ANALYSIS OF THE SPATIAL CONFIGURATION IN CINEMA ON A HUMAN SCALE: 'THE SECRET WORLD OF ARRIETTY'

Zeynep Fatma NİĞDELİ*, Merve KARAOĞLU CAN**

Abstract

Space design is a research field with a broad framework that interacts with different disciplines. Scale, one of the most important components of this field, is used to increase the cinematic effect in the configuration of film spaces. While literature has several studies on cinema and space, little research has been conducted on animation and human size. Because of the use of two distinct human scales and the association of houses with these, this work differs from similar researches. This study aims to reveal the impact of the human scale on the production of the spatial configuration by using the experimental aspect of the cinema. The objective is to evaluate data that effectively informs the audience about scale differences. In this study, the qualitative research method was used through descriptive analysis. The study was conducted by coding, analyzing, and following the findings through scenes in the example of the film *The Secret World of Arrietty*. As a result of coding, five main themes were obtained. The themes with the highest frequency value were human scale and space. In the conclusion we state that the use of the combination of codes in cinema and perception changes with the change in human size allowing audiences to transfer the meaning.

Keywords: human scale, spatial configuration, anime, cinema, space.

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SİNEMADA MEKÂN KURGUSUNUN İNSAN ÖLÇEĞİ ÜZERİNDEN ANALİZİ: 'THE SECRET WORLD OF ARRIETTY (ARİETTİ'NİN GİZLİ DÜNYASI)'

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Öz

Mekân tasarımı farklı disiplinlerle etkileşimde bulunan geniş çerçeveye sahip bir araştırma alanıdır. Bu alanın en önemli bileşenlerinden biri olan ölçek ise film mekanlarının kurgusunda sinematik etkiyi artırmak amacıyla kullanılmaktadır. Literatürde sinema ve mekân hakkında birçok çalışma bulunmaktadır fakat animeler ve insan ölçeği ilişkisini ele alan araştırmalar az sayıdadır. Çalışma; iki farklı insan ölçeğinin bir arada olma durumu ve onlara uygun iki ölçekteki evlerin birlikteliği bakımından benzerlerinden ayrılmaktadır. Bu çalışmanın amacı; sinemanın deneysel yönü kullanılarak insan ölçeğinin mekân oluşumunda anlam üretimine etkisi olduğunu ortaya koymaktır. İnsan ölçeğinde yaşanan değişimlerin mekân kurgusuna etkisi değerlendirilerek, bu ölçek farklılıklarının izleyiciye aktarımında etkili olan verilerin ortaya konulması hedeflenmektedir. Bu çalışmada betimsel analiz yoluyla nitel araştırma gerçekleştirilmiştir. Çalışma, *Arrietty'nin Gizli Dünyası* filmi örneğindeki sahneler üzerinden kodlama, analiz ve bulguların görselleştirilmesi şeklinde yürütülmüştür. Kodlama sonucunda; beş ana tema elde edilmiştir. En yüksek frekans değerine sahip temalar insan ölçeği ve mekân olmuştur. Sonuç olarak; mekânda insan ölçeğinin değişimi ile birlikte algının da değiştiği ve sinemada bu ilişkilerin kullanımı ile izleyiciye anlam aktarımı sağlandığı sonucuna ulaşılmıştır.

Anahtar Kelimeler: insan ölçeği, mekân kurgusu, anime, sinema, mekân.

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Introduction

Research on space design interacts with and is influenced by different disciplines. Especially since the end of the 1970s, architecture and space design have started to interact with different art forms, and one of the fields that architecture and space design have been working in has been cinema. The intersection of cinema with architecture has developed a multifaceted interaction as a result of the cinematic narration of architecture and the connection that cinema establishes with space (Pallasmaa, 2008, p. 13). In cinema, when describing the scene, which is one of the main parts of the film, plans with a certain space requirement and movement integrity are taken into account (Singleton, 2004, p. 80). The change in time and space indicates that the scene has changed. Thus, space plays an important role in the interaction between cinema and architecture. While architects create experimental configurations in space design thanks to developing technological possibilities and cinema techniques, the visual expression power of architecture has contributed to cinematographic narrative and has effectively transferred the scenario to the audience.

The spaces created in the films are not only background but are also actively used to direct the emotional and cognitive reactions of the audience (Sakhaei et al., 2022, p. 2). Scenes are set up in spaces that support the film's theme and visually enhance the basic idea by evoking certain perceptions in the audience's mind. Space components are also used to guide this perception, and the scale occupies an important place among these components. When expressing differences to an audience, an essential architectural feature is scale, which makes differences more perceptible through comparison in the space, especially when people are close to one another. The basic unit of measurement for the viewer who tries to perceive the space through comparison is the human scale, which he/she dominates with his/her personal experiences (Ölçer Kanbur, 2022, p. 51). The person utilizes his/her body's visual and tactile clues, which he/she employs as a scale, to experience space on a human scale based on body measurements and proportions. One of the factors that enhances the architectural impression is that the space is appropriate for human scale (Ching, 2002, p. 317; Kuban, 2002, pp. 61-62). The change in the human scale is not an element that the viewer can experience in real life. Although they do not have clear measurements, average anthropometric measurements have been defined for people, and individuals perceive space from similar measurements. The experimental opportunities provided by cinema may allow the viewer to have with various experiences.

Cinema's ability to create and manipulate illusions has brought along configurational examples that cross boundaries in space design (Pallasmaa, 2012, p. 14). Animation is one of the examples of this type of film, which progresses with imagination and provides significant development with technological developments. In animation, events or situations that go beyond the boundaries of real life are conveyed to the audience with specified cinematic tech-

niques. The producer can provide different experiences with extraordinary features in spatial configuration and manipulate standard spatial parameters by stretching them (Köseoğlu & Yücel, 2023; Salam & Kusumawardhani, 2023). These possibilities provided by animation also make the space an experimental element in the transfer of the story to the audience.

The history of animation is associated with the emergence of cinema, and it is known that the first examples seen were in stop motion technique (Şenler, 2005, p. 102). Although America was the pioneer in its development, it was seen that similar productions were made in European countries. In Japan, on the other hand, the development of animation followed a different path and the animations produced here were named 'anime' due to their features and techniques. The first distinguishing feature of anime is the way they are created. While American animations focus on drawing moving pictures, Japanese anime uses limited animation techniques aimed at animating pictures. This technique, which allows production with more limited possibilities, has accelerated the development of anime (Şeker, 2020, p. 18). Another feature of anime is that while using this technique, they mobilize manga, which is also a unique Japanese visual narrative art (Karaman, 2019, p. 32). While manga plays an important role in the transmission of cultural values, it is seen that the same mission continues in anime. With these features, anime has become a narrative that has developed with its unique production techniques and unique cultural accumulation but has reached a universal status (Napier, 2005, pp. 12-13). Anime, which is generally expressed as a genre of cinema, is an art form that includes different disciplines for some researchers (Poitras, 2001, p. 7).

