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Spatial Narrative in the Cinematographic Body Environment

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Abstract

Due to the experimental interface of cinematographic space fiction that produces temporal and spatial intervals, architectural design can be explored via time-body-space relationships. In this study, Eskihisar Coastline/Turkey has been selected as an urban coastline, due to its potential as a public space where the body can be observed, much like all public spaces. It is being examined with an experimental surface exploration developed with the relations between fragments of spatial intervals within the context of the movement-body experience in cinematographic spatial fiction. So cinematographic spatial fiction is a spatial narrative displayed based on the time-body-space fragments. The study has explored cinematographic fiction as an architectural design approach through the notions of time-body-space shared between the disciplines of cinema and architecture. The research methodology is qualitative; coherent to the case-study. The experimental phases consisted of the fragmentation of video recording, the multiple exposure experiment, and the "kinesphere" experiment phases that visualized the inter-surface connection codes of Eskihisar Coastline/Turkey as an urban coastline. Rudolf Laban's "kinesphere" approach, which questions the direction of bodily movement in relation to the limbs, is developed as a controllable, definable template for measuring the interval of body movement. This approach is handled the movement intervals over the proportions of the body as a measurable parameter through a geometric design approach. As a result, the surface articulations determined through the spatial intervals of experience produced urban furniture images. Cinematographic spatial fiction offers a geometry-based reading interval developed from the ratio-proportion of the body to the production intervals presented to the architectural design in the context of time-space through the produced urban furniture image. The interface designed in this study is expected to offer a solution proposal that can be developed from the body scale for the urban furniture needed in public spaces in the cities of the future.

Keywords:
Architectural design, bodily experience, kinesphere, spatial cinematography, spatial cinematography

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INTRODUCTION

Spatial Body Relations in Everyday Urban Experience

"Ten Books on Architecture" (1998) written by Marcus Vitruvius Pollio in B.C. 25, emphasizes the importance of geometrical formation and connection, which overlap with the proportions and symmetry between the whole body and its limbs in the design of buildings. The interval of view drawn by Vitruvius in the context of spatial body relations for building and city design with the proportions of the human body also allowed Renaissance artists to lean on the body with an analytical approach and reconsider it in a geometric system (Sennett, 2008). It can be said that the spatial body relation in the Renaissance period, whose boundaries are drawn through idealized body scale, proportions, and symmetry, is reflected in the design of space as a proportional connection with this body is established. From the Renaissance to the 20th century, spatial body relations emerged according to the ways of thinking developed over the measurable characteristics of the body as the subject in spatial approaches. In the 20th century, the effects of the technological developments in the Modern Period and the changes in the production styles of the Industrial Revolution on the design of space and on the body as its user were also reflected in the spatial body relation. The impact of the concepts of standardization and mass production on the production of space as well as the Cartesian concepts of mechanization and functionality, which idealize, universalize, and attempt to objectify the body, is dominant. The sense of the period, which considers the body detached from its relation with its environment, reveals a digitized definition of the body, which is placed inside the digitized space depending on the production practice and then divided into parts with measurable features.

When the spatial body approaches developed from Vitruvius to the Modern Period are examined, one common element is that the body is a means of perceiving and designing the outside world. It is an object as the scale of space design, reduced to its measurable properties and is the user of the idealized space designed regarding its dimensions. The body is neither the subject nor the object that structures the space with the interaction it establishes with the environment with its perceptual and sensual features. Rather, it constructs a fluid and dynamic spatial body relation that is detached from all given possibilities of internal and external relations. The effect of this constant fluctuation on the design of space and the definition of space as a means of perceiving the outside world has also changed. In processes where the interaction with space is ignored, the approach based only on the measurable features of the body in space design also reduces the spatial body relation to a digitized system. Whereas the body shapes it by constantly interacting with the environment that creates it. The physical and mental experiences it produces in the space while on the move exist in the fluidity of time. The body interacts with the experienced space depending on time (Tanju, 2008). As a result of a temporal rupture, form corresponds to space

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solidified by the freezing of time. By looking at the relation of space produced with body-space mobility and time, it may be possible to improve the scope of space by embodying time (Uysal & Arıdağ, 2012). Space as a perceived and lived being can be understood through temporal events. For this reason, architecture is reproduced based on space-time relations beyond a physical environment (Arıdağ et al., 2009). The expression of experience in terms of place or time is insufficient to explain its relational nature. Experience expresses in synchronicity involving forces or processes interacting with one other (Kwinter, 1998). These synchronicities are considered in the study as the orientations of the body on the route it follows in time. By focusing on sensual existence, interaction with the environment, and spatial experience in addition to its physical possibilities, spatial body relations have been transformed, revealing the spaces of experience. On the other hand, approaches developed through the body's experience of seeing develop a spatial body approach that reconstructs the body and space with different perspectives by questioning the given limits of the body. Spatial approaches, which take reference from the digitization of the measurable features of the body, evolve into an understanding of space and reveal both its physical and sensual characteristics and the relation it establishes with the environment it interacts with. Through that fluid and dynamic body understanding, both the fiction and interaction with the movement experience are produced and the spatial possibilities of the movement-body experience are increased.

At this point, Laban's Movement Analysis (Laban, 1960), which questions the relation of the body with space through movement, becomes significant. Rudolf von Laban (1879-1958), known as a philosopher, scientist, mathematician, dance theorist, as well as artist, architect, dancer, choreographer, dance designer, and painter, developed experimental approaches to movement theory. Laban's approach can also be linked to the discipline of architecture as it reveals the dynamics of movement-body, particularly through dance. Unlike previous dance notation systems, in which the dance moves of the body performed on stage are recorded, Laban's experimental exercises focus on the produced movements themselves. His analysis system is significant in terms of space approaches established with the body, as it provides the body with the flexibility to produce its choreography and opens it to interaction with dance, choreography, music, space, and other dancers. Questioning the relation of the body with the rules of dance, the stage, and the choreography, Laban argues that research on movement, the body that produces the experience can be seen through the elements it draws in his performance. In this direction, Laban questioned the limits of choreography, made movements revealed by the body more visible, and examined the relation between the dance space and the elements of movement produced by the body by questioning geometric solids. Laban says that in his approach, the traces left by the route the body draws on the stage during the performance define the dance space (Laban, 1975).

This approach carries the dance space from the stage as a defined plane or volume to the movement elements of the human body as the place where the action happens. Laban created the idea of the "kinesphere" as a controllable, definable template for detecting the interval of bodily movement. He defined this concept as the personal sphere that includes movement-body, and the sphere that surrounds it, the personal space of the body. In short, the “kinesphere” is established between platonic solids and the body. Questioning the direction of bodily movement in terms of its relation with the limbs, Laban stated that the interval of movement takes place within the icosahedron, over the last point that the body can reach with its limbs without moving (Figure 1a). Marking the center of gravity of the body on the body in a three-dimensional coordinate system explains the boundaries of the "kinesphere" with a three-plane definition based on the orientation of the limbs (Figure 1b): Door Plane (Figure 1c), Wheel Plane (Figure 1d) and Table Plane (Figure 1e), (Newlove J. & Dalby J., 2004).

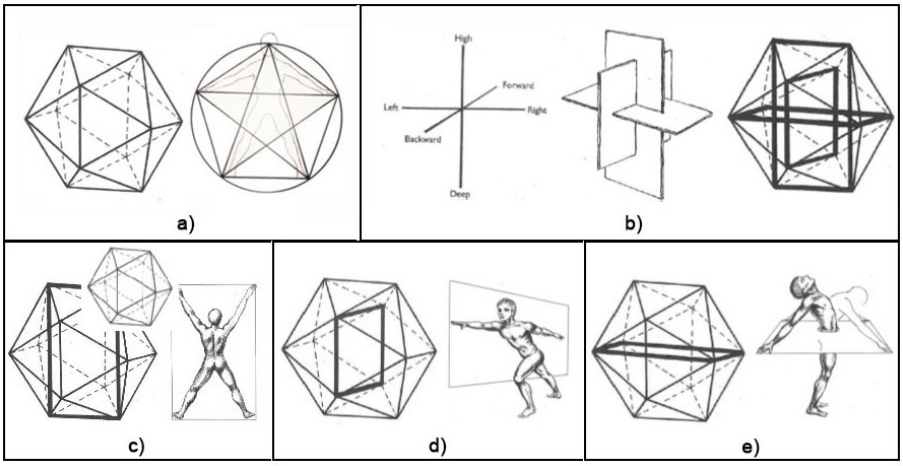

Figure 1. a) Icosahedron, A pentagonal pose showing parts of the body, b) Three planes perpendicular to each other in the Icosahedron, Planes that define the "kinesphere" in the Icosahedron; c) Door plane, d) Wheel plane, e) Table plane, (Newlove, J. & Dalby, J., 2004).

