	5	3
20	5	5	5	5	5	5	5	5	5	5	5	5	5
21	5	5	5	5	5	5	5	5	5	5	5	5	5
22	1	2	2	2	2	5	5	5	4	4	1	5	1
23	5	5	3	3	5	5	5	5	5	5	3	4	2
24													
25	5	5	5	5	5	5	5	5	5	5	5	5	
26	5	5	5	5	5	5	5	5	5	5	5	5	5
27								5				5	
28	4	4	4	4	4	5	5	5	4	4	3	3	3
29	2	4	4	4	4	4	4	4	4	4	4	4	4
30	5	5	5	5	5	5	5	5	5	5	5	5	1
31	3	3	3	3	3	3	3	3	3	3	2	3	3
32	5	5	3	3	5	5	5	5	5	5	3	5	3
33	5	5	5	5	5	5	5	5	4	4	4	4	1
34													
35	5	5	5	5	5	5	5	5	5	5	5	5	3
36	2	4	4	4	4	5	5	5	4	4	3	2	2
37	5	4	3	3	4	5	4	4	5	5	3	4	3
38	5	5	5	5	5	5	5	5	5	5	5	5	2
39	3	4	4	4	4	5	5	5	5	5	3	3	3
40	5	5	5	5	5	5	5	5	5	5	5	5	5
41	5	5	5	5	5	5	5	5	5	5	5	5	3
42													
43	5	5	5	5	5	5	5	5	5	5	5	5	3
44	2	4	4	4	4	4	4	4	4	4	4	4	2
45	3	3	3	3	3	3	3	3	3	3	3	3	3
46	2	5	5	5	5	5		5	5	5	5	5	2
47	1	5	2	3	4	5	5	5	5	1	2	3	1
48													
49	4	4	4	4	4	5	5	5	4	4	3	3	3
50	4	4	3	4	3	5	5	5	2	2	4	5	5
51	5	5	2	2	4	4	5	5	5	3	1	2	1
52	3	5	1	1	4	5	5	5	5	5	1	1	1
53	5	5	5	5	5	5	5	5	5	5	5	5	2
54													
55	5	5	5	4	5	5	5	5	5	5	5	4	4
56	2	4	4	4	5	5	5	5	5	5	3	4	2
57	4	5	4	3	4	5	5	5	5	5	5	4	4
58	5	5	5	5	5	5	5	5	5	5	5	5	5
59	2	1	1	1	1	1	1	1	1	1	1	1	1
60	5	5	5	5	5	5	5	5	5	5	4	5	4
61	1	5	5	5	5	5	5	5	5	3	1	4	
62	2	3	3	3	5	5	5	5	4	4	2	3	3
63	4	5	4	5	2	5	5	5	4	4	3	3	3
64	4	4	4	4	4	4	5	5	5	5	4	5	4
65	4	4	4	4	4	5	5	5	5	4	4	4	4
66													
67													
68	5	5	5	5	5	5	5	5	5	5	5	5	
69	4	4	4	4	4	5	5	5	3	3	3	5	3
70	1	5	5	5	4	5	5	5	4	5	5	4	1
71	2	5	5	5	5	5	5	5	5	5	5	5	1
72	5	5	5	5	5	5	5	5	5		1	5	5
73	3	4	2	2	4	5	5	5	4	4	3	4	1
74	5	5	5	5	5	5	5	5	5	5	5	5	
75	1	5	5	5	5	5	5	5	5	5	1	5	1
76	3	3	3	3	3	3	3	3	3	3	3	3	3
77	2	4	4	4	4	5	5	5	2	2	5	5	5
78	5	5	5	5	5	5	5	5	5	5	1	4	1
79	2	5	5	4	5	5	5	5	5	5	3	3	3
80											5		
81	3	5	5	5	5	5	5	5	5	3	5	5	
82	5	5	5	5	5	5	5	5	5	5	5	5	
83	3	5	5	5	5	5	5	5	5	5	2	3	1
84	5	5	2	3	4	5	5	5	5	5	3	4	3
85	5	5	5	5	5	5	5	5	5	5	3	3	3
86	5	5	5	5	5	5	5	5	5	5	5	5	2
87													
88	4	5	5	5	5	5	5	5	5	5	5	5	5
89	5	5	5	5	5	5	5	5	3	3	4	5	
90	5	5	5	5	5		5	5	5	5	5	5	5
91	2	4	4	4	5	5	5	5	4	4	5	5	2

122													
123	4	4	4	4	4	4	5	5	5	4	3	4	
124													
125	5	5	5	5	5	5	5	5	5	5	5	5	5
126	3	5	4	5	5	5	5	5	5	4	3	3	3
127	2	4	4	4	4	2	4	4	4	4	4	2	2
128	5	5	5	5	5	5	5	5	5	5		5	1
129	5	5	5	5	5	5	5	5	5	5	5	5	4
130	5	5	5	5	5	5	5	5	5	5	5	5	5
131	2	5	5	3	5	5	5	5	5	5	5	5	3
132	2	5	5	5	2	5	5	5	4	5	2	2	2
133	1	5	5	5	5	5	5	5	5	5	5	5	5
134	1	5	5	5	5	5	5	5	4	4	5	5	5
135	4	4	4	4	3	4	4	4	3	3	3	4	4
136	1	3	3	3	1	3	5	5	1	1	2	2	2
137	4	3	3	3	3	5	5	5	3	4	1	2	1
138	5	5	5	5	5	5	5	5	5	5	5	5	5
139	5	5	5	5	5	5	5	5	5	5	5	5	5
140	5	5	5	4	5	5	5	5	5	5	5	5	
141	2	5	5	5	5	5	5	5	5	5	3	3	3
142	4	4	4	4	2	4	4	4	4	4	2	4	2
143	2											2	
144	4	4	3	5	4	5	5	5	4	4	4	2	2
145	5	5	5	5	5	5	5	5	4	4	3	5	3
146	5	5	5	5	5	5	5	5	5	5	5	5	5
147	5	5	5	5	5	5	5	5	5	5	3	1	1
148	3	4	4	4	5	5	5	5	3	3	4	5	5
149	3	3	3	1	3	5	1	1	2	2	1	5	5
150	3	4	4	4	3	4	2	2	3	4	5	5	4
151	3	3	3	3		5	5	5	4	4	3	3	1
152	5	5	5	5	5	5	5	1	5	1	5	1	1
153	3	3	3	3	3	4	4	3	3	3	3	3	3
154	5	5	5	5	5	5	5	5	5	5	5	5	5
155	1	1	1	1	1	4	2	2	2	2	3	2	1
156								5					
157	5	5	5	5	5	5	5	5	5	5	5	2	2
158	3	4	5	4	5	5	5	5	3	3	5	5	1
159	2	4	4	4	4	5	5	5	3	3	5	3	1
160	2	4	4	4	5	5	5	5	4	3	2	2	2
161													
162	5	5	5	5	5	5	5	5	5	5	5	5	2
163	4	5	5	5	5	5		5	5	5			4
164	5	5	5	5	5	5	5	5	5	5	5	5	2
165	1	5	5	5	5	5	5	5	5	5	5	5	1
166	2	3	3	3	3	4	4	4	4	4	4	2	2
167	5	5	5	5	5	5	5	5	5	5	5	5	3
168	2	4	4	4	4	5	5	5	3	4	5	5	5
169	3	4	2	2	5	5	5	5	5	5	3	3	2
170	5	5	5	5	5	5	5	5	4	4	4	4	4
171	5	5	5	5	5	5	5	5	4	4	5	5	5
172	2	3	3	3	3	5	4	4	4	4	2	4	4
173	3	5	5	5	5	5	5	5	4	2	5	5	5
174	5	5	5	5	5	5	5	5	5	5	5	3	3
175	5	5	5	5	5	5	5	5	5	5	5	5	5
176	1	2	2	2	5	5	5	5	5	5	5	5	1
177	2	4	4	3	3	5	3	1	2	4	3	3	4
178													
179	1	5	5	5	5	5	5	5	5	5	5	5	1
180	1	1	1	1	5	5	5	5	5	5	3	5	3
181	2	5	5	5	5	5	5	5	5	5	2	3	2
182													
183	2	3	3	3	3				3			4	2
184	2	5	5	5	5	5	3	5	4	4	4	4	3
185	5	5	5	5	5	5	5	5	5	5	5	5	5
186	5						4	4	4	4	5	5	4
187	4	4	4	4	4	5		5	4	4	4	5	
188	4	5	5	5	5	5	4	5	4	5	4	5	5
189													
190	4	4	4	4	4	5	3	5	4	4	2	4	
191	3	3	2	4	3	2	3	4	3	2	3	4	3
192	4	4	4	4	4	5	5	5	4	4	4	4	4
193	5	1	1	1	1	5	5	1	2	2	1	5	1
194	2	2	2	2	2	4	2	2	2	2	4	4	4
195	5	5	5	5	5	5	5	5	5	5	1	3	3
196	2	5	5	5	2	5	5	5	2	2	5	5	5
197	5	5	5	5	5	5	5	5	5	5	3	5	4
198	3	3	3	3	3	3	3	3	3	3	3	3	3
199	4	5	4	4	5	5	5	3	4	4	3	5	5
200	1	2	2	2	2	5	5	5	1	1	1	4	
201	5	5	5	5	5	5	5	5	5	5	4	3	1
202	5	5	5	5	5	5		5	5	5	5	5	3
203													