When we evaluate animations in terms of space information, they seem to have unique content concerning this aspect. Even though experienced architects and technicians were in charge of designing the spaces, the latter differed from the virtual spaces of cinema because of the techniques used (Arısal, 2010, p. 39). There are two methods used in the formation of spaces: reinterpreting the existing and creating fictional spaces (Arısal, 2010, pp. 19-20). In this direction, what is particularly striking in terms of the content of the study is the effect of configurational spaces on the audience. Because anime spaces are two-dimensional spaces with a strengthened perception of three dimensions that cannot be experienced in real life. The audience's involvement in the film is possible only if they can perceive and internalize this spatial configuration. In this sense, anime, with their original content and fantastic stories, offer rich examples of space. The spaces used by Hayao Miyazaki, known as the artist who increased the international recognition of anime, were also seen as a remarkable point in the relationship between cinema and space design within the scope of the research subject. Miyazaki, who advocates fundamental issues such as humanity's relationship with technology, opposition to war, and stance against the destruction of nature, creates stories that tell these issues in his anime (Scally, 2013, pp. 18). The spatial configura-

tions of the stories are also visually powerful in that they reflect the rich use of imagination. Miyazaki's anime features people or imaginary creatures on different scales. The research focuses on how anime, which produces experimental works exploiting the influence of cinema, conveys to the viewers the change of human scale in spatial fiction.

When the literature studies conducted within the scope of the research were examined, the scope was determined as cinema, architecture, space, scale, human scale, animation, and anime. It was observed that the studies focused on the interdisciplinary relationship between cinema and architecture (Dear, 1994; Pallasmaa, 2008, 2012; Wilson, 2022) or the use of space in cinema (Çelik et al., 2023; Cutting & Iricinschi, 2015; Kaçmaz, 1996; Tawa, 2022; Verderber, 2014). On the other hand, studies in animation (Alvarado, 2008; Şahin, 2010; Salam & Kusumawardhani, 2023) focused on using both space and digital technologies. The studies (Altıparmakoğlu Sakarya, 2023; Köseoğlu & Yücel, 2023; Ölçer Kanbur, 2022) examined the scale or human scale parameter with spatial experiences through the eyes of different creatures. In this sense, the distinctive aspect of the research is the configuration of two different human scales and spaces of appropriate dimensions. Thus, the use of human scale through the interaction between characters in the scenes is thought to be designed to strengthen the perception of space. According to the research conducted, *The Secret World of Arrietty* is usually mentioned briefly when discussing Miyazaki films (Köse et al., 2021; Scally, 2013), but a small number of articles including only the film (Hyland, 2015) have also been identified.

When the studies on cinema and space are evaluated in terms of sample, they are divided into two categories: those in which more than one film is examined or those in which research is conducted on a single film. Cases where more than one film is examined are relevant to the spatial analysis of a director's filmography (Ünver, 2021) or on films selected in line with a specific theme (Sözen, 2014). In examples where a single film was examined (Köseoğlu & Yücel, 2023), spaces were associated with a parameter and guided the analysis. In the mentioned studies, especially in terms of the framework of the subject, there is no study that compares the relationship between human scale and animation through the coexistence of two different scales of people. There is also no study addressing the role of anime spaces in this relationship. According to these findings, the spaces in a selected film of Miyazaki, one of the important representatives of anime, will be examined in relation to the human scale parameter to complete the deficiency seen in the research. The argument of the research is that in interdisciplinary studies between cinema and space design, human scale is used as an effective tool in directing the perception of individuals and helps to convey the story in certain situations. In this context, it is argued that anime stands out among the film genres that allow the human scale to be experienced under different conditions in spatial configuration in terms of usage techniques and content. Following the literature study and the argument of the research, research questions were for-

mulated to determine the boundaries of the study and to contribute to the analysis of the human scale in anime. The questions are listed below:

- In which relationships is the changing human scale monitored in the film?

- What data makes the scale parameter perceptible from the viewer's point of view in the formation of space?

- Do the scenes in which the relationship between human scale and space is emphasized connect with the story flow?

Along with the research questions, a study will be conducted on the film *The Secret World of Arrietty* about the coexistence of people and space on two different scales. This relationship is a situation that cannot be perceived and experienced in real life but can be visualized with the features of anime that allow the use of imagination. The aim of the study is to reveal the effect of human scale on the production of meaning in the formation of space by using the experimental aspect of cinema. Considering that changes in human scale play an important role in the individual's perception of space, we aim to analyze the data that are effective in transferring the scale difference to the audience through spatial configuration in cinema.

Methodology

Research design

This study is based on a qualitative research method combined with descriptive analysis. Qualitative research is defined as a methodology that positions the researcher at the center of the event and interpret the cases in their natural environment for the selected sample in terms of the meanings that people give to the event (Denzin & Lincoln, 2018, p. 43). Since the study examines the effect of human scale on the production of meaning through the spatial perception it creates in the audience, it was deemed appropriate to determine the density of qualitative data rather than quantitative data in this research. In addition, the fact that the relationship between the perception of space and the user is read through subjective judgments in the literature has influenced this choice. The study includes the evaluation of the selected sample from the viewer's point of view, centering on the researchers, and the identification and interpretation of the data that strengthen the human scale changes.

In qualitative research, the study begins with the identification of a problem, it then considers the meaning that individuals/groups attribute to a social or human problem. Finally, the study proceeds with a systematic approach using inductive or deductive methods or both together (Creswell, 2013, p. 44). In this study, inductive and deductive approaches were used together. According to Creswell, deductive skills are used in the process of evaluating and con-

trolling them while the process of creating patterns, categories and themes is inductive in the research (Creswell, 2013, p. 45). This approach has also been adopted in the research design. The themes to be used were decided with the deductive approach during the watchings carried out in the process of gaining familiarity with the film. In the process of coding and categorization, arrangements were made in the categories with the inductive approach and the data obtained were organized in a way to contribute to the evaluation. The use of these two approaches together was distinctive in the findings section in terms of revealing the elements related to the individual's relationship with space and environment. The categories organized with the inductive approach contributed to the determination of the actions that the data coded in the anime were associated with according to their size or function in accordance with the flow of the story.

Sample

The film *The Secret World of Arrietty*, released in 2010, was chosen as subject for the study. The film was adapted from Mary Norton's novel The Borrowers (1952) and transferred to cinema by Hayao Miyazaki. The little people who constitute the subject of the film present a fantastic world to the audience. In this sense, the story is similar to the legends in Japanese culture. For Miyazaki, who feeds on the synthesis of Western and Japanese culture, the story was considered remarkable in this respect (Hyland, 2015; Scally, 2013). The main protagonists of the story are small-scale people living under the floorboards of people's houses. They live their lives by borrowing what is left of people without being seen by them, or an imperceptibly small amount of their belongings. But they absolutely must not be seen doing this or their lives will be in danger. *Arrietty*, the protagonist of the film, is a small-scale person who lives in a house under the floorboard with her parents. The story begins when she is noticed by *Sho*, who comes home on vacation for a week. Panicked by their discovery, the little people first want to make sure that they don't become life-threatening and then plan to escape. During this process, the bad attitude of *Haru*, the family's helper, allows the small- and large-scale places to be seen from different angles within each other. *Sho*, who wanted to be friend with *Arrietty*, helped to the family and this progress in the story increased the interaction of people on two different scales within the film.

The film was chosen as a study sample because it features two different human sizes and two distinct locations where these individuals may coexist. In the film, the movements of small individuals in a normal-sized house initially gave a chance to make comparisons. The interaction between people in the subsequent scenes increased the transitivity between locations and characters. In the film, the change in human scale is emphasized and conveyed to the audience by focusing on the relationship between characters and spatial configuration. When the film is evaluated in terms of the use of space in anime, it is important in terms of using two approaches together, where both real

spaces are interpreted, and fictional spaces are created. With these features, it has been an important opportunity for the study as it provides rich spatial data in the process of questioning the hypothesis of the research.