Although the "kinesphere" in the Icosahedron, as the interval of movement surrounding the body and its limbs, is defined by the relation of perpendicular surfaces determined within platonic solids, it has a dynamic and flexible structure that transforms with the change in movement-body. For this reason, it should be considered the body's own space, dynamic and shaped by the dynamics of movement, which is revealed through elements with movement-body (Moore, 2009).

Within the scope of this study, the surfaces that define Laban's “kinesphere” approach as an interval of movement are formed according to movement-body and produce space with their articulations. This interval is considered significant because of the similarities it shares with the spatial body relations questioned in the context of cinematographic spatial fiction. The kinesphere, which provides a controllable and definable template to visualize inter-surface connection codes, offers a tracked, signed, recorded, and reproduced personal sphere. As a dancer, dance designer, choreographer, architect and movement theorist, the spatial body relation that Laban questions in the discipline of dance and

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"kinesphere" approach provide an experimental reading interval to the geometry-based architectural design approach for the bodily search of spatial intervals. The cinematographic space, which is explored through the movement-body experience, attaches importance to the body experience, and the discovery of new relation possibilities at all phases. An experimental approach is adopted that stretches the boundaries according to the way of reading and offers a dynamic and self-reproducing interval of representation. Non-representational theory, which questions the position of the body in representation that exists as a reflection of ideas, ideologies, perspectives, and values, criticizes the reductionist attitude that ignores the intertwined relations and human-environment interaction in life while the representation reflects reality (Thrift, 2008). It corresponds to a dynamic process in which everything is in relational possibilities (Doel, 2007). Non-representational theory is a common concept for studies aiming to reveal more-than-human, more-than-text, and relation possibilities (Lorimer, 2005). According to Nigel Thrift's (2008) non-representational approach, everything is interactive. At the same time, it offers an experimental base that allows the body-environment relation to increase. As Vanini (2015) states, non-representational theories include experimentation with their open structure to case studies, various observation methods, and new transmission channels. It is significant to make research-oriented choices rather than comparing these tools to each other (Thrift, 2008). This research uses geometry as a new transmission channel by considering the movement of the body in the time plane (Figure 2).

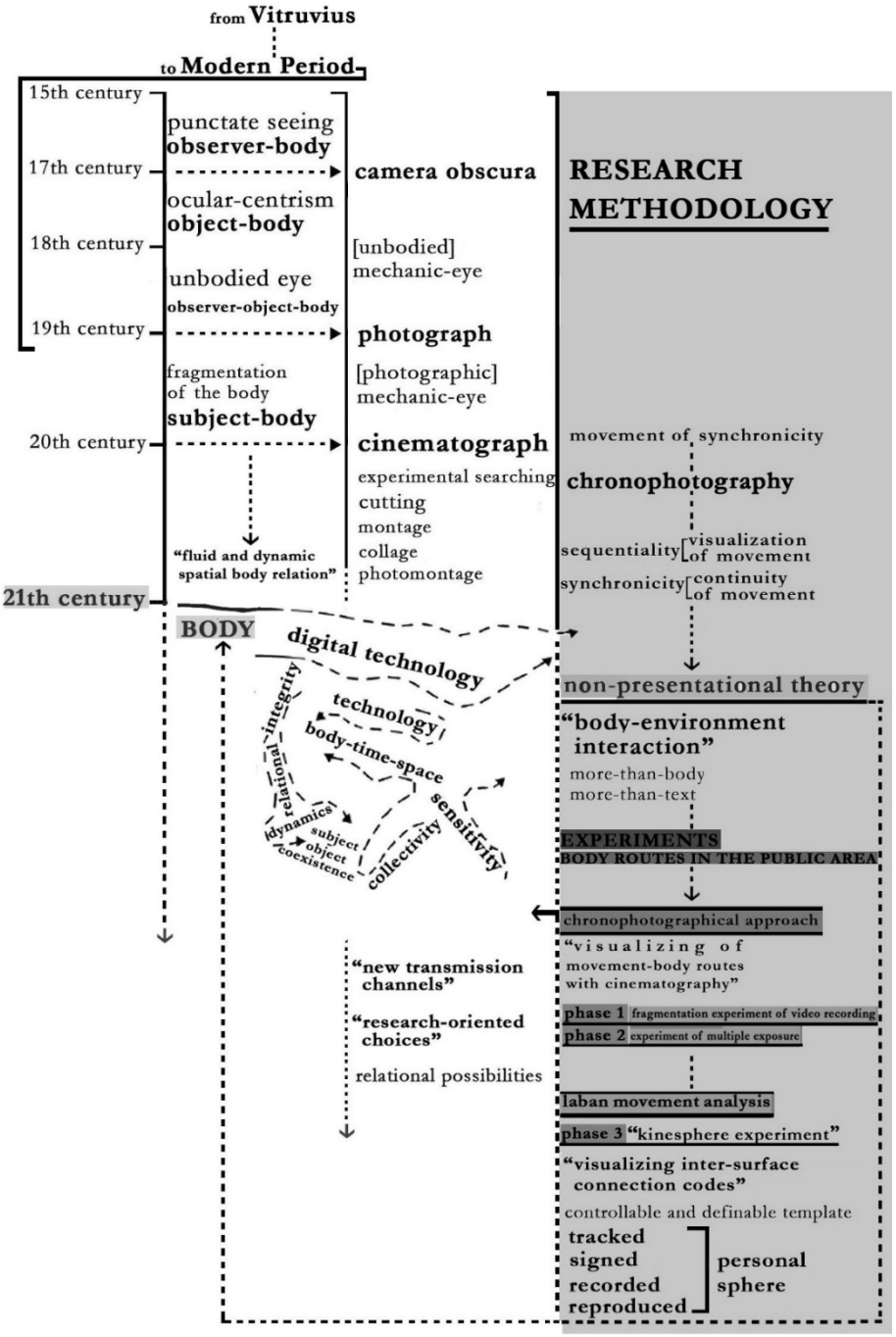

Figure 2. Theoretical framework and research methodology diagram (Aslan & Arıdağ, 2023).

BODY ROUTES IN THE PUBLIC AREA

The purpose of this study was to question spatial possibilities with the search for an experimental space developed with the relations established between time-body-space fragments. As such, in order to reveal the possibilities of the space, Eskihisar Coastline/Turkey has been chosen as an urban space, due to its potential as a public space where the body can be observed, much like all public space and with a search for a surface exploration developed through the body routes recorded with cinematographic techniques. The observation phase was carried out during the COVID-19 pandemic, which impacted the entire world, on November 21, 2020, coinciding with the weekend, during two distinct

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time periods of the day – one in the morning sequence from 10:00 to 13:00 and the other in the evening sequence from 16:00 to 19:00. The pandemic affected social interactions and the usage of public areas. Therefore, in this process where access to public spaces is limited, a public space that can be accessed in a short time was preferred for video recording. Eskihisar Coastline/Turkey as an urban coastline (Figure 3) was chosen because it is an area that is densely used on weekends during the COVID-19 pandemic and a pedestrian promenade that allows for continuous city flow and where different body-action examples can be seen.

Figure 3. a) Eskihisar Coastline/Turkey, observation and video recording test area, b) The limit of the movement-body routes in the public space that determined to in the experimental phases.