92	3	4	2	2	2	5	5	5	5	5	4	4	1
93													
94	3	5	4	4	4	5	5	5	5	5	3	4	3
95	5	5	5	5	5	5	5	5	5	5	1	5	5
96	4	2	2	2	2	5	5	5	2	2	1	5	5
97													
98	5	5	5	5	5	5	5	5	5	5	5	5	5
99	5	5	3	3	5	5	5	5	5	5	3	5	2
100	5	5	5	5	5	5	5	5	5	5	5	5	1
101	5	5	5	5	5	5	5	5	5	5	5	5	5
102	3	4	4	4	4	5	5	5	4	4	3	3	3
103	3	3	3	3	3	3	3	3	3	3	3	3	3
104	5	5	5	5	5	5	5	5	5	5	5	5	5
105													
106	5	5	5	5	5	5	5	5	5	5	5	5	5
107													
108	5	5	4	4	4	5	4	4	4	4	4	5	5
109	5	5	5	5	5	5	5	5	5	5		5	2
110	5	5	5	5	5	5	5	5	5	5	5	5	
111	5	5	5	5	5	5	5	5	5	5	5	5	
112	2	4	4	4	4	5	5	5	5	5	2	4	2

204	5	5	5	5	5	5	5	5	5	5	5	5	5
205	4	4	4	4	4	4	5	5	5	5	3	5	
206	2	5	4	4	4	5	5	5	5	5	3	5	2
207	2	5	5	5	5	5	5	5	5	5	5	5	5
208	3	2	2	2	2	4	5	5	4	4	2	2	2
209	5	5	5	5	5	5	5	5	5	5	5	5	2
210	2	4	4	4	4	5	5	5	4	4		3	
211	5	5	5	5	5	5	5	5	5	5	5	5	5
212	2	2	4	2	2	4	3	3	3	4	4	4	4
213	5	5	2	5	5	5	5	5	5	5	2	4	1
214													
215	3	3	3	3	3	3	3	3	3	3	3	3	3
216	2	4	4	2	2	5	5	5	5	5	2	2	2
217	4	5	4	5	5	5	5	5	5	4	5	4	4
218	5	5	5	5	5	5	5	5	5	5	5	5	5
219	2	5	5	5	5		5	5	5	5	4	4	1
220	3	3	3	3	4	3	5	5	5	5	2.5	3	3
221	4	5	5	5	5	5		5	5	5	5	5	1
222	4	5	5	4	5	5	5	5	5	5	3	4	
223	3	4	4	4	4	5	5	5	3	3	4	4	4

11.3 Brightness for the list of activities you would like to do in the dwelling, mark with a circle "O".

Rate each activity according to the given parameters from dark to bright according of how you would like it in a home. (You can include activities not realized at home; otherwise leave such activities in blank)

Activities	1-dark	2-slightly dark	3-half dark half bright	4-slightly bright	5-bright
1 Entering (main entrance)					
2 Breakfast					
3 Lunch					
4 Dinner, supper					
5 Cooking					
6 Sleeping					
7 Washing (shower)					
8 Bathing					
9 Clothes washing					
10 Clothes drying					
11 Leisure					
12 Study, reading					
13 Work					

Answers:

Answer number	Brightness Entering	Brightness Breakfast	Brightness Lunch	Brightness Dinner, supper	Brightness Cooking	Brightness Sleeping	Brightness Washing (shower)	Brightness Bathing	Brightness Clothes washing	Brightness Clothes drying	Brightness Leisure	Brightness Study, reading	Brightness Work
1	4	4	4	4	4	3	4	4	4	5	3	4	4
2	5	5	5	5	5	5	5	5	5	5	5	5	5
3	3	3	3	3	3	3	3	3	3	3	3	3	3
4	4	5	4	4	5	2	4	4	3	5	5	3	4
5	5	5	5	5	5	3	2	2	1	1		5	5
6													

Answer number	Brightness Entering	Brightness Breakfast	Brightness Lunch	Brightness Dinner, supper	Brightness Cooking	Brightness Sleeping	Brightness Washing (shower)	Brightness Bathing	Brightness Clothes washing	Brightness Clothes drying	Brightness Leisure	Brightness Study, reading	Brightness Work
113	3	3	3	3	3	2	3	3	5	5	5	5	3
114	5	5	5	5	5	5	5	5	5	5	5	5	5
115	4	5	5	2	5	2	3	3	4	4	5	3	4
116	5	5	5	5	5	2	5	5	5		5	5	5
117	5	5	5	3	5	1	3	3	3	3	5	5	5
118	4	5	5	4	3	2	2	2	3	3	4	3	4