Data collection tools and analysis

The data collection process in qualitative research requires a comprehensive study and may include observations, documents, audio-visual materials, and digital tools. Their collection contributes to a holistic problem analysis (Creswell, 2013, p. 51). The use of multiple tools together is considered important in increasing the study's reliability (Baltacı, 2019, p. 374).

Figure 1. Phases of the method
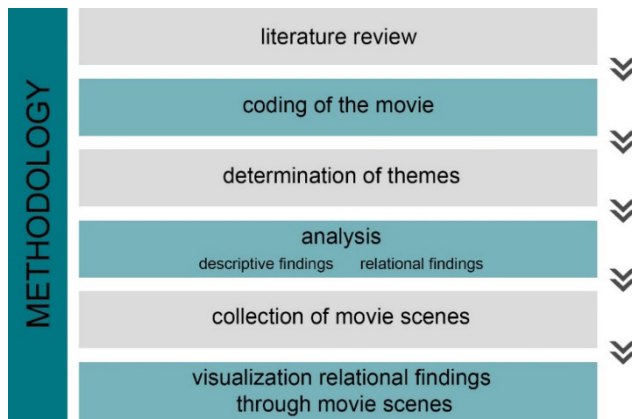
In the research, first, the conceptual framework of the subject and the studies conducted in this field were determined by conducting a literature review. Subsequently, the film *The Secret World of Arrietty* was accepted as an auditory and visual material and the researchers became familiar with the film as a viewer. After this process, the steps of the research continued through the *MAXQDA* program. The reasons for choosing this program can be listed as a) enabling the coding of the film in video format, b) a coding interface suitable for qualitative research, and c) clear analysis-visualization tools. Since the film could be transferred to the program in video format, there was no restriction on the selection of specific scenes and all scenes in the film were coded. In this process, Strauss & Corbin's coding paradigm, small code units are created first in the video with an inductive and deductive approach, then categories and themes are created (Strauss & Corbin, 1998). In the formation of categories and themes, it was important to group the data that made the human scale change evident in the film through the configuration of space. At the same time, it was argued that the categories allowed for a relationship to be established between the actions in the space and the progress of the story.

After the coding process of the research, the analyses were carried out

again using the *MAXQDA* program. Since the program identifies the video as a single document, the findings are presented as *'coded episode-based'*. The analyses performed through the program were evaluated under two headings descriptive and relational. Film scenes were used in the visualization of relational findings (*Figure 1*). The criteria that are effective in scene selection are to ensure that the themes obtained can be observed concretely and to present the relationship established with the human scale comparatively. In the images obtained with the screenshot tool, the relevant codes were marked and edited by the authors with the *Photoshop* program and the findings were interpreted through the images.

Findings

Findings were obtained through coding were interpreted primarily in terms of their descriptive characteristics. The densities of the codes and their statistical data in the film are presented within this framework. Moreover, the human scale theme was taken into the center and its relations with other themes were examined. The answers to the research questions were searched with these descriptive and relational results. In visualization of relational findings within the film, interpretation was made through film scenes. All the findings are classified according to their descriptive or relational character.

Descriptive findings

People of different scales can be perceived not only through comparison the relationship between two people in the scenes, but also through different variables. Accordingly, the film was evaluated for five themes: human scale, space, animal, plant, and object. In the coding process, 571 frequency values were obtained from 18 categories and 87 codes, and the data related to this process are presented in *Figure 2*. According to the frequency density, the most frequently coded subject in the film was determined to be the human scale. This was followed by the themes of space, object, plant, and animal in order of intensity in coding.

Figure 2. Code- frequency table

Theme		Category	Code	Frequancy
👤	Human Scale	2	9	235
🏠	Space	2	31	128
🐱	Animal	4	11	28
🌿	Plant	3	10	59
☕	Object	7	26	121

The distribution of the categories and codes within the film was analyzed by creating 'coded episode-based' code-subcode models of the identified themes. The transfer of themes obtained during the coding process, presented in *Figure 2*, in order of intensity has been deemed appropriate. This sequence also contributes to the understanding of the hierarchy that strengthens the perception of human scale in the film.

- In the human scale code, it was determined that small people were coded more than normal people with a frequency value of 150 (*Figure 3*). Considering that the film's subject is the life adventure of little people, the difference is meaningful. The prominent codes in both categories are the characters *Arrietty* and *Sho*. *Arrietty* is significantly over-coded in the film because she is also the protagonist. On the other hand, *Sho* is the most frequently coded character among normal people in the film. These frequency values can be considered concrete indicators of *Arrietty* and *Sho*'s interaction. *Homily* and *Pod* stand out among the little people because they are *Arrietty*'s parents. In the human category, *Haru* is the second character with the highest frequency value as a character who searches for little people, discovers, and communicates with them in the second half of the film.

Figure 3. Human scale theme, hierarchical code-subcode model
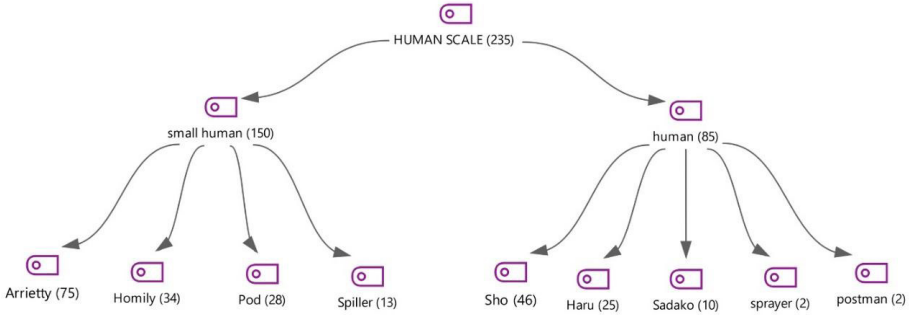
- The theme of space is important as it constitutes the subject of the research. The space coding in the film was made according to the opening and closing times of each scene. The coding shows that the film consists of 128 scenes (*Figure 4*). According to the frequency value, it has been determined that the film mostly takes place in the interior. The codings made in the interior are divided into two categories as house and small-scale house. When the frequency values are compared, it can be seen that the small-scale house where the film's main characters of the film live, and the normal-scale house are coded in close rates to each other. The most coded spaces in the normal scale house are the children's room, entrance, larder, and kitchen. *Arrietty*'s interaction with the character of *Sho* increases the importance of the children's room space. The fact that a small-scale house located under a door, which opens from the closet to the larder in the entrance area, is also a meaningful and significant finding that shows the code frequencies in the entrance and larder are very high. The coding frequency in the kitchen space has an important role in the film in terms of the fact that the object-stealing act, which is seen in the first scenes of the film and makes the story understandable, takes place here and *Arrietty*'s mother hides in the kitchen pantry after being caught. In the small-scale house, the frequency values of living room, general view and corridor were higher than the other codes. The small-sized house combines kitchen and living room. Therefore, what happens between small people in the film takes place mostly in the living room, where they are together, and the frequency value is markedly higher than other places. The corridor that connects the spaces in the house, the relationship with the larder and the space seen in the transition to the normal-sized house stand out as binding spaces that are usually seen briefly in film scenes. Another prominent code belongs to the overall appearance of a small-scale house. The increased interaction of both human scales results in normal people exploring the small house in the

film's later scenes. This is why the small house appears from a general angle in the film. The transmission of the scale difference to the viewer was provided by the general view scenes of the house on a small scale from the normal human eye. When the outdoor code frequencies were examined, the place with the highest value was found to be the garden. The garden, the first place where *Arrietty* is seen by the character *Sho* at the beginning of the film, also has an important role in the film in terms of opening from the larder to the outdoor. In parallel with these relationships, it was observed that code frequency was also very high.