In the observation phase, body actions detected during observations made at different periods during the day on the coastline routes were recorded. Visual data were obtained about the various bodily actions produced by pedestrians. Observing the instantaneous possibilities of intensifying body flows on this promenade, examples of "Walking Body" as a periodic body-action and "Wandering Body" as a product of its periodic body-action were examined in the experimental phases.

Visualization of Movement-Body Routes: Chronophotographic Approach

The cinematographic approaches of Eadweard Muybridge and Etienne-Jules Marey, who developed movement representations by focusing on different qualities of movement, such as its phases and continuity, were used as references. Chronophotography is a cinematographic technique developed with studies on movement. Eadweard Muybridge and Etienne-Jules Marey's chronophotography approaches, which also form the basis of cinematography, are thought to form the basis of movement and time modeling of digital platforms in the current century. The continuity of movement and time can provide the opportunity to explore spatial potentials that are more sensitive to the environment, as in cinema, in a relational sense. The spatial narrative

potentials are formed by coding the body with time-movement fragments. Such a perspective enables us to grasp the environment as it is, no matter what information parameter we put into it. In the study, these approaches constituted the first two experimental phases as reconfigurable experiment bases in capturing and revealing the elements of the experience route of the body as a subject.

Eadweard Muybridge worked on chronophotography by arranging multiple photographs taken with his camera, one by one as a frame, to visualize movement. In Muybridge's chronophotographic movement approach, the continuity of the sequential frames creates a cinematographic effect and presents a sequenced narrative. The fragments added one after the other as part of the whole not only preserve their independent structures but also reveal the whole, which contains new spatial possibilities through their interrelations. In Etienne-Jules Marey's representation, which visualizes movement with all its phases, the movement, which is exposed at regular intervals in a single frame, exists in a new spatial structure, which becomes evident with the inter-fragment relation that includes simultaneous breaks. While Muybridge's purpose in movement representation is to visualize situations that the eye cannot perceive during movement, Marey's purpose is to measure the continuity of movement.

In this study, the method envisaged for the spatial approach focusing on the changes in the movement-body experience route was limited to the multiple exposure experiment phase, in which intervals of movement corresponding to their actions are examined through overexposure. This technique is preferred for surface searches developed over elements of movement as all moments are recorded and presented in synchronicity in a single frame. However, in the context of the observations made in the field and the data obtained from the video recordings, it was necessary to parameterize movement-body to track, mark, and control it. In this context, the experimental phases were structured and developed to be analyzed in the context of fragment-sequence. Chronophotography was used to visualize the movement-body routes that were observed and recorded in the fieldwork.

In the movement-body experience, routes drawn by time to produce instantaneous action are fiction specific to the body in a cinematographic context. While wandering in a city, the body advances by making cuts in the movement route through the movement experience layers coded in its memory, which enable it to continue its interaction with its range of gaze and impressions, past and present. It creates the movement from its gaze; the route of the experience is in the relation that includes continuity and succession. It produces changes in the speed, direction, and temporality of the movement such as recession, activation, stopping, advancing, and regressing. The fact that it produces the experience with the intervals of movement that it adds one after the other through cutting is called "body assembly". To analyze the surface intervals of the experience space established with the body, two examples from different

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times of the day selected from the category of "wandering body" as a product of its periodic body-action were considered movement sequences. For the experience intervals produced by the cinematographic spatial fiction, two examples belonging to different times of the day selected from the category of "walking body" as a periodic body-action were evaluated in the context of a movement period. In the cinematographic spatial fiction, the possibilities of body montage, which enables the body to produce its spatial interval in the experience of movement in the city, were parameterized as 3 items to be examined by comparing them in the experimental phases:

- "The act of walking in the temporality of the city": Each movement-experience sequence produced exists by producing its time-space context. Demonstrating morning sequence and evening sequence examples of the act of walking as singular movement sequences.
- "The direction of movement-body": In body montage, the starting and ending point of the movement is determined by the movement-body route. Movement experience has a direction structured by the cuts made by the body. With the cutting and transition that the body makes in the range of vision, the experience is produced instantaneously. In cinematographic spatial fiction, the body experience can be discussed from different perspectives. The movement's direction can be constructed from different perspectives and intervals. Sequencing the fragments, side by side on a cinematographic plan with montage techniques such as symmetry, change of direction, and cutting.
- "The temporality of movement-body": The body, which moves in the direction of movement in body montage, also constructs the temporality of the experience. Combined with this succession of cuts made by the body, the experience contains a linear temporality. The continuity and succession of the movement in its direction structure the duration. In cinematographic space fiction, new temporal intervals are produced by the montage technique in which the motion fragments superimposition, juxtaposition and cutting.

EXPERIMENTS

Fragmentation Experiment of Video Recording

Eadweard Muybridge attempted to visualize movements that cannot be captured by the human eye by posing them one after the other with short time differences, then ordering them in frames. A similarity was established between the chronophotographic movement approach and revealing the surface relations that make the spatial possibilities hidden within the movement visible. In this context, body routes recorded with video using a Canon EOS 250D 18-55 DC DSLR Digital Camera in the

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public area appear as movement intervals on a series of photographs when the video is split into fragments. Attempts were made to identify spatial intervals among these photographs by coding the movement with montage techniques such as superimposition, juxtaposition, and cutting. In this context, to capture the movement fragments of the body actions, which were observed to have different movement speeds in their time-space intervals, the number of frames per second (fps) required to capture the interval speeds was determined. For this, the video recording was done at 25 fps (periodic), which is often used in cinema and thought to best mimic the movement flow of the human eye, and 50 fps (producing its period) to capture the spatial possibilities of the interactions between the movement speed in the flow of the city and with other bodies. The instantaneous probabilities observed in the fieldwork determined the duration of the video recordings. Video recording was conducted with the camera as the "mechanical-eye", which wandered around coastline as an observer and took recordings based on various factors such as daylight, human density, actions at different speeds, time zone, and angle change. Attention was paid to the time intervals determined instantaneously according to the change period of the movement, the period of completing the movement of the body, and the time the body entered the frame. All video recordings were converted to JPEG format photos using the Adobe Premiere program. The fragments were analyzed individually and sequentially using Adobe Photoshop.

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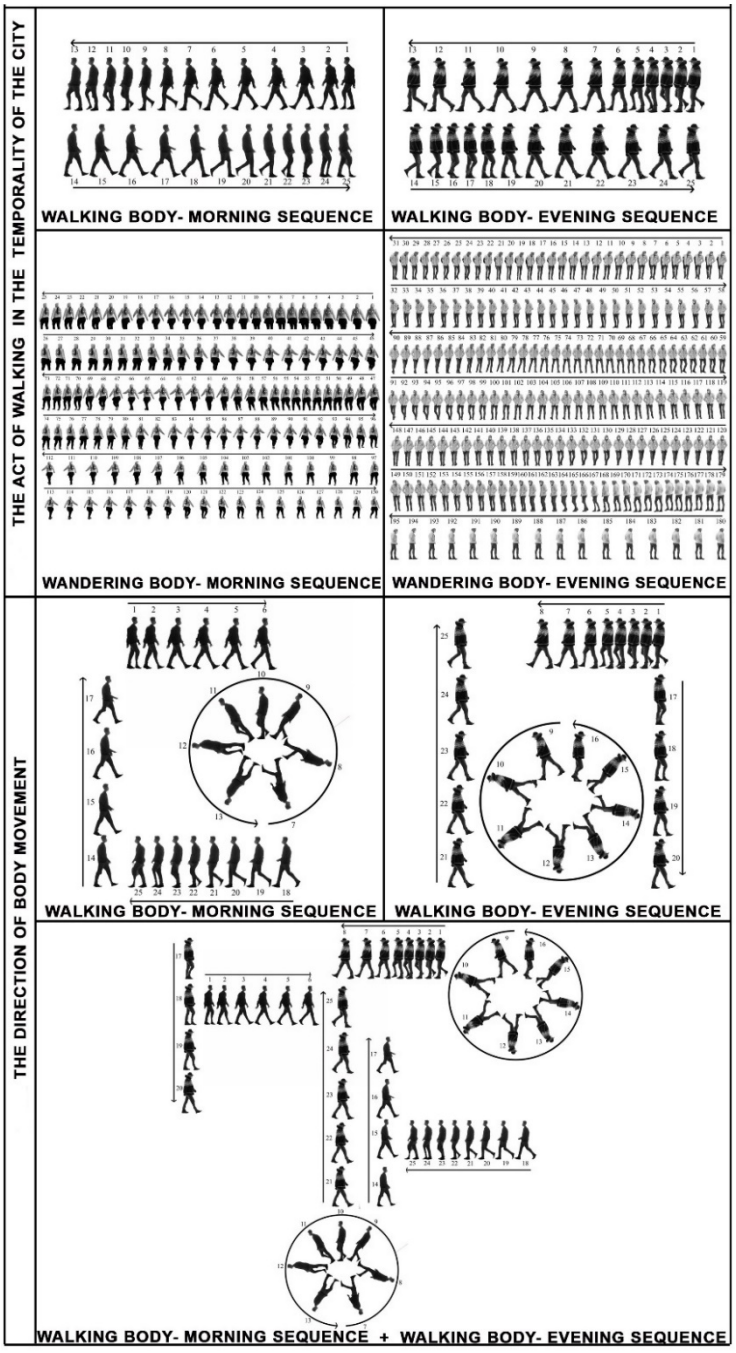
THE ACT OF WALKING IN THE TEMPORALITY OF THE CITY
WALKING BODY- MORNING SEQUENCE
WALKING BODY- EVENING SEQUENCE
WANDERING BODY- MORNING SEQUENCE
WANDERING BODY- EVENING SEQUENCE
THE DIRECTION OF BODY MOVEMENT
WALKING BODY- MORNING SEQUENCE
WALKING BODY- EVENING SEQUENCE
WALKING BODY- MORNING SEQUENCE + WALKING BODY- EVENING SEQUENCE