7	4	4	4	4	4	2	4	4	4	5	4	4	4
8	5	5	4	4	4	1	3	3	4	5	5	2	4
9	1	5	5	3	5	1	5	5	5	5	5	3	3
10	5	5	4	4	5	1	4	4	3	5	3	3	3
11	4	4	4	4	4	1	2	2	2	4	5	1	2
12	4	5	5	4	4	4	4	4	3	2	5	5	5
13	3	4	4	4	3	4	4	4	3	3	4	4	3
14	4	5	5	5	3	2	3	3	2	3	4	4	4
15	5	5	5	1	5	1	3	3	5	5	4	4	4
16	2	4	4	3	4	1	4	3	4	4	4	4	3
17	4	4	4	4	4	2	3	3	4	5	4	4	4
18	5	5	5	3	5	1	3	3	5	5	3	5	5
19	5	5	5	5	5	1	5	5	5	3	3	5	5
20	4	4	4	4	5	4	4	4	2	5	4	4	5
21	3	5	5	5	5	1	3	3	3	5	5	4	4
22	4	4	4	4	4	1	2	2	3	3	5	4	5
23	5	5	5	3	4	1	5	5	3	3	5	4	5
24													
25	5	5	5	5	5	1	4	4	5	5	3	5	
26	5	5	5	5	5	5	5	5	5	5	5	5	5
27	3	5	5	5	5	3	3	3	3	3		3	3
28	2	4	5	4	4	2	3	3	3	4	4	5	5
29	4	4	4	4	4	2	3	4	3	3	4	4	3
30	5	5	5	5	5	5	5	5	5	5	5	5	5
31	2	3	3	3	3	1	2	2	4	5	5	3	3
32	5	5	5	5	5	1	4	4	5	5	3	5	5
33	5	5	5	5	5	1	4	4	4	4	5	5	5
34													
35	5	5	5	3	5	1	5	5	5	5	5	5	5
36	5	5	4	3	4	1	2	2	3	3	4	4	4
37	5	4	4	3	4	1	4	3	3	3	4	4	5
38	2	5	4	2	5	1	5	5	5	5	3	2	2
39	3	4	4	4	4	1	3	3	3	5	5	5	5
40	5	5	5	5	5	5	5	5	5	5	5	5	5
41	5	5	5	5	3	1	2	2	3	3	4	4	5
42													
43	4	4	4	4	4	2	3	3	3	5	5	4	3
44	2	2	4	4	2	1	2	2	2	4	4	2	3
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47	5	5	5	3	5	2	4	4	5	5		3	4
48													
49	5	5	5	5	5	3	4	4	3	5	5	5	5
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51	5	5	5	4	4	1	2	3	3	4	5	3	4
52	5	5	5	5	5	1	5	5	5	5	5	5	5
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54													
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62	4	5	5	5	4	4	1	2	2	5	5	5	5
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64	4	5	5	5	5	5	5	5	5	5	4	3	3
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66													
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79	2	4	4	2	5	1	4	4	5	5	4	4	4
80											3		
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122													
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124													
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133	5	4	4	4	5	1	4	4	5	5	4	5	5
134	5	5	5	2	5	1	5	5	5	5	5	5	5
135	5	5	5	5	4	2	3	3	3	3	4	4	4
136	2	4	5	5	5	4	4	5	4	4	5	5	5
137	5	4	4	4	4	2	3	4	3	4	5	5	5
138	5	5	5	5	5	5	5	5	5	5	5	5	5
139	5	5	5	5	5	5	5	5	5	5	5	5	5
140	5	5	5	5	5	1	5	5	5	5	5	5	
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142	2	4	4	2	4	2	4	4	2	4	2	4	2
143	5				5								
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161													
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165	3	3	3	3	3	3	3	3	3	3	3	3	3
166	5	4	4	4	4	1	3	3	3	3	5	5	5
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168	4	5	5	5	4	3	2	2	3	4	5	5	5
169	5	4	4	4	4	5	5	5	5	5	5	5	5
170	4	5	5	5	5	1	4	4	3	3	5	5	5
171	4	3	4	4	4	1	4	4	4	5	4	5	5
172	5	5	4	4	4	2	4	4	3	4	4	4	4
173	4	4	4	4	4	1	4	4	5	5	4	4	4
174	5	5	5	5	5	1	3	3	5	5	5	5	5
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176	5	5	5	5	4	5	5	5	5	5	5	5	5
177	4	5	5	2	2	1	3	3	4	5	3	2	2
178													
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180	5	5	5	5	5	3	3	3	3	3	5	4	4
181	5	5	5	5	5	5	5	5	5	5	5	5	5
182													
183	4	4	4	4	4							4	4
184	2	4	4	4	3	3	2	4	2	2	5	5	3
185	4	5	5	5	5	4	5	5	4	4	5	5	
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187	4	4	4	4	4	2		3	3	5	4	5	
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189	4	4	4	4	4	4	3	4	3	3	3	3	3
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192	4	4	4	4	4	1	4	4	4	4	4	4	4
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195	3	3	3	3	3	1	1	1	3	3	4	4	4
196	5	5	5	5	2	5	5		2	2	5	2	2
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198	3	3	3	3	3	3	3	3	3	3	3	3	3
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90	5	5	5	5	5	5	5	3	3	3	4	4	4
91	5	5	5	5	5	1	4	4	5	5	5	5	5
92	4	4	4	4	4	2	2	5	5	4	4		5
93	5	5	5	4	5	1	5	5	5	5	5	5	5
94													
95	5	5	5	3	5	1	4	3	5	5	3	5	5
96	4	5	5	4	5	2	4	2	5	5	5	5	5
97													
98	5	5	5	5	5	1	5	5	5	5	5	5	5
99	5	5	5	5	5	3	5	3	5	5	5	3	3
100	4	4	4	4	4	4	4	4	4	4	5	3	2
101	3	4	4	2	3	1	3	3	3	3	5	3	3
102	4	4	4	4	4	1	3	3	4	4	3	4	4
103	3	3	3	3	3	3	3	3	3	3	3	3	3
104	5	5	5	3	5	1	3	3	5	5	5	3	4
105													
106	5	5	5	5	5	5	5	5	5	5	5	5	5
107													
108	5	3	3	4	2	4	3	3	3	3	2	2	2
109	5	5	5	5	5	2	5	5	5	5		5	5
110	5	5	5	5	5	1	5	5	5	5	5	5	
111	5	5	5	5	5	5	5	5	4	5	5	5	
112	5	5	5	5	5	1	3	3	4	5	5	5	5

201	5	5	5	5	5	5	5	5	5	5	5	5	5
202	2	4	4	2	4	1		4	4	5	3	4	3
203													
204	5	5	5	5	5	5	5	5	5	5	5	5	5
205	4	4	4	4	5	2	3	3	3	5	5	4	3
206	5	5	5	5	5	5	5	5	4	4	5	4	4
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212	3	4	4	4	4	4	3	3	3	4	4	3	3
213	5	5	4	4	4	1	4	4	4	4	5	4	4
214													
215	4	5	5	5	5	5	5	5		5	5	5	5
216	5	4	4	4	4	2	2	2	4	4	5	5	5
217	4	4	2	2	4	2	4	4	1	4	4	3	2
218	5	5	5	5	5	1	5	5	5	5	5	5	5
219	4	4	4	4	4	4		4	4	4	4	3	3
220	3	3	3	1	4	1	5	5	5	5	4	3.5	2
221	5	5	5	5	5	2		4	5	5	5	5	4
222	5	5	5	5	4	5	4	4	4	5	5	5	
223	3	4	5	3	3	1	4	4	4	5	5	5	5

11.4 "sense of nature" for the list of activities you would like to do in the dwelling, mark with a circle “O”.