Figure 4. Space theme, hierarchical code-subcode model
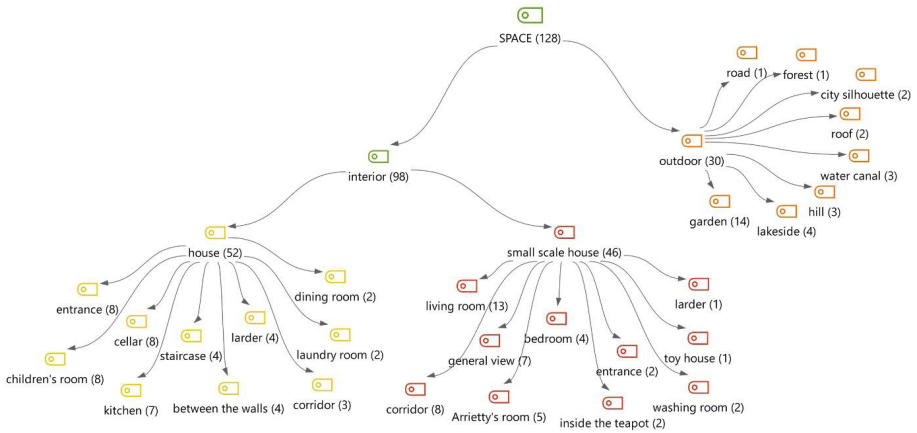
- While object coding is being done in the film, the existence of objects has been determined through the state of being with people on a small scale. This is one of the limitations of this study. Since the objects found in the spaces of normal people are more numerous in terms of type and the data that strengthen the perception of scale in the film flow are seen in the scenes where they are compared with small people, it was deemed appropriate to code in this way. Accordingly, the theme is divided into 7 categories (*Figure 5*). The two prominent categories in terms of frequency value are sewing materials and kitchen utensils. The codes of these two categories also vary according to other categories. Sewing material stands out in terms of the objects that little people use as facilitators in their daily lives. Kitchen utensils, on the other hand, are often used in scenes set in the kitchen and larder in the film. In the code-subcode model, the object with the highest frequency was determined to be a needle. The needle is the first object *Arrietty* borrows, and she uses it as a means of defense throughout the film. For this reason, the frequency of use was considered significant

in terms of its effect in the film. The codes under the object theme generally attract attention in terms of their dimensions. These objects were selected from species that are at most two or three times the height of small people and that can emphasize the difference in scale when they are together.

*Figure 5. Object theme, hierarchical code-subcode model*
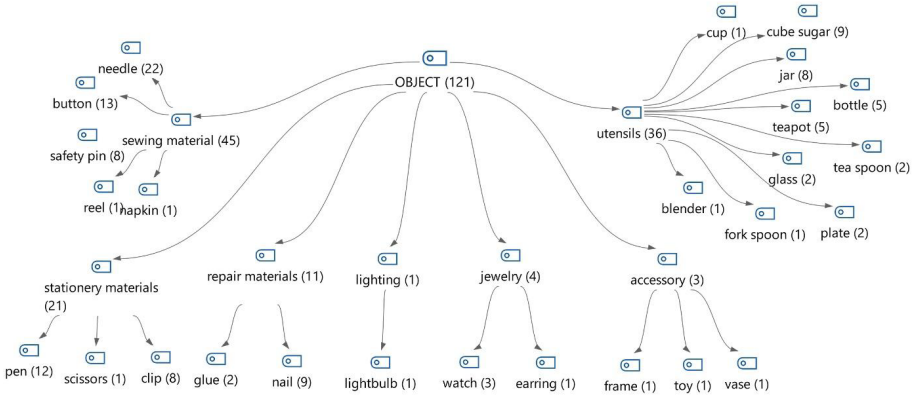
- The animal theme is divided into four categories (*Figure 6*). These are the insects that show the most diversity in these categories. The smaller size of insects compared to other animal species facilitates comparability. For this reason, they were used in the film as living creatures that make the difference in scale perceptible, especially when being with small people. The cat has been seen as the highest frequency value code among all the codes. Cats have an important role in the film regarding the relationship they establish with people of both scales. The association of animals with small people has often been treated as a danger to be protected in terms of scale, and cats are one of these species. However, in the last moments of the film, as a result of positive human connection on two scales, he displayed a friendly attitude and played an important role in the storyline. The resulting friendship is also used to emphasize the difference in scale in the film, as it increases the number of times two human species and animals are present in the same scene.

*Figure 6. Animal theme, hierarchical code-subcode model*
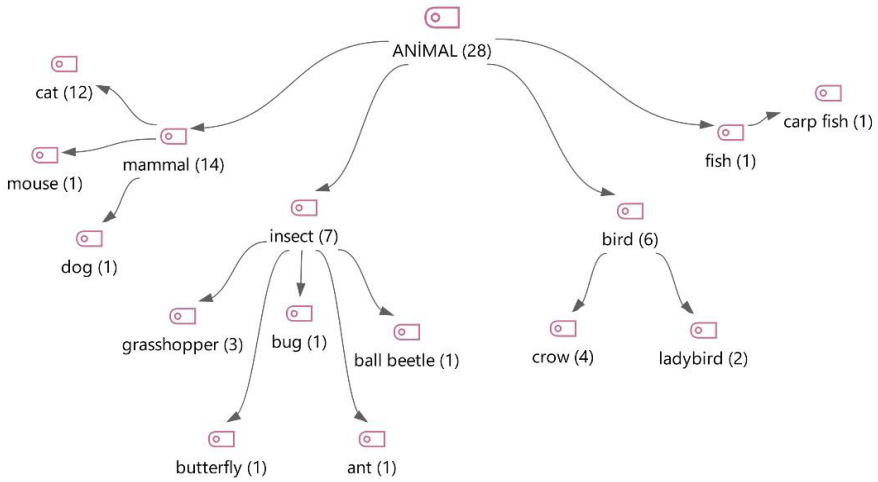
- The plant theme consists of 3 main categories (*Figure 7*). Vegetable and fruit uses were coded for each subspecies in the film. However, another limitation of the study emerged during the coding of the leaf-flower category. In this context, since all the flowers were seen in the animation could not be identified, the leaf-flower category was classified only as a category according to its presence in the scene. It has been determined that the plant with the highest frequency value in the film is also the leaf and flower. The film's heroine, *Arrietty*, is interested in leaves and flowers and even portrays her room as a garden. When the interior of her room is examined, one can see that she intensively exhibited the leaves and flowers she collected. For this reason, the most prominent plants that emphasize the concept of scale in the film have come to the fore as leaves and flowers. Besides, fruits and vegetables are coded just once in the film.