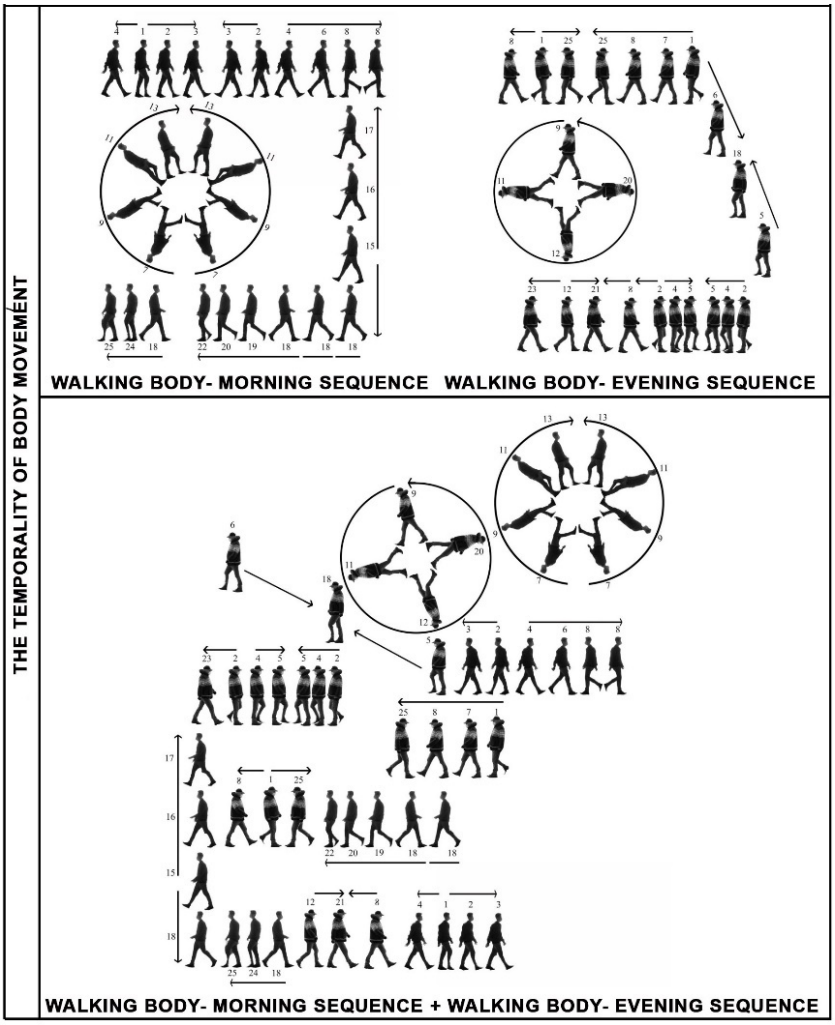

Figure 4. Phases of fragmentation experiment of video recording.

Experiment of Multiple Exposure

Developed from Muybridge's chronophotographic movement approach, the single and related sequence trials produced in the three phases of the first experiment were conducted with the multiple exposure technique. Then, based on Marey's simultaneity approach, all the fragments were brought together in a single plane (Figure 5).

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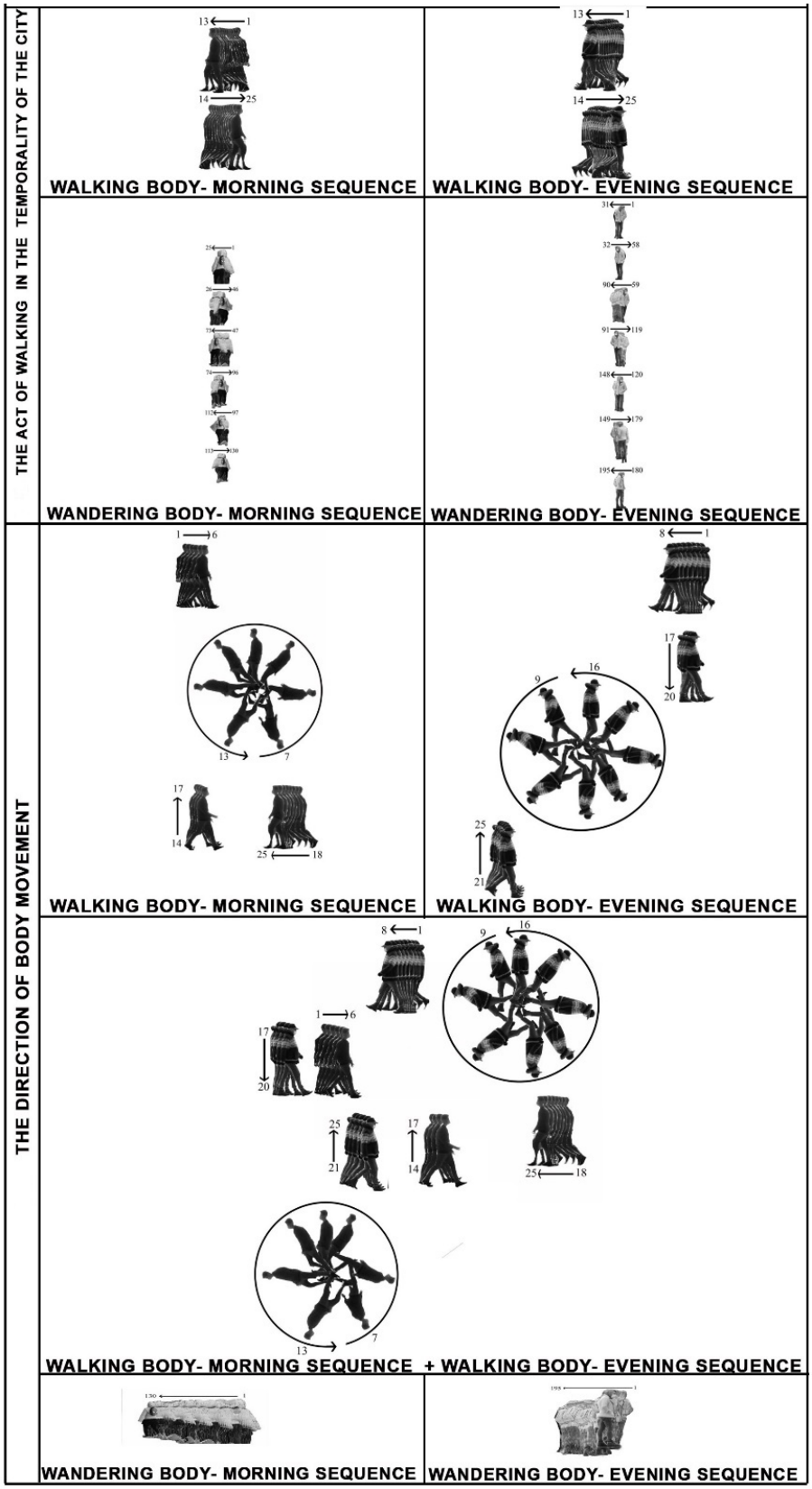
THE ACT OF WALKING IN THE TEMPORALITY OF THE CITY
WALKING BODY- MORNING SEQUENCE
WALKING BODY- EVENING SEQUENCE
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THE DIRECTION OF BODY MOVEMENT
WALKING BODY- MORNING SEQUENCE
WALKING BODY- EVENING SEQUENCE
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WANDERING BODY- MORNING SEQUENCE
WANDERING BODY- EVENING SEQUENCE