Rate each activity according to the given parameters from artificial to natural according of how you would like it in a home. Artificial means that the spaces does not evoke natural environment. Natural means that the space evokes or is connected natural environment. (You can include activities not realized at home; otherwise leave such activities in blank)

Activities	1-artificial	2-slightly artificial	3-half artificial half natural	4-slightly natural	5-natural
1 Entering (main entrance)					
2 Breakfast					
3 Lunch					
4 Dinner, supper					
5 Cooking					
6 Sleeping					
7 Washing (shower)					
8 Bathing					
9 Clothes washing					
10 Clothes drying					
11 Leisure					
12 Study, reading					
13 Work					

Answers:

Answer number	Naturalness Entering	Naturalness Breakfast	Naturalness Lunch	Naturalness Dinner, supper	Naturalness Cooking	Naturalness Sleeping	Naturalness Washing (shower)	Naturalness Bathing	Naturalness Clothes washing	Naturalness Clothes drying	Naturalness Leisure	Naturalness Study, reading	Naturalness Work
1	2	4	4	4	4	4	4	4	4	4	3	4	4
2	5	5	5	5	5	5	5	5	5	5	5	5	5
3	2	2	2	2	2	2	2	2	2	2	2	2	2
4	4	4	4	3	2	3	4	4	4	4	5	2	4
5	5	5	5	5	5	3	1	3	1	1		5	5
6													
7	4	4	4	4	4	4	4	4	4	5	4	4	4
8	3	4	4	4	2	1	1	1	4	5	5	4	5
9	4	4	4	4	4	1	1	1	1	5	5	3	3
10	2	4	3	3	2	2	2	3	2	4	3	3	3
11	3	3	3	4	3	1	1	2	2	2	5	1	4
12	5	4	4	1	3	2	1	1	3	4	4	2	1
13	4	4	4	4	4	4	4	4	5	4	3	4	3
14	4	4	4	4	3	3	4	4	2	5	4	4	4
15	5	5	5	3	2	4	4	4	2	4	5	4	4
16	3	2	3	4	3	2	2	3	3	3	5	5	5
17	4	4	4	4	3	2	2	2	2	5	3	4	4
18	5	5	5	5	5	5	5	5	4	4	5	5	5
19	5	5	5	5	1	5	1	1	1	5	5	5	5
20	5	4	4	4	4	2	4	2	2	5	4	4	3
21	2	2	2	2	2	2	2	2	2	4	4	2	2
22	4	2	2	2	2	2	2	2	2	2	5	2	2
23	5	5	5	5	5	5	5	5	5	5	5	5	5
24													
25	5	5	5	5	5	1	4	4	4	5	3	4	
26	5	5	5	5	5	5	5	5	5	5	5	5	5
27	5	5	5	3	5	5	1	1	5	5	5	5	3
28	3	4	4	4	2	4	2	2	2	4	4	3	3
29	2	4	4	4	4	3	2	2	2	2	3	3	3
30	5	5	5	5	5	5	5	5	5	5	5	1	1
31	3	3	3	3	3	3	3	3	3	3	3	2	2
32	4	4	4	4	2	1	1	4	2	5	4	3	4
33	5	5	5	5	5	5	2	2	4	4	4	1	1
34													
35	5	5	1	5	1	3	4	4	4	5	5	4	2
36	3	4	4	3	3	2	1	1	2	2	4	3	3
37	4	4	3	3	3	2	3	3	3	3	4	3	4
38	4	4	4	4	4	2	2	2	2	2	3	2	2
39	4	4	3	1	1	5	2	2	2	5	5	1	3
40	5	5	5	5	5	5	5	5	5	5	5	5	5
41	5	5	5	5	5	5	2	2	2	2	4	4	3
42													
43	3	3	3	3	3	3	3	3	3	5	5	3	3
44	2	2	4	2	2	3	2	2	2	4	4	2	3
45	3	3	3	3	3	3	3	3	3	3	3	3	3
46	2	5	5	5	5	5	5	5	5	5	5	5	4
47	5	5	5	5	4	3	3	3	4	5	5	4	4
48													
49	4	4	4	4	4	3	2	2	2	4	5	3	3
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51	5	5	3	1	2	1	1	1	2	4	5	3	3
52	1	1	5	3	4	5	1	4	1	5	5	5	5
53	5	5	5	5	5	5	5	5	5	5	5	5	5
54													
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57	5	5	5	3	5	5	5	5	4	5	4	4	5
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60	1	1	1	1	1	1	1	1	1	2	2	2	2
61	4	4	4	4	2	4	3	3	2	5	5	2	
62	5	5	5	5	4	4	2	4	2	5	5	5	5
63	5	5	5	5	5	4	4	5	2	2	4	5	4
64	5	4	4	4	4	3	3	4	3	4	4	3	3
65	3	2	2	2	2	1	1	1	3	4	5	3	3
66													
67	1	1	2	4	1	2	2	3	1	3	3	2	2
68	5	5	5	5	5	5	5	5	5	5	5	5	
69	5	4	4	4	3	1	1	1	1	5	5	1	3
70	5	5		5	5	5	5	5	5	5	1	5	1
71	1	5	5	5	5	5	5	5	2	2	5	5	5
72	1	1	1	1	1	1	1	1	1	1	1	1	1

Answer number	Naturalness Entering	Naturalness Breakfast	Naturalness Lunch	Naturalness Dinner, supper	Naturalness Cooking	Naturalness Sleeping	Naturalness Washing (shower)	Naturalness Bathing	Naturalness Clothes washing	Naturalness Clothes drying	Naturalness Leisure	Naturalness Study, reading	Naturalness Work
113	5	5	5	5	5	5	5	5	5	5	5	5	5
114	2	2	2	2	2	2	2	2	2	4	4	3	3
115	3	4	4	4	2	2	3	3	1	3	5	4	3
116	5	5	5	5	5	5	5	5	5		5	5	5
117	2	3	3	3	3	3	3	3	3	3	3	4	4
118	5	5	5	2	3	2	2	4	2	2	5	3	4
119	4	4	4	2	4	2	1	1	2	5	4	3	3
120	5	5	5	5	5	5	5	5	5	5	5	5	5
121	5	5	5	5	5	5	5	5	5	5	5	5	5
122													
123	5	5	5	3	4	2	2	2	5	5	5	5	
124													
125	5	5	5	5	5	5	5	5	5	5	5	5	5
126	5	4	3	3	1	3	3	3	1	4	4	3	3
127	4	4	4	4	3	4	2	2	2	2	5	4	4
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129	4	4	4	4	4	4	4	4	4	4	4	4	4
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131	5	5	5	5	5	5	4	4	4	4	4	5	5
132	4	4	4	4	4	5	2	4	2	5	4	4	4
133	5	5	5	5	5	5	5	5	5	5	5	5	5
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135	4	4	4	4	3	3	3	3	2	2	3	4	4
136	1	2			2	1	1	1		1	2	2	2
137	5	5	5	5	3	3	3	3	3	5	5	5	5
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139	5	2	2	2	2	4	2	2	2	2	2	5	3
140	5	5	5	4	3	5	5	5	5	5	5	5	
141	5	5	5	1		3	5	5	4	4	5	5	5
142	4	4	4	2	2	2	2	4	2	4	4	2	2
143	5								5				
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145	3	4	4	4	4	5	2	2	4	4	5	4	3
146	3	4	4	4	4	1	1	1	1	3	3	3	3
147	4	4	4	4	4	5	4	4	4	5	5	4	4
148	5	3	3	3	3	1	2	2	1	1	5	4	4
149	3	5	5	5	5	5	5	3	3	3	3	5	5
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156	1	1	1	1				1					1
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203													
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214													
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223	5	4	4	4	4	4	3	4	3	3	3	3	3

11.5 What other activities not listed in the previous question would you like to do in your home? Include activities you actually can do in your home and activities you can´t do in your home.