Figure 7. Plant theme, hierarchical code-subcode model
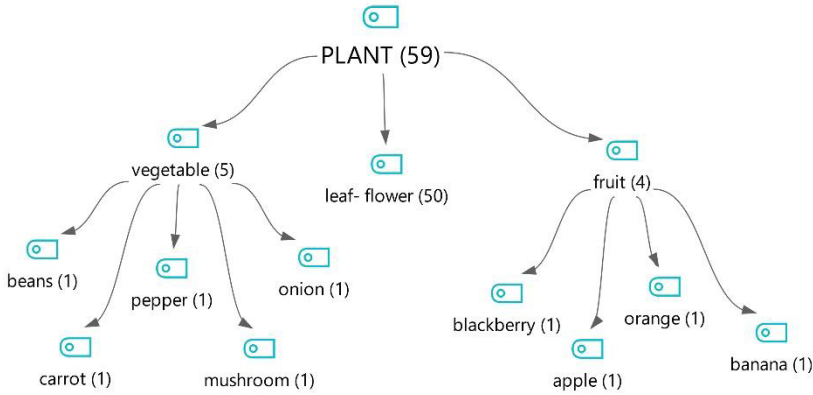
After examining descriptive findings of the themes, the general data based on coding in the film were evaluated. In the single case model analysis obtained by *MAXQDA*, the codes with the highest frequency value in the entire film were examined. According to this, it was observed that the codes with high frequency values is represented by human characters. Four of them are people on a small scale, while two are people on a normal scale. Given that the *The Secret World of Arrietty* film concentrates on human characters of various scales, the film's intense portrayal of the characters can be expressed as important data regarding the transmission of this to the viewer. However, plants, objects and outdoor uses are other common codes in the film, and their densities are presented in *Figure 8*.

Figure 8. The Secret World of Arrietty film, single case model
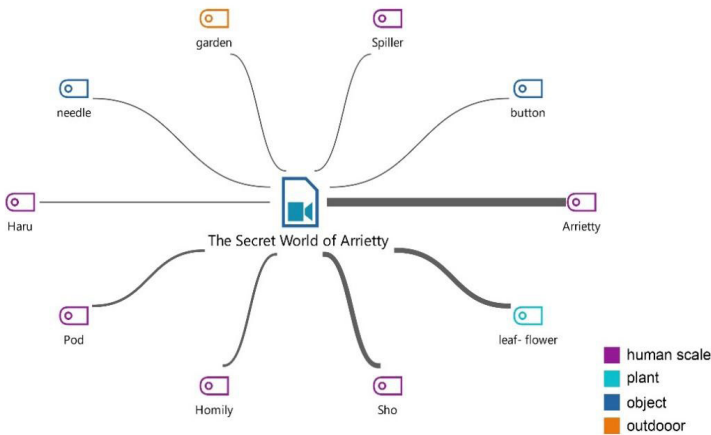
Another descriptive finding about the film is the statistical table showing the lengths and percentage values of the codes in the video with the help of *MAXQDA*. The ten codes with the highest value are selected from the obtained data and presented in tabular form (*Figure 9*). Compared to the single case model, it was found that the code lengths and the coding frequency in the film were approximately similar. However, when the length of the scenes affected the analysis, two interior-related codes were included in the table. One belongs to the house category, while the other belongs to the small-scale house category. Based on this result, it can be stated that when we consider the code length- the spaces emerge.

Figure 9. The Secret World of Arrietty film, code coverage statistics

Thema	human scale	human scale	plant	human scale	object	human scale	human scale	space	space	space
Category	small human	human	leaf- flower	small human	sewing material	small human	human	interior house	outdoor	interior small scale house
Cod	Arrietty	Sho	leaf- flower	Pod	needle	Homily	Haru	children's room	garden	living room
Time	1:02:03	0:37:09	0:36:14	0:27:17	0:20:11	0:20:08	0:15:11	0:13:38	0:11:44	0:09:56
Percent	%65,90	%39,50	%38,50	%29,00	%21,45	%21,40	%16,1	%14,49	%12,48	%10,56

The descriptive findings obtained in the study provide important results in terms of observing the intensity of the categories and themes created during the coding process in the film. In addition, the code distributions visualized with the help of the hierarchical code-subcode model also enabled the data used effectively in the film to stand out. When these code densities are compared with the single case model and video statistics, it is seen that the data overlap in a way that supports each other. Moreover, the contribution of descriptive findings to the research is that they decompose the data that make the use of scale in the film prominent for the viewer, enable new meaning productions within themes and categories, and provide a basis for relational findings.

Relational findings

Following the descriptive findings obtained in the research they study evaluated the relationships between codes. In this context, they study focuses on human scale and its relations with other codes. The findings of the rela-

tionships created with the code co-occurrence model -code intersection- tool are presented below.

The places where the two different human scales in the film are coded together and separately have been determined according to their frequencies. In the coding, both human scales were found to be existing in most places (*Figure 10*). However, there are more places where small people take part alone in the film than there are normal people. It is possible to express as a meaningful finding that the little people, who offer the viewer the experience of watching the place from an unusual scale in the film, present an intense relationship and frequency value in the space code. According to the frequency values, when the coexistence of people in the houses in both scales is evaluated, it is determined that the characters are coded more in places suitable for their own size. The only exception to this is seen in the general appearance code of the small house. This can be explained by the fact that it is possible to see the house's general appearance only from a larger scale point of view.

*Figure 10. Human scale and space co-occurrence model -code intersection-*
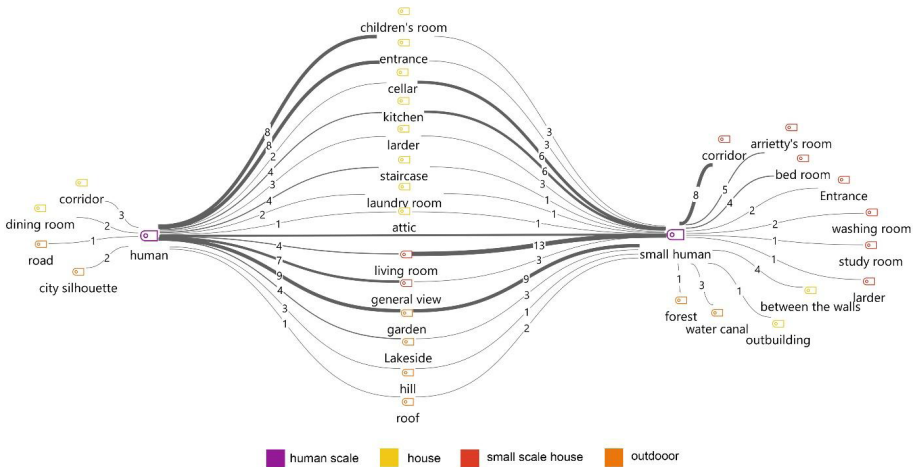
When the situation of two different human scales in the film being together with the animal theme was examined, the following table was obtained according to the frequency values (*Figure 11*). The most coded animal on both human scales is the cat. As mentioned in the descriptive findings, the friendship developed with this animal in the film's story increased the cat's frequency value. Animals coded together with the small human scale but in small numbers were selected from small-sized and easy-to-compare species, reinforcing the emphasis on the human scale.

Figure 11. Human scale and animal co-occurrence model -code intersection-
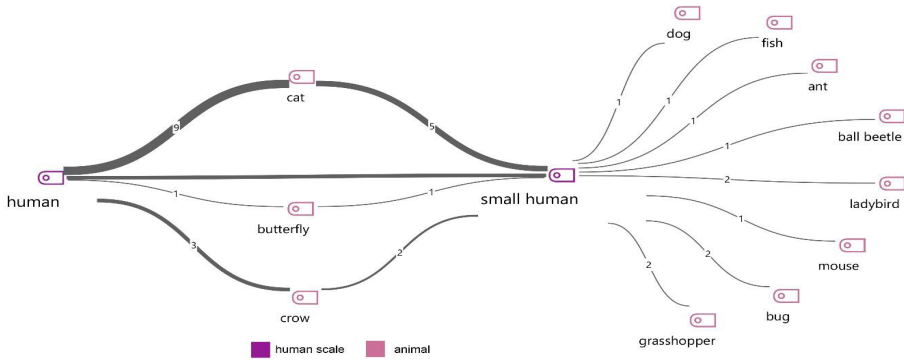
According to the code co-occurrence model showing the relationship of the human scale theme with plants, there are few species in the film in terms of the number of codes (*Figure 12*). However, it is possible to interpret that the intensity of use of the code according to the frequency values is higher than that the animal upper code. In both human scales, the frequency values of the use of plants with small people is higher than with normal people. The code with the highest frequency is seen as a leaf-flower. According to the code co-formation model, co-coding frequency with small people is also higher than with other plants. The film heroine's interest in plants mentioned in the descriptive findings makes this data meaningful. In addition, in the codes used with small-scale individuals, it was found that the aim was to compare known vegetable or fruit measurements with people on different scales, and in cases where people on both scales were found together, the difference in scale was emphasized.