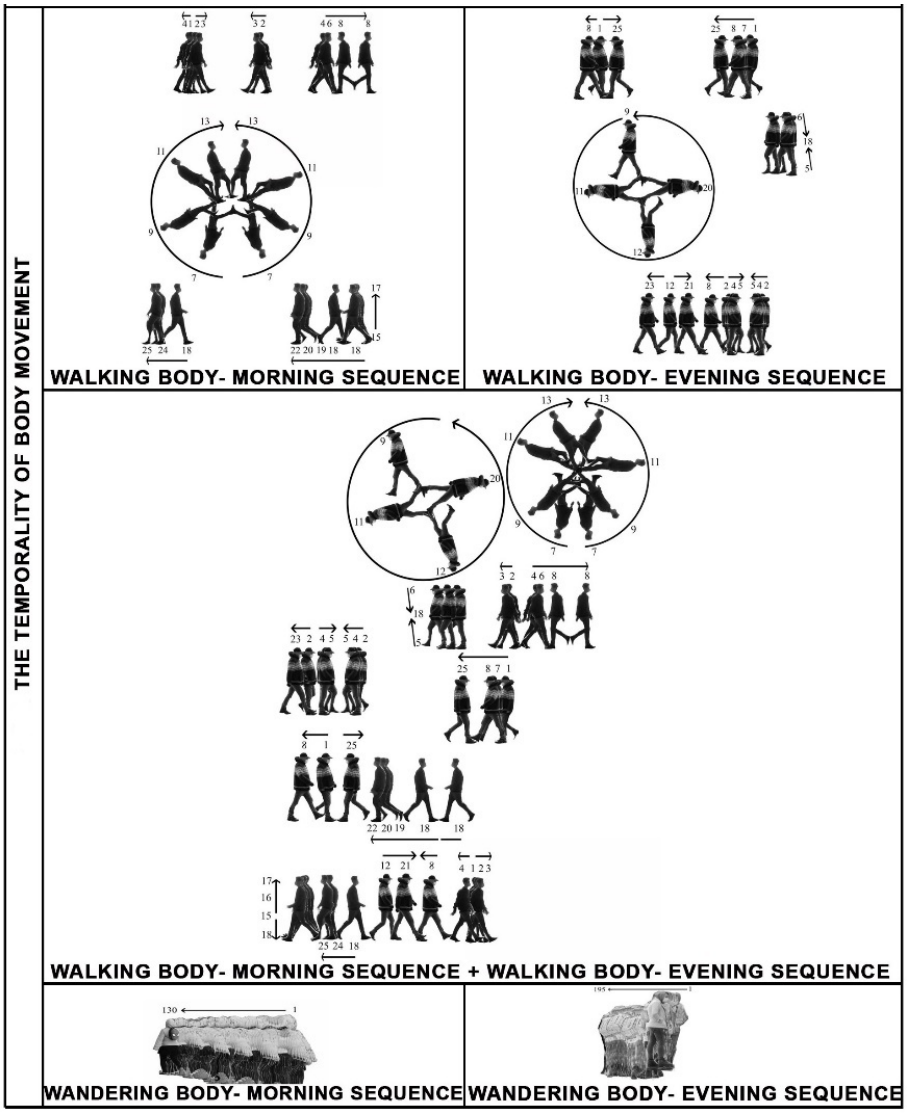

Figure 5. Phases of an experiment of multiple exposures.

"Kinesphere" Experiment Visualizing Inter-Surface Connection Codes

In the third experiment, the "kinesphere" as a controllable, definable template for detecting the interval of bodily movement and "movement notation" were used. Body representations were reduced to standards and numerical values. The 2D representations of fragmental structure obtained in the chronophotography experiments were turned into 3D by being open to experience in the computer environment. The "kinesphere" was developed from the body's unique proportions and was turned into a body scale that visualizes the inter-surface connection codes.

Rhinoceros 3D was used to model "walking body" sequence samples in three planes (table plane, wheel plane and door plane) which intersect at the body's center of gravity, considered to determine the "kinesphere" by defining the interval of movement of the body in Laban Movement Analysis. 10 samples selected from different movement intervals within the 'walking body-morning sequence' and 'walking body-evening sequence' were modeled to visualize the cinematographic spatial narrative of the city, and the "kinespheres" revealed by movement-body

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to examine the spatial ranges of both successive sequences and their relation to each other. After determining the personal intervals for each body fragment in the sequences, three-dimensional kinespheres were established for each set of 10 sequences created from these fragments. They are movement-body “kinespheres” that express the interval of movement of "walking body" as a periodic body-action samples that perform a linear and periodic action in the city. The spatial interfaces corresponding to the 3-dimensional ranges of movement of the walking body were determined with the surface articulations from the movement space "kinesphere", which denotes the interval of movement of the body by accepting the farthest point they can reach. Although this series, consisting of 10 samples created from walking-body sequences from different time periods, does not occur in linear time within the city, it contains a cinematographic structure based on the relationship established between the narrative components of the movement. Surface articulations discovered with kinespheres in Sequence 1 and Sequence 2 and their relationship with each other were applied to all 10 sequences, revealing the spatial narrative of the walking body. In this narrative, movement routes sought within the surface articulations provided by the kinesphere were obtained in a curved and multidirectional manner, encompassing rectangular intervals established by the "Table Plane", "Door Plane", and "Wheel Plane". Visualizing the spatial narrative of the walking body in the city was made possible by utilizing the curved and differently angled surfaces of the kinesphere, which extended beyond the three planes of the kinesphere, thus enabling the exploration of all possibilities (Figure 6).