_____

_____

_____

Answers:

Answer number	**11.5 What other activities not listed in the previous question would you like to do in your home?**
1	My house is a Machiya style house located north of Gojo St./The facade of it is Machiya style, but inside of it is modern style because we renovated it./ There are many high-rise apartment houses in this Cho-nai (Fukakusa Cho). Especially, there is a 14-story house on the south side of my house, and a 9-story house on the west side./So, we get few sun in our house most of year.
2	掃除をする。会話をする。Cleaning up, conversation.
6	ジム
7	だらだら酒を飲む
8	It's important for me to have a talking time with family.

12	Space for playing games such as badminton, in the building premises.
15	客をもてなす
16	play music, play games, party, grill
18	Library, research room, toy room, gym,
20	庭の手入れ, garden maintenance
22	庭の手入れをする,植物を育てる make garden maintenance、grow plants
27	日光浴、swimming
34	そうじをする。 Cleaning up.
35	hear loud music
38	何も考えず、ただ無心になる時。「ボォーと」する。 Being absentminded.
42	たとえばジムにあるようなマシンでトレーニングしてみたい。
46	「友人などと集う」という行動 記述欄があってもよかったのでは？部屋の構成で和室があるのかないのか聞いてほしかったです。そこはどんな使われ方をしているのか？床の間があるのかないのか？季節に応じた設えをすることがあるのか？ シーンの７（シャワー）はすべて空欄にしてください。消す作業ができませんでした。
47	踊る　　楽器を演奏する
64	社交 /social life
65	excercise
74	軽い運動をする/make light sport/excercise.
78	めい想、ヨガ/meditation yoga
82	Exercise, meditation
86	I can invite friends at home/I can not have a garden/I can not open the windows and have fresh air/I can not have climate isolation at my home
91	トイレ
94	Parties and other social gatherings.
95	
96	
97	
98	
99	Living alone allows me great freedom, and I like to enjoy staying at home very much. Perhaps only activities like sport, machine exercise, movies, concerts, requires to leave home.
104	絵を描いたりトレーニングをしたり庭作り etc
108	友人との語らいの場としています place for talking with fgriends
112	庭で野菜を作ってみたい。何か、小さくても良いので屋外で自然を感じられる住空間が欲しい。私は一人暮らしの留学生なので一戸建ての町家に住む必要性は感じていないが、たまには自然の空気、自然の光、自然の緑の豊かな生活が懐かしい。
113	Entertaining, having a pet, playing a musical instrument, all of which I do.

115	Gathering- welcoming in friends (for party) or neighbors (for tea)
121	特になし
125	Exercises and work-outs
130	運動する、イベントをおこなう
131	昼寝をする。(evening sleep) meditation, talking happily
132	特に無いです。
139	柔道の練習、茶道
144	友人と遊ぶ、しゃべる
152	動物・家畜を飼う
153	特にないです。
158	・友人と対話、（お茶を飲む） /・物を作る（工作、編み物、手芸）/・猫と遊ぶ。/・子供と遊ぶ。/・体操をする
160	特になし。
169	眠ることができれば十分です。
171	Play a musical instrument
173	exercise, play music or movies loudly, play musical instruments, parties.
193	meditation
197	特になし。
199	着替え、泛面（はみがき）マッサージ、音楽をきく（レジャー？）ＴＶや映画をみる（レジャー？）//音楽を奏でる（ピアノ、フルート、バイオリンなど）
200	はなす
210	室内でできる運動(ヨガなどストレッチングなど)を行う。
215	くつろぐ.....個人で、又客人と共に。Relax…..indivivually or with guests.
216	暗く静かな板の間で座禅を組みたい。I want to make Zen meditation darkly in a quiet room with a wooden floor.
217	休憩する（リビングルームが欲しれ）Take a break (want a living room)
220	changing fusuma is hard work, maybe more difficult when getting old. But people in Machiya don`t want to change lifestyle.
221	運動をする。
223	pets, workout, party

Question 12:

12. For the same list of activities in the previous questions fill out during which activities it is possible to see a garden or a view to the outside. Mark with a circle "O"

Activities	1-Possible to see a garden	2-Possible to see other exterior than garden	3-not possible to outside
1 Entering (main entrance)			
2 Breakfast			
3 Lunch			
4 Dinner, supper			
5 Cooking			
6 Sleeping			
7 Washing (shower)			
8 Bathing			
9 Clothes washing			
10 Clothes drying			
11 Leisure			
12 Study, reading			
13 Work			

Answers:

Answer number	12.- view Entering	12.- view Breakfast	12.- view Lunch	12.- view Dinner, supper	12.- view Cooking	12.- view Sleeping	12.- view Washing (shower)	12.- view Bathing	12.- view Clothes washing	12.- view Clothes drying	12.- view Leisure	12.- view Study, reading	12- view Work
1	3	1,3	1	1	3	3	3	3	3	2	3	2	2
2	1,2	1,2	1,2	1,2	1,2	3	1,2	1,2	1,2	1,2		1,2	1,2
3	2	2	2	2	2	2,3	2	2	2	2	2		
4	3	2	2	2	3	3	3	3	3	2		2	
5	1	1	1	1	1	1	3	1	3	3		1	1
6	3	3	3	3	2	3	3	3	3	3	3	3	3
7													
8													
9													
10													
11													
12	3	2	2	3	2	2	3	3	1	1	2	2	2
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Answer number	12.- view Entering	12.- view Breakfast	12.- view Lunch	12.- view Dinner, supper	12.- view Cooking	12.- view Sleeping	12.- view Washing (shower)	12.- view Bathing	12.- view Clothes washing	12.- view Clothes drying	12.- view Leisure	12.- view Study, reading	12- view Work
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122													
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109	1	2	2	1	2	2	2	2	2	2		2	3
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155	1	1	3	1	1	1	3	3	2	1	3	3	2
156													
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159	2	1	1	1	1	3	3	3	3	1	1	1	1
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161													
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182	3	3	3	3	2	2		3	2	2			1
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184	3	2	2	2	2	3	3	3	3	3	2	2	2
185	1	1	1	1	1	2	3	3	3	1	1	1	
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187	3	3	3	3	3	3		1	2	1	2	1	
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202	3	1	1	1	1	1		3	3	1		1	3
203	2	3	3	3	3	3	3	3	3	1	3	3	1
204		1	1	1	3	3	3	3	3	1	2		2
205	2	2	2	2	1,2	2	1	1	3	3	1,2	2	2
206	2	1	1	1	2	1	3	3	3	2	1	1	2
207	1	1	1	1	1	1	1	1	3	1	1	1	1
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209	3	2	2	2	3	3	3	3	3	2	2	3	2
210	2	2	2	2	2	3	3	3	3	1		2	
211		1	1	1				1					
212	1	3	2	3	2	2	2	2	2	1	1	2	2
213	2	1	1	3	1	3	3	3	2	3	2	3	3
214	1	1	1	1	1	1	1	1	1	1		1	2
215	1	1	1	1	1	1	1	1	1	1	1	1	1
216	3	3	3	3	3	2	1	1	1	1	2	2	2
217	2	2	2	2	2	3	3	3	3	2	1,2	2	3
218	1	2	2	2	3	1	2	2	2	2	2	2	2
219	1	2	2	2	2	1		2	2	2			
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221	1	1	1	1	1	2		2	2	1	1	1	1
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223	3	3	3	3	3	3	3	3	3	2	3	3	3