Figure 12. Human scale and plant co-occurrence model -code intersection-
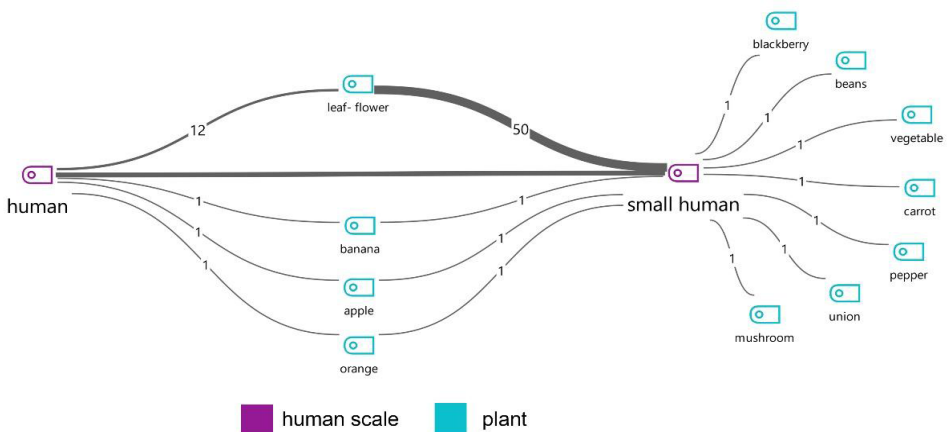
According to the relationship scheme of the human scale theme with objects, codes with people and small people in terms of number and codes with only small people show closeness (*Figure 13*). It has been determined that the highest codes according to the frequency value are in the small human category. When these data are combined with descriptive findings, it can be stated that this situation is a result of the coding objects according to their being with small people.

Figure 13. Human scale and object co-occurrence model -code intersection-
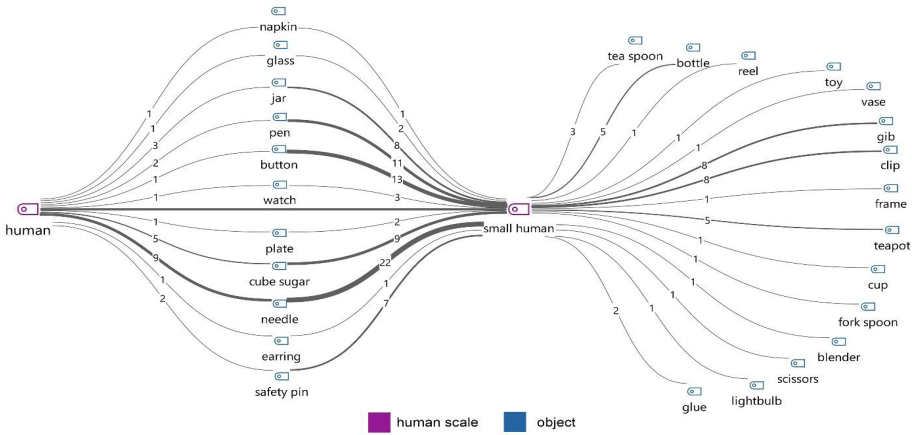
In *The Secret World of Arrietty*'s film, the coexistence of the human scale with space, animals, plants, and objects has been analysed and it has been concluded that the relationship established with small people predominates within these codes. While the relationship between people and space is more transitive than other codes, animals, objects, and plants are used as a tool to compare the size of small people. These relational findings, centered on the human scale, provide data on use of codes in the film. However, in terms of viewer, from the viewer's point of view, it was observed that the data in the film are arranged in interaction with each other and in a more complex relationship. To examine the co-occurrence model between codes, the code with the highest frequency value was selected from each theme and their intersections were examined (*Figure 14*). In the human scale theme, categories were used to see the scale difference better, while in the space theme, the code with the highest frequency value was selected from each subcategory. According to the model, the code interaction is primarily focused on the human scale, space, and plants. Nevertheless, each code is connected to at least three other codes. The film uses a relational strategy to express the main theme by showing the audience these relationships in various combinations and settings.

Figure 14. The Secret World of Arrietty film, co-occurrence model -code intersection-
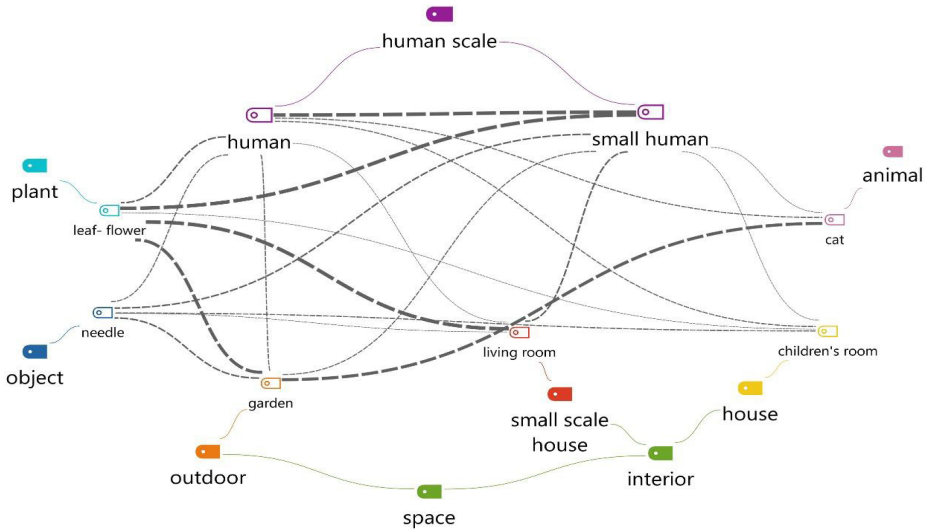
In the relationships between themes, the codes overlap intensively and, in some cases, make special connections. For example, while the animal theme communicates with both human scales, it is only used in the garden among the spaces. Objects or plants have a more complex relationship. However, when relationships are evaluated based on their presence in different scale spaces, they vary in terms of the meanings they convey to the viewer. In this context, the relationships were visualised through film scenes.

The relational findings were visualized through screenshots taken in different categories. In the first step, the situations of two different human scales being together; in the second step, scenes from the house, small scale house, and outdoor spaces were categorically selected, and codes were marked via screenshots. In addition, the human scale was added to the analysis since situations where two people of different scales are together constitute the film's subject. Afterwards, the scale emphasis in spatial configuration was examined through a determined object.