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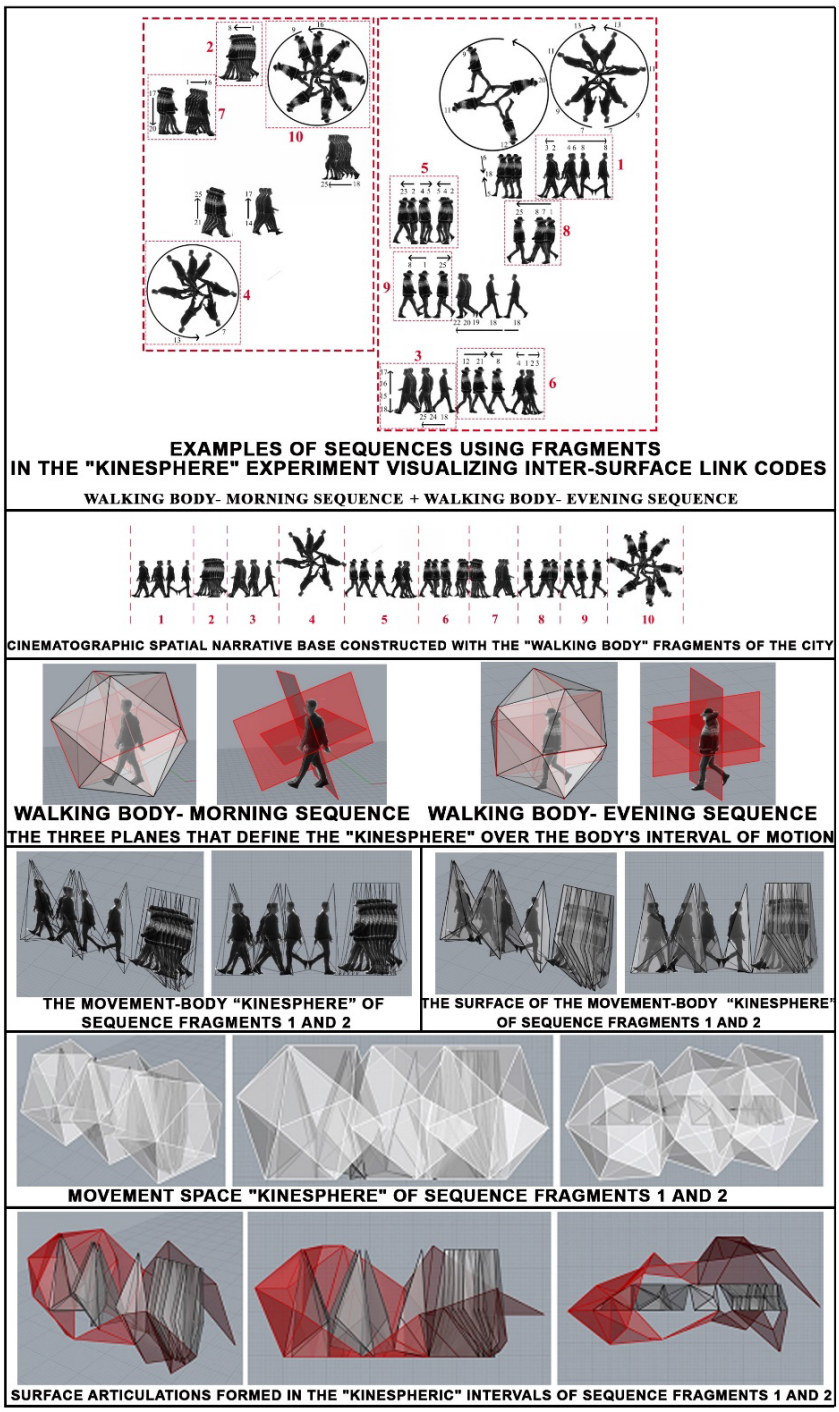

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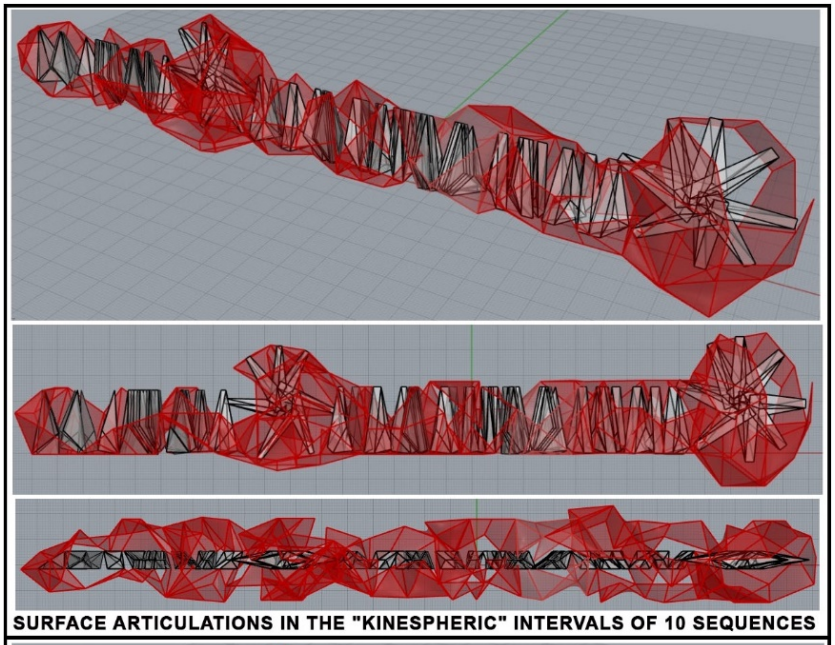
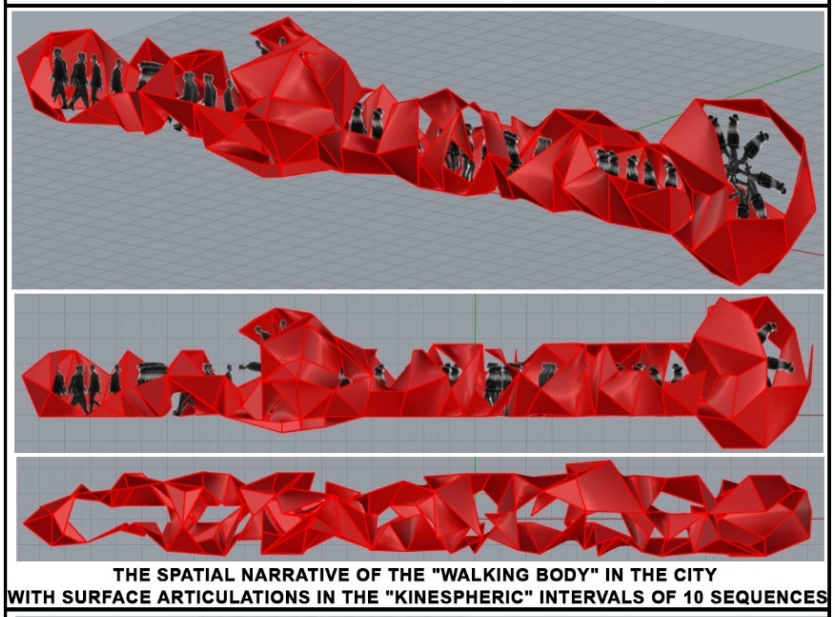
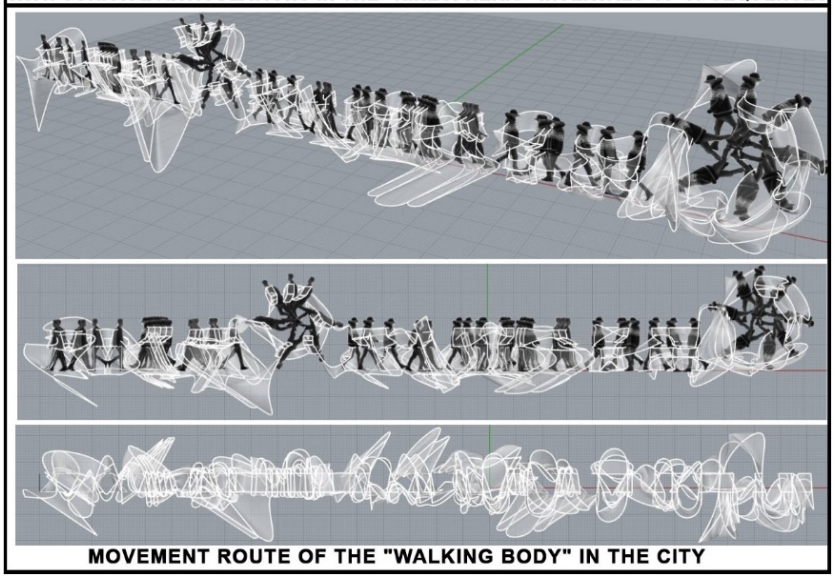


SURFACE ARTICULATIONS IN THE "KINESPHERIC" INTERVALS OF 10 SEQUENCES



THE SPATIAL NARRATIVE OF THE "WALKING BODY" IN THE CITY
WITH SURFACE ARTICULATIONS IN THE "KINESPHERIC" INTERVALS OF 10 SEQUENCES