Question 13:

13. For the same list of activities in the previous questions fill out during which activities you would like to be able to see a garden or a view to the outside. Mark with a circle "O"

Activities	1-Possible to see a garden	2-Possible to see other exterior than garden	3-not possible to outside
1 Entering (main entrance)			
2 Breakfast			
3 Lunch			
4 Dinner, supper			
5 Cooking			
6 Sleeping			
7 Washing (shower)			
8 Bathing			
9 Clothes washing			
10 Clothes drying			
11 Leisure			
12 Study, reading			
13 Work			

Answers:

Answer number	13.- view Entering	13.- view Breakfast	13.- view Lunch	13.- view Dinner, supper	13.- view Cooking	13.- view Sleeping	13.- view Washing (shower)	13.- view Bathing	13.- view Clothes washing	13.- view Clothes drying	13.- view Leisure	13.- view Study, reading	13.- view Work
1	2	1	1	1	3	3	3	3	3	2	2	2	2
2	1,2	1,2	1,2	1,2	1,2	3	1,2	1,2	1,2	1,2		1,2	1,2
3	3	3	3	3	3		3	3	3	3	3		
4	2	2	2	3	3	3	3	3	1	1	1	1	2
5	1	1	1	1	1	1	3	1	3	3		3	3
6	3	1	1	1	1	1	1	1	1	1	1	1	1
7													
8													
9													
10													
11													
12	1	2	2	3	2	2	3	3	1	1	1	2	3
13	3	2	2	2	2	1	3	3	2	2	2	1	1
14	1	2	2	2	2	1	2	2	2	2	2		2
15	1	2	1	2	2	1	1	1	3	3	2	2	2
16	2	1,2	1,2	1,2	1,2	3		2	3	2	1,2	1,2	1,2
17	3	1	1	1	2	3	3	3		2	1	1	1
18	1	1	1	1	1	1	1	1	1	1	1	1	1
19	1	1	1	1	1	1	1	1	1	1	1	1	1
20	2	1	1	1	2	3	3	1	2	1	1	1	1
21	1	1	1	1	1	1	1	1	1	1	1	1	1
22	1							1			1		1
23	2	1	1	1	1	3	1	1	3	1	1	1	1
24	1	1	1	1	1	1	1	1	1	1	1	1	1
25	1	1	1	1	1	3	1	1					
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28	1	1	1	1	1	1	1	1	1	1	1	1	1
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33	1	1	1	1	1	3	3	1	3	1	1	1	1
34	2	1	1	1	2	1	3	3	2	1	1	1	1
35	1	1	1	1	2	3	1	1	3	1	1	1	2
36	2	1	1	2	1	2	3	3	3	3	1	2	2

Answer number	13.- view Entering	13.- view Breakfast	13.- view Lunch	13.- view Dinner, supper	13.- view Cooking	13.- view Sleeping	13.- view Washing (shower)	13.- view Bathing	13.- view Clothes washing	13.- view Clothes drying	13.- view Leisure	13.- view Study, reading	13.- view Work
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116													
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119	1	1	1	1	1	3	3	3	3	1	1	1	1
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121	1	1	1	1	1	3	1	1	3	1	1	3	1
122													
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48													
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156													
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178													
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181										1			
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185	1	1	1	1	1	3	3	3	1	1	1	1	
186	1	1	1	1	2	3	3	3	3	2	2	2	2
187	3	3	3	3	3	3		1	3	1	1	1	
188	1	1	1	1	1	1	3	2	2	2	2	1	1
189						3						3	
190	1	1	1	1	1	3	3	3	3	3	2	3	
191													
192	1	3	3	3	3	3	3	3	1	1	1	3	3
193	1	1	1	1	1	1	1	1	1	1	1	1	1
194	1	2	2	2	2	3	3	3	3	3	2	2	2
195	3	1	1	1	1	3	3	1	3	1	1	1	1
196	1	1	1	1	1	3	3	3	3	2	2	3	3
197	2	1	1	3	3	3	3	3	3	2	1	1	3
198	3	1	1	1	3	3	3	3	3	1	1	3	3
199	1	1	1	1	1	1	3	2	3	1	1	1	1
200	1	1	1	1	1	1	2	2	2	1	1	1	1
201	1	1	1	1	1	3	2	2	3	3	2	2	3
202	1	1	1	1	1	1		1	1	1	1	1	1
203		1	1	1	1					1			1
204	3	1	1	1	3	3	3	3	3	3	2	1	2
205	1	1,2	1,2	1	2	3	3	3	3	2	2	1	1
206	1	1	1	1	1	1	1	1	1	1	1	1	1
207	1	1	1	1	1	1	1	1	1	1	1	1	1
208	1	1	1	1	1	3	1	1	3	1	1	1	1
209	2	1	1	2	1	3	3	3	2	1	1	1	2
210	1	1	1	1	3	3	3	3	3	2		2	
211	1	1	1	1									
212	1	1	1	1	2	2	2	2	2	2	1	2	1
213	1	1	1	3	3	3	3	3	3	1	2	1	1
214													
215	1	1	1	1	1	1	1	1	1	1	1	1	
216	1	1	1	1	3	3	3	3	1	1	3	3	3
217	2	2	2	2	2	1	1	1	1	2	1,2	2	1
218	1	1	1	1	1	1	1	1	1	1	1	1	1
219	1	1	1	1	1	1		1	1	1	1	1	3
220	1	1	1	1	1	1	1	1	1	1	1	1	1
221	1	1	1	1	1	1		1	1	1	1	1	1
222	1	1	1	1	1	1	1	1	1	1	1,2	1	
223	1	1	1	1	2	3	3	2	2	2	2	2	2

Japanese version of the questionnaire (without answers)

質問１

住居のタイプと所有形態についてお伺いします。

１－１

現在お住まいの住居タイプは何ですか。次の中からお選び下さい。（○印は１つ）

1）一戸建て：町家
2）一戸建て：町家以外
3）長屋建て：町家
4）長屋建て：町家以外
5）共同住宅
6）その他（　　）

１－２

現在の住居の所有形態についてお答え下さい。（○印は１つ）

1）持ち家
2）貸家・間借り

１－３

住んでみたいとお考えの住居タイプは何ですか。（○印は１つ）

1）一戸建て：町家
2）一戸建て：町家以外
3）長屋建て：町家
4）長屋建て：町家以外
5）共同住宅
6）その他（　　）

質問２

お住まいの住居における空間（部屋）についてお伺いします。

２－１

現在お住まいの住居にある空間（部屋）の種類と数をお伺いします。（　　）内には住居に含まれる空間の数を記入し、該当する空間がない場合は 0 とご記入下さい。

台所（キッチン）　（　　）
風呂（バスルーム）　（　　）
寝室（ベッドルーム）　（　　）
居間（リビングルーム）　（　　）
庭　（　　）
バルコニー　（　　）
物置　（　　）
店／仕事場　（　　）