In most of the film, at least two themes are used together with space. However, in some scenes where the human scale is obvious, only the place where the event takes place and people on two scales are included. It is observed from the film screenshots that in terms of scale, a representation large enough to cover the scene was used to emphasize the coexistence of these two individuals (*Figure 15*). This situation trivializes the information about the environment, and there are even parts of the scene where details about the environment are omitted. The two scenes selected below are examples of this use. In the image on the left the house helper *Haru* sees little people for the first time and catches *Homily*. The image on the right shows *Sho* and *Arrietty*

struggling to save *Homily. Both* scenes are important to observe the interaction of two different scales of people in the story towards the end of the film.

Figure 15. Findings in the human scale category

In the scenes coded in the home category, the space was constructed on a normal human scale (*Figure 16*). Nevertheless, other elements, such as fruits and objects are used for easy comparison when small people are present in this space. As the data increases in the scene, it becomes easier for the viewers to understand the difference in scale with the use of people, space, and objects at both scales. For example, of the following scenes selected for the house category, the image on the left is of *Homily* being imprisoned in the kitchen after her capture. The fact that she is in a jar and the fruits in the background facilitate the perception of human scale through comparison. The image on the right belongs to the scene of *Homily*'s rescue and again the jars are used as a comparative tool. In addition, the size of the space and the presence of *Sho*, who is of normal human size, reinforces this perception.

Figure 16. Findings in the house category
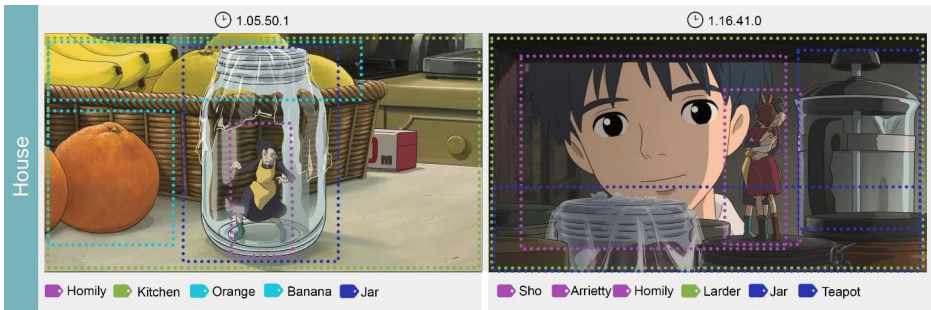
In the small-scale house, the space is suitable for the body size of the small people who are the film's main characters, but here as well, the use of objects and plants that remind of life on a larger scale attracts attention. The distribution of button, clock, pen, or flower on the scene are included as elements

that remind the viewer of life on a standard scale while in this space. In addition, there are also scenes where the difference in scale between spaces can be viewed from the eyes of a normal person (*Figure 17*). For example, in the image on the left, Homily's presence in the living space in his daily life is observed. Here, the dimensions of the house of the house are suitable for her. However, the data emphasizing their small scale are used in the space as buttons, watches, pens, or flowers. The image on the right belongs to the scene in which *Haru* discovers this house. The view of *Haru* in the space through the eyes of *Homily*, a small person, is remarkable in terms of conveying the difference in scale.

*Figure 17. Findings in the small-scale house category*
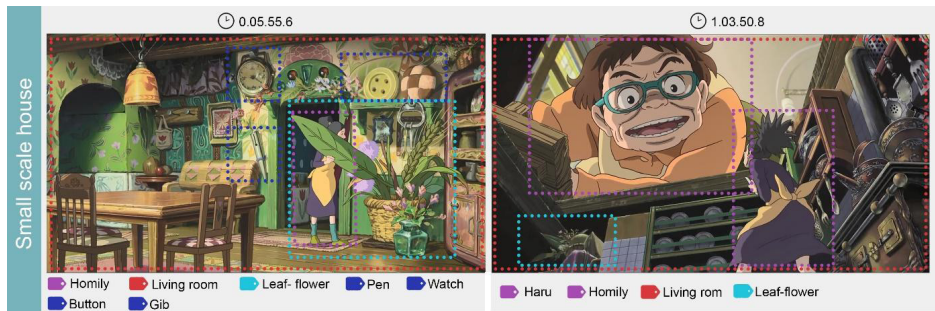
In the scenes coded with the category of outdoor space, plants and animals were used as supportive in the space. In these uses, which are in direct proportion to the conditions of the space and the film's subject, the predominant emphasis is again on the human scale (*Figure 18*). In the image on the left of the selected scenes, *Sho* sees *Arrietty* for the first time. The setting of the scene is complemented by the use of trees, the sky, and the intense use of flowers. *Arrietty*'s measurements on the flowers can be easily compared with these elements. The image on the right is when *Arrietty* leaves this house. In this scene there is the use of a cat and many trees. The human scale can be perceived through the state of being together.

Figure 18. Findings in the outdoor category
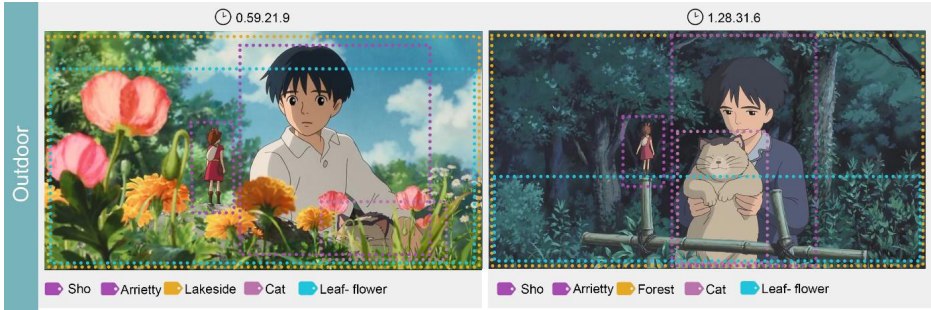
In the film, there are separate living spaces and furnishing elements in sizes suitable for every human scale. The objects in these places were also planned in line with the usage functions and ergonomic dimensions while designing the spaces. For example, images of two scenes from the film are taken for the use of the teapot object. On the left, it is seen that small-scale people are eating dinner in a house that is suitable for their size and with dinnerware that is also suitable for them. The teapot on the edge of the table is suitable for their size too. On the right side there is a scene showing Haru in the kitchen of a normal-sized house. The teapot on the kitchen counter is also of the appropriate size for this scale (*Figure 19*).

Figure 19. The use of teapot at appropriate scales
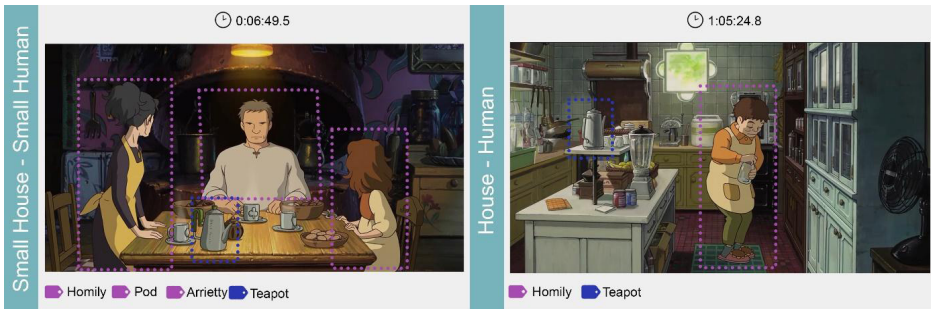
In the film, objects are of appropriate sizes to be used functionally for both human scales, but the opposite can also seen. In some scenes, this object is associated with a person of a different size to emphasize the difference in scale. This difference in scale was intended to enable the viewer to make comparisons and to use the human scale to support the story. As an example of this, *Pod* is seen on the left, standing in front of the teapot in a normal sized kitchen. This image, which belongs to one of the first scenes of the film, is especially important in terms of conveying this dual scale use to the viewer. In the image on the right, the teapot is shown as a clue that normal-sized people looking for small people see belonging to them (*Figure 20*).