MOVEMENT ROUTE OF THE "WALKING BODY" IN THE CITY

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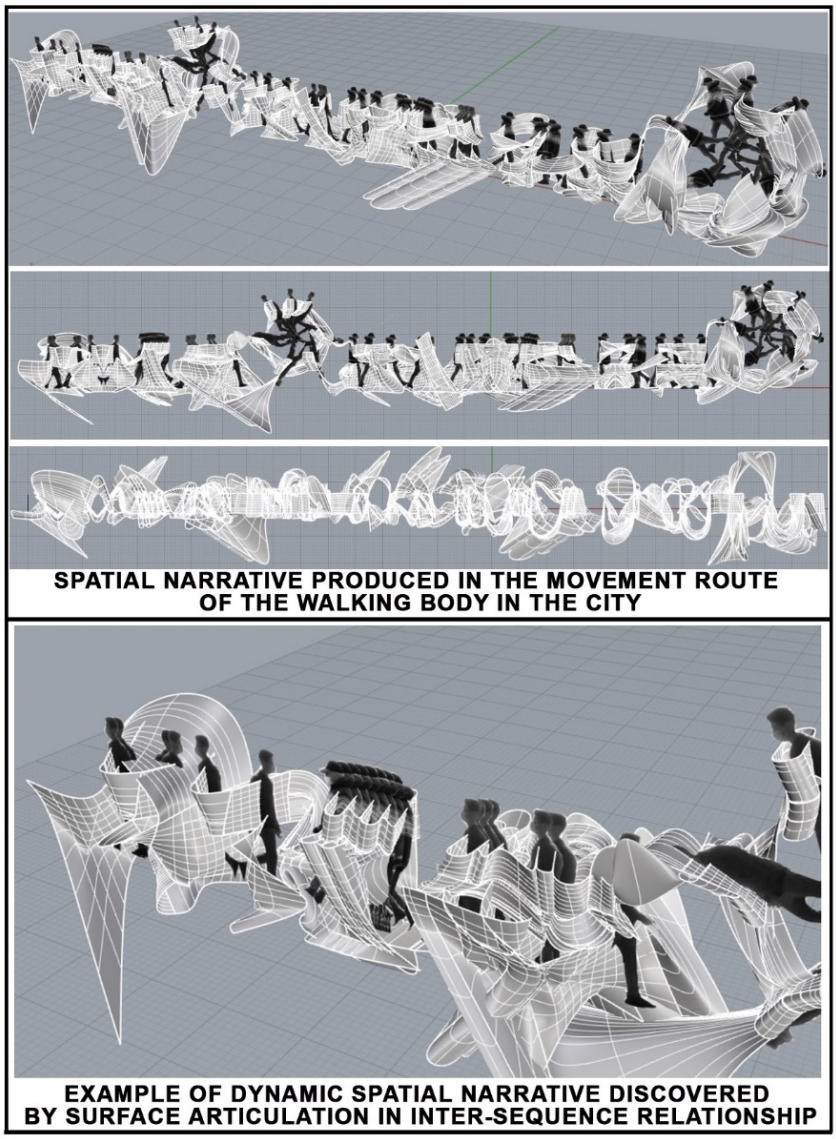

Figure 6. "Kinesphere" Experiment Visualizing Inter-Surface Connection Codes.

RESULTS

Phases of Fragmentation Experiment of Video Recording

The act of walking in the temporality of the city

"Walking Body" as a periodic body-action:

- The times to complete the movement periods are different.
- The fragmental structure formed by body routes has different intervals.

"Wandering Body" as a product of its periodic body-action:

- The fragmental structure in which it cuts in producing its periods is the body assembly.
- The fragmental structure of body routes in the temporality of the city produces the different intervals of movement.

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The direction of movement-body

"Walking Body" as a periodic body-action:

- Within the sequencing of the fragments in different relation possibilities such as symmetry, change of direction, and cutting, different spatial intervals that reproduced the experience in a cinematographic fiction has revealed.
- It generates new relation possibilities of sequences constructed by cuts of fragments that preserve their singular structure.
- The body that produces the experience appears to contain more intervals from the singular point of view.

The temporality of movement-body

"Walking Body" as a periodic body-action:

- Interruptions, additions, jumps, backward, and forwards are made in the temporality of the movement with montage techniques about the possibilities of discarding, repetition, and repositioning of the fragments.
- Different temporal intervals of the movement are produced by the fragmentation of the succession of the fragments.
- It is observed that the fragments are reproducible with different readings on a cinematographic plane.
- In the morning and evening sequences are handled together, observed that each walking body fragment preserves its singular structure, and temporal intervals have produced with cinematographic fiction.

Phases of The Experiment of Multiple Exposures

The act of walking in the temporality of the city

The sequence of the fragments in the movement-body experience makes the body assembly visible simultaneously.

The direction of movement-body

"Walking Body" as a periodic body-action:

- Observed that the fragmental structure, both as singular experiences and in the new relation possibilities established between them, contains new sequence intervals that refer to surface articulations, which develop through movement-body experience.
- Although it bases on periodic repetition, it can produce new time-space contexts according to the movement fragments.

"Wandering Body" as a product of its periodic body-action:

- Body montage based on the succession of fragments can produce surface relations limited to their interval.

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The temporality of movement-body

"Walking Body" as a periodic body-action:

- It can be reproduced synchronously in a new fiction by associating different fragments.

"Wandering Body" as a product of its periodic body-action:

- It retains the structure of the second phase of the experiment, in which the sequence of fragments is handled synchronously without temporal interference.
- New movement sequences are formed with assembly techniques produced by different sequences.

"Kinesphere" Experiment Visualizing Inter-Surface Connection Codes

- Body routes can be tracked, recorded, analyzed, and edited with the "kinesphere" that is considered the body scale.
- It reveals different intervals with the surface articulations that contain the movement interval part-whole relation possibilities have produced.
- In the space narrative, which consists of 10 cinematographic plans, the surface relations obtained by the relation between the "kinespheres" determine the "kinesphere" of the experience as the space that the walking body in the city can reach.
- Planar approach that considers the intervals of movement of the kinesphere in the aggregate, defines the interval of movement handled over the last point of a movement that the body can reach.
- The route drawn by limbs of the body that move is revealed, surface articulations of the continuity on routes marked on created fragments.

DISCUSSION

In the first experiment (phases of fragmentation experiment of video recording), the movement of the fragments was parameterized and examined, then singular and fragmented movement sequences were produced by arranging them one under the other, side by side (Figure 4). In the second experiment (phases of the experiment of multiple exposures), it was observed that space intervals could be examined with a continuous and holistic approach by overlapping the fragments (Figure 5). In both experimental phases, it was understood that the experience of movement could be reproduced from different perspectives by considering the direction and time of the movement in the new relation possibilities established with the fragments. It has been concluded that the singular space of the "wandering body" as a product of its periodic body-action samples examined in the field through "body montage" can be increased by multiple readings in the "walking body" as a periodic

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body-action samples as a cinematographic spatial fiction. Thus, it can be concluded that probabilities can produce new connections and intervals with relation probabilities established with fragments. It can be said that movement fragments handled with a cinematographic approach can produce more relation possibilities than the singular experience of the body.

The cinematographic approach used in the "kinesphere" experiment, visualizes the inter-surface connection codes as a body scale and refers to the revealing of surface articulations in the study of the spatial possibilities revealed by movement elements based on movement-body. However, considering that the search for space to be produced within the limitations of the “kinesphere” defined by geometric surfaces is insufficient to convey the dynamic and fluid nature of movement, the movement-body route is emphasized, and the route drawn by the moving limbs of the body is marked. Although the fluidity of the route refers to the interval of movement, it has been observed in this experimental phase that all the space possibilities to be produced remain within the interval of the "kinesphere". For this reason, starting from a space understanding that goes beyond representation and produces intervals, a dynamic spatial narrative was developed from the interval of movement of the body with the surface articulations increased in the route through the example of sequence 1 and 2 examined in the "kinesphere" experiment (Figure 6). The dynamic spatial narrative discovered in the increased surface articulations was analyzed in a fragmental relation in the context of cinematographic spatial fiction and transformed into urban furniture image design samples that would support the urban flow (Figure 7). It suggests that performative urban furniture is produced with the geometry-based architectural design approach developed within the scope of the study. Taking actions in the city as a reference, the possibilities of change can be seen, and urban furniture can be created in movement-body routes by needs moving together with the body in the cities of the future.