２－２

お住まいの住居の中で、好きな空間（部屋）についてお伺いします。下記の中から好きな空間を 4 つ選び、最も好きな空間を１、以下順に２、３、４とし、それぞれに該当する空間（部屋）に○印を記入してください。

なお、該当する空間（部屋）がない場合は、該当なしの欄に○印を記入してください。

	1	2	3	4	該当なし
台所（キッチン）					
風呂（バスルーム）					
寝室（ベッドルーム）					
居間（リビングルーム）					
庭					
バルコニー					
物置					
店／仕事場					

質問３

洗濯をする場所についてお答ください。（○印は１つ）

1）住居内
2）住居のある建物内にある共用空間
3）住居外

質問４

住居の窓から見えるものについてお伺いします。

４－１

住居の窓から見えるものについてお答えください。（○印はいくつでも）

1）通り
2）庭
3）建物

４－２

自宅の窓から見えて欲しいと思うものについてお答えください。 (○印はいくつでも)

1）通り
2）庭
3）建物

質問５

次の組合せから、好ましいと思う方を選んでください。（A、B、A=Bのいずれかに○印）

	A	B	A= B
A=ベッド　　-B=布団			
A=畳　　-B=フローリング			
A=ユニットバス　-B=トイレと別の風呂（バス）			
A=バルコニー　-B=庭			

質問６

町家の周辺状況についてお伺いします。

町並みを考える上で、以下に示す町家の要素はどの程度重要だと思いますか。町並みとの関係で重要だと思われる町家の要素で、下記に含まれていない場合、その他の（　　）内に名称を記し、重要度についてお答え下さい。

（各項目について 1 から 5 のうち１つに○印。数字の意味は次の通りです：１重要でない、２それほど重要でない、３どちらとも言えない、４かなり重要である、５重要である）

回答例：

町家の要素	重要度				
屋根	1	2	3	④	5
格子窓	1	2	③	4	5
むしこ窓	1	2	③	4	5

町家の要素	重要度				
屋根	1	2	3	4	5
格子	1	2	3	4	5
むしこ窓	1	2	3	4	5
犬矢来	1	2	3	4	5
店の間	1	2	3	4	5
通り庭	1	2	3	4	5
座敷	1	2	3	4	5
奥庭	1	2	3	4	5
坪庭	1	2	3	4	5
庇	1	2	3	4	5
軒下	1	2	3	4	5
蔵	1	2	3	4	5
路地	1	2	3	4	5
その他（　　）	1	2	3	4	5

質問 7

あなたご自身や家庭（家族・世帯）についてお答えください。（○印は１つ。世帯員の数については数字を、住所については文字をご記入下さい。）

性別	1．男性　　2．女性
年齢	1．20 歳代　2．30 歳代　3．40 歳代　4．50 歳代 5．60 歳代　6．70 歳以上
職業	1．会社員　2．自営業　3．公務員　4．その他
家族構成	1．単身　2．夫婦のみ　3．夫婦と子供　4．夫婦とその親 5．夫婦とその親と子供（3 世代住居） 6．その他（　　）
世帯員の数	(　　) 名（本人を含む）
国籍	1．日本人　　2．日本人以外
住所	（　　）市（　　）区（　　）町

質問８

８－１

あなたのお住まいは、次のお祭りに使用されることがありますか。該当するものをお答えください。（〇印はいくつでも。該当するものがない場合は、５）に〇印を付けてください。）

1）祇園祭
2）ひな祭り
3）屏風祭り
4）その他（　　）
5）お祭りに使われることはない

８－２

あなたのお住まいを、次のお祭りに使用したいと思いますか。該当するものをお答えください。（〇印はいくつでも。該当するものがない場合は、５）に〇印を付けてください。）

1）祇園祭
2）ひな祭り
3）屏風祭り
4）その他（　　）
5）お祭りに使われることはない

質問９

９－１

あなたのお住まいには、儀式や特別の用途に使われる次の要素がありますか。該当するものをお答えください。（〇印はいくつでも。該当するものがない場合は、５）に〇印を付けてください。）

1）床の間
2）仏壇
3）お地蔵さん
4）その他（　　）
5）そのような要素はない

９－２

あなたのお住まいに、儀式や特別の用途に使われる次の要素のうち、ほしいものがありますか。該当するものをお答えください。（○印はいくつでも。該当するものがない場合は、５）に○印を付けてください。）

1）床の間
2）仏壇
3）お地蔵さん
4）その他（　　）
5）そのような要素はない

質問１０

１０－１

下表には、住居で行われる 13 種類の一般的な生活行動がリストアップされています。表に列挙された現在行っている生活行動について、「日常的（カジュアル）/形式的（フォーマル)」の評価基準に基づいて 5 段階で評価してください。該当する生活行動がない場合は、空欄のままとしてください。（当てはまる評価基準の段階のうちの１つに○印）

日常的（カジュアル）/形式的（フォーマル）：その行動を行う空間はどの程度形式的か。日常的生活行動とは、マナー、スケジュール、設え等にルールがなく、自由であること、形式的生活行動とは、マナー、スケジュール、設え等のルールが決められていることである。お祭りの儀式行動は形式的な生活行動の例である。

生活行動	日常的	どちらかと言えば日常的	どちらとも言えない	どちらかと言えば形式的	形式的
1 玄関に入る					
2 朝食をとる					
3 昼食をとる					
4 夕食をとる					
5 調理をする					
6 眠る					
7 体を洗う（シャワー）					
8 入浴する					
9 衣服を洗う					
10 衣服を乾かす					
11 レジャーを楽しむ					
12 勉強する、読書する					
13 仕事をする					

回答例：

生活行動	日常的	どちらかと言えば日常的	どちらとも言えない	どちらかと言えば形式的	形式的
1 玄関に入る		○			
2 朝食をとる		○			
3 昼食をとる			○		
4 夕食をとる				○	
5 調理をする	○				

１０－２

表に列挙された現在行っている生活行動について、次の評価基準に基づいて 5 段階で評価してください。該当する生活行動がない場合は、空欄のままとしてください。（当てはまる評価基準の段階のうちの１つに○印）

公的（パブリック）/私的（プライベート）：その活動を行う空間はどの程度私的（プライベート）か。

生活行動	公的	どちらかと言えば公的	どちらとも言えない	どちらかと言えば私的	私的
1 玄関に入る					
2 朝食をとる					
3 昼食をとる					
4 夕食をとる					
5 調理をする					
6 眠る					
7 体を洗う（シャワー）					
8 入浴する					
9 衣服を洗う					
10 衣服を乾かす					
11 レジャーを楽しむ					
12 勉強する、読書する					
13 仕事をする					

１０－３

表に列挙された現在行っている生活行動について、「暗い/明るい」の評価基準に基づいて 5 段階で評価してください。該当する生活行動がない場合は、空欄のままとしてください。（当てはまる評価基準の段階のうちの１つに○印）