Figure 20. The use of teapot at different scales
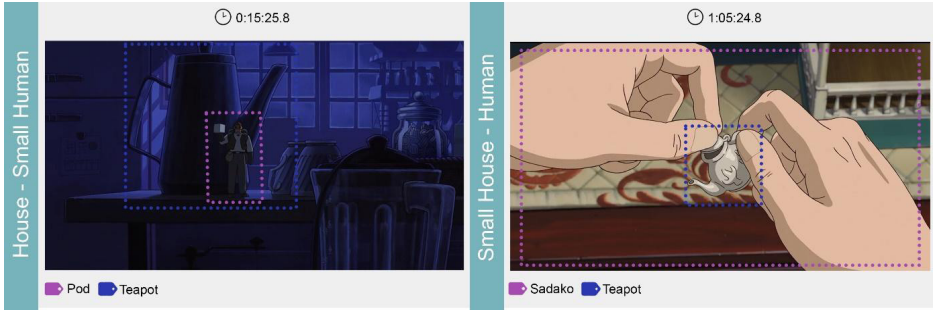
In the film, the use of objects of compatible sizes with people and their association with people of different sizes is meaningful in the progress of the story. While the object does not draw attention in the scene when used in appropriate sizes, in the opposite case it becomes an element of emphasis. Through this emphasis, the human scale is conveyed to the viewer in the film. For the viewer, it is perceived that the spatial configuration has changed through the object and the human scale has also changed.

Conclusion and Discussion

In real/everyday life, the perception that a person has of the dimensions of the area, objects or living beings with which he comes into contact in his interaction with the environment is carried out by comparing them with the perceived body measurements, rather than using units of measurement tangible. When examples not compatible with the human scale are produced, the individual perceives this and takes on different meanings. When considered from the point of view of cinema, the change in the human scale can be used as a transfer of the main idea in the film or as a design parameter that supports it. In the selected film, the effect of the life of people at two different scales and their interaction with each other on the progress of meaning in the spatial configuration was evaluated together with other phenomena that support it.

It would be correct to describe the change of human scale and coexistence as a fictitious story. The research aims to reveal the effect of human scale on the production of meaning in the formation of space by using the experimental aspect of animation. In this context, it was seen that digital and technological developments that enable the use of imagination were utilized in the film.

In the film, places can be seen through the eyes of both people. This perspective, which cannot be experienced in reality, is presented to the viewer through animation. While the audience perceives the difference in human scale by making comparisons, the director supports the main idea by emphasizing this difference.

Five themes were identified in *The Secret World of Arrietty*: human scale, space, animal, plant, and object. The results obtained from the descriptive findings of these themes show their intensity in the film. The descriptive findings constituted the first step for the relational findings and their visualization. In the statistical data obtained about the film, it has been determined that the codes with the highest frequency value belong to people on both scales. This finding strengthens the judgement that the film focuses on the human scale parameter. It constitutes one of the answers for the data that makes the scale parameter in the formation of space perceptible to the viewer. In addition, the intensities in some codes gain meaning in connection with the story flow. The analysis showed that it is possible to observe the relationship between the frequency values and the script of the film in a clear way. This result constitutes an answer to the research question that investigates the connection with the story flow in scenes where the relationship between human scale and space is emphasized.

The descriptive findings of the study provide comparisons and answers the research question that focuses on the relationships in which the changing human scale is observed in the film. At the same time, the data that makes the scale parameter perceptible for the viewer can also be traced in these findings. When the diversity and strength of the codes between the human scale and the theme of space are evaluated, it is seen that the number of spaces coded with small-scale people is higher than normal people. Due to the appropriateness of their proportions, small people can be found both in their places and in regular people's houses. It is possible to claim that the viewer notices the scale difference by comparing the dimensions of the space and the furnishings when the situation, in which they are together, is examined. It was concluded that the strongest relationship between the themes of 'human scale' and 'space' was observed in transmitting the human scale parameter to the viewer in the film. After that, the theme most associated with space was seen as the object. In the relational findings and their visualization, it has been observed that at least two themes are used in the scene formation. These have been the themes of human scale and space under the influence of necessary variables. However, during the analysis of the entire film, in addition to these two themes, we identified the presence of one or more codes that would clarify the scale difference. The editing of the scene with various codes from different themes has strengthened the transmission of human scale change to the viewer in terms of increasing the number of comparable data. At the same time, it directs the viewer's perception along with the story progress. The results explain the connections in which the change in human size is shown in the film. In addition, it was observed that the story flow once again connects to places where relationships are concentrated, which answers one of the research questions.

According to the story, the little people live with normal people, depending on them, but they also seem to have spaces of their scale. This finding

highlights the significance of designing rooms and furnishings to accommodate physiological measures for comfortable living. The space dimensions, furnishing, and object use differ for each scale. In these cases, furnishings for activities like eating, lying down, and using items like plates, forks, and teapots are shown in proportions proportional to their physiological measures. However, it is shown in the film that when small people borrow something, they give it a new purpose because they can not utilize it to carry out their intended activity due to the scale difference. The visualization of these results expressed about the story is seen in the step of tracking the relational findings through screenshots.

The different methodological steps carried out in the research and their findings form some singular answers in terms of the research questions in the conclusion. However, with a holistic approach, it is seen that the data obtained from descriptive findings overlap with relational data. Data on the intercode relationship – which could not be obtained from the descriptive results – were obtained in the next step. In this way we answered the remaining research questions. Following the latter, together with their interpretations through the images, is important to concretely observe the results of the research. Therefore, in this way, the research questions were obtained as part of carrying out the different phases of the methodological analysis. Together with this, data supporting the findings were presented in the study as well.

Based on the evaluation of the data obtained from the findings, it has been concluded that the perception changes with the change of human scale in the space and that the use of these relationships in cinema provides meaning transfer to the viewer. Spaces are perceived as normal when they are seen with people appropriate to their scale. However, when people of different scales experience a space or are in the same space with objects of that scale, it adds new and extraordinary meanings to the film. This detected data leads to the conclusion that the perception formed by the human scale in spatial configuration provides a meaning together with spatial data of different scales that can be compared. In this study, the parameter of human scale in space, which is a common subject of cinema and architecture, was examined. This analysis showed that the design was associated with the main idea of conveying the changing scale difference to the viewer. Furthermore, it was determined that the dimensions and set of furnishings and objects to be emphasized in the spatial configuration are foreseen. New meanings for objects were created by reevaluating the functional equivalents of elements for use in the space. As shown by the relational outcomes, in order for the human scale to become a tool for producing meaning and for this meaning to be transmitted between spaces, it has been established as an important criterion that this main idea must be processed transitively between scenes, and used in a support to these.

The results obtained from the research are important in terms of discuss-

ing the experimental results of the use of human scale in the intersection of cinema and architecture. When evaluated within the literature, it is unique because it is examined through an example where two different scales of people are shown in the same film. In addition, there is a lack of studies conducted to this or a similar method in the literature, and it is also a first in terms of being a study that codifies and examines every scene of the film in all its aspects. This study aims to open venus for further studies focusing on the use of the human scale in films from different genres, or to the analysis of the same aspect in different films by the same directors. Expanding the scope of the research by focusing on one of the themes identified in the film considering the use of the human scale can also be stated as a further research topic.

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