暗い/明るい：その活動を行う空間はどの程度明るいか。

生活行動	暗い	どちらかと言えば暗い	どちらとも言えない	どちらかと言えば明るい	明るい
1 玄関に入る					
2 朝食をとる					
3 昼食をとる					
4 夕食をとる					
5 調理をする					
6 眠る					
7 体を洗う（シャワー）					
8 入浴する					
9 衣服を洗う					
10 衣服を乾かす					
11 レジャーを楽しむ					
12 勉強する、読書する					
13 仕事をする					

１０－４

表に列挙された現在行っている生活行動について、「人工的/自然的」の評価基準に基づいて 5 段階で評価してください。該当する生活行動がない場合は、空欄のままとしてください。（当てはまる評価基準の段階のうちの１つに○印）

人工的/自然的：その活動を行う空間はどの程度の自然と結びついているのか（例えば、自然の空気や光をどの程度空間に導入しているのか)。

生活行動	人工的	どちらかと言えば人工的	どちらとも言えない	どちらかと言えば自然的	自然的
1 玄関に入る					
2 朝食をとる					
3 昼食をとる					
4 夕食をとる					
5 調理をする					
6 眠る					
7 体を洗う（シャワー）					
8 入浴する					
9 衣服を洗う					
10 衣服を乾かす					
11 レジャーを楽しむ					
12 勉強する、読書する					
13 仕事をする					

１０－５

表に列挙された現在行っている生活行動について、「不適合/適合」の評価基準に基づいて 5 段階で評価してください。該当する生活行動がない場合は、空欄のままとしてください。（当てはまる評価基準の段階のうちの１つに○印）

不適合/適合：その活動を行う空間があなたの生活行動に適合している程度。

生活行動	不適合	どちらかと言えば不適合	どちらとも言えない	どちらかと言えば適合	適合
1 玄関に入る					
2 朝食をとる					
3 昼食をとる					
4 夕食をとる					
5 調理をする					
6 眠る					
7 体を洗う（シャワー）					
8 入浴する					
9 衣服を洗う					
10 衣服を乾かす					
11 レジャーを楽しむ					
12 勉強する、読書する					
13 仕事をする					

質問１１

１１－１

下表には、住居で行われる 13 種類の一般的な生活行動がリストアップされています。あなたが将来行ってみたいと思う生活行動について、「日常的（カジュアル）/形式的（フォーマル)」の評価基準に基づいて 5 段階で評価してください。該当する生活行動がない場合は、空欄のままとしてください。(当てはまる評価基準の段階のうちの１つに○印)

日常的（カジュアル）/形式的（フォーマル）：その行動を行う空間はどの程度形式的か。日常的生活行動とは、マナー、スケジュール、設え等にルールがなく、自由であること、形式的生活行動とは、マナー、スケジュール、設え等のルールが決められていることである。お祭りの儀式行動は形式的な生活行動の例である。

生活行動	日常的	どちらかと言えば日常的	どちらとも言えない	どちらかと言えば形式的	形式的
1 玄関に入る					
2 朝食をとる					
3 昼食をとる					
4 夕食をとる					
5 調理をする					
6 眠る					
7 体を洗う（シャワー）					
8 入浴する					
9 衣服を洗う					
10 衣服を乾かす					
11 レジャーを楽しむ					
12 勉強する、読書する					
13 仕事をする					

回答例：

生活行動	日常的	どちらかと言えば日常的	どちらとも言えない	どちらかと言えば形式的	形式的
1 玄関に入る		○			
2 朝食をとる		○			
3 昼食をとる			○		
4 夕食をとる				○	
5 調理をする	○				

１１－２

あなたが将来行ってみたいと思う生活行動について、次の評価基準に基づいて 5 段階で評価してください。該当する生活行動がない場合は、空欄のままとしてください。（当てはまる評価基準の段階のうちの１つに○印）

公的（パブリック）/私的（プライベート）：その活動を行う空間はどの程度私的（プライベート）か。

生活行動	公的	どちらかと言えば公的	どちらとも言えない	どちらかと言えば私的	私的
1 玄関に入る					
2 朝食をとる					
3 昼食をとる					
4 夕食をとる					
5 調理をする					

6 眠る					
7 体を洗う（シャワー）					
8 入浴する					
9 衣服を洗う					
10 衣服を乾かす					
11 レジャーを楽しむ					
12 勉強する、読書する					
13 仕事をする					

１１－３

あなたが将来行ってみたいと思う生活行動について、「暗い/明るい」の評価基準に基づいて 5 段階で評価してください。該当する生活行動がない場合は、空欄のままとしてください。（当てはまる評価基準の段階のうちの１つに○印）

暗い/明るい：その活動を行う空間はどの程度明るいか。

生活行動	暗い	どちらかと言えば暗い	どちらとも言えない	どちらかと言えば明るい	明るい
1 玄関に入る					
2 朝食をとる					
3 昼食をとる					
4 夕食をとる					
5 調理をする					
6 眠る					
7 体を洗う（シャワー）					
8 入浴する					
9 衣服を洗う					
10 衣服を乾かす					
11 レジャーを楽しむ					
12 勉強する、読書する					
13 仕事をする					

１１－４

あなたが将来行ってみたいと思う生活行動について、「人工的/自然的」の評価基準に基づいて 5 段階で評価してください。該当する生活行動がない場合は、空欄のままとしてください。（当てはまる評価基準の段階のうちの１つに○印）

人工的/自然的：その活動を行う空間はどの程度の自然と結びついているのか（例えば、

自然の空気や光をどの程度空間に導入しているのか)。

生活行動	人工的	どちらかと言えば人工的	どちらとも言えない	どちらかと言えば自然的	自然的
1 玄関に入る					
2 朝食をとる					
3 昼食をとる					
4 夕食をとる					
5 調理をする					
6 眠る					
7 体を洗う（シャワー）					
8 入浴する					
9 衣服を洗う					
10 衣服を乾かす					
11 レジャーを楽しむ					
12 勉強する、読書する					
13 仕事をする					

１１－5

上記の表にリスト化されている生活行動以外に、あなたが住居の中で行ってみたいと思う行動がありましたら、ご記入ください。

質問１２

リスト化された生活行動において、庭が見えるか、庭以外の外が見えるか、外が見えないかについてお答えください。(該当する項目に○印)

生活行動	庭が見える	庭以外の外が見える	外が見えない
1 玄関に入る			
2 朝食をとる			
3 昼食をとる			
4 夕食をとる			
5 調理をする			
6 眠る			
7 体を洗う（シャワー）			
8 入浴する			
9 衣服を洗う			

10 衣服を乾かす			
11 レジャーを楽しむ			
12 勉強する、読書する			
13 仕事をする			

質問１３

リスト化された生活行動において、庭を見たいか、庭以外の外を見たいか、外を見たくないかについてお答えください。(該当する項目に○印)

生活行動	庭を見たい	庭以外の外を見たい	外を見たくない
1 玄関に入る			
2 朝食をとる			
3 昼食をとる			
4 夕食をとる			
5 調理をする			
6 眠る			
7 体を洗う（シャワー）			
8 入浴する			
9 衣服を洗う			
10 衣服を乾かす			
11 レジャーを楽しむ			
12 勉強する、読書する			
13 仕事をする			