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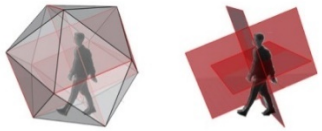
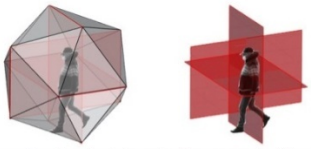
THE PRODUCTION PHASES OF SPATIAL INTERVALS IN SEQUENCE SAMPLES 1 AND 2 WITH MOVEMENT-BODY FRAGMENTS

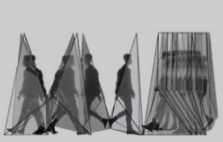
URBAN FURNITURE IMAGE DESIGN AS GEOMETRY-BASED A DYNAMIC SPACE NARRATIVE IN THE RELATIONSHIP BETWEEN SEQUENCES

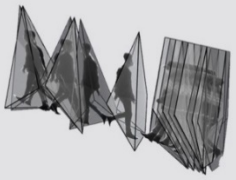


3 planes showing the interval of movement of the body with the "kinesphere" of the "walking body-morning sequence"



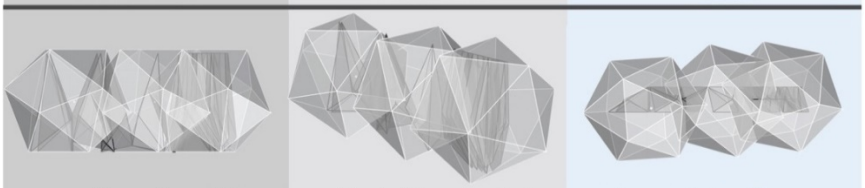
3 planes showing the interval of movement of the body with the "kinesphere" of the "walking body-evening sequence"



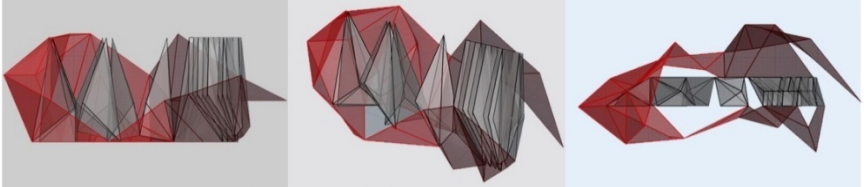


The surfaces of the movement-body "kinesphere" of sequence fragments 1 and 2

ELEVATION **PERSPECTIVE** **PLAN**

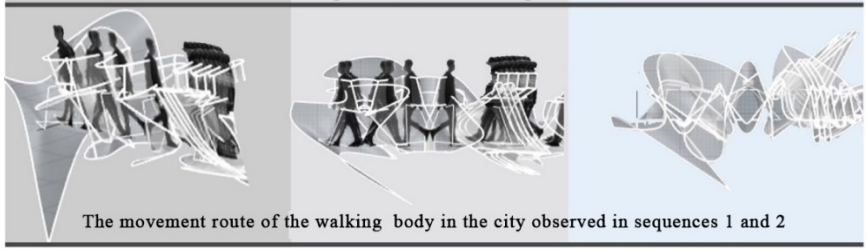


The surfaces of the movement-body "kinesphere" of sequence fragments 1 and 2



Surface articulations formed in the "kinespheric" intervals of sequence fragments 1 and 2

The spatial narrative of the body walking in the city with the surface articulations formed in the "kinespheric" intervals of sequences 1 and 2



The movement route of the walking body in the city observed in sequences 1 and 2

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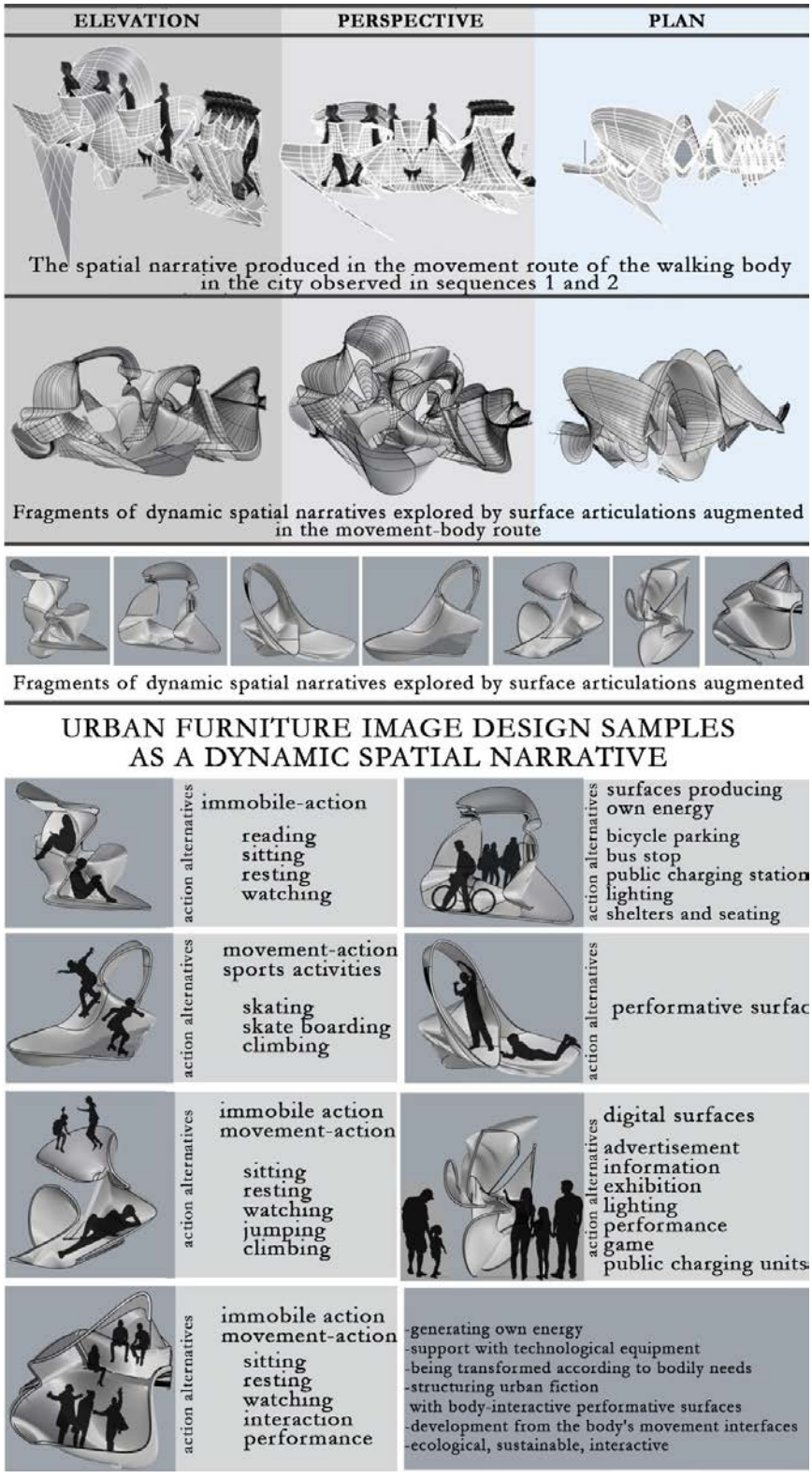

Figure 7. Urban furniture image design samples as a dynamic spatial narrative discovered by surface articulation in the production phases of spatial intervals with movement-body fragments and the relationship between sequences.

Urban furniture image design samples as a geometry-based dynamic spatial narrative are based on sequences between the relationship movement-body fragments. These images as a dynamic spatial usage proposal can be developed from the body's interval of movement. The production of space based on ideal body measurements, which have been standardized since the Vitruvian Period and produced depending on

body dimensions, intervals of movement, and usage styles, has an ecological and sustainable quality as it supports the interaction of the body with the environment in which it is located. Designing space corresponding to the action required by the body with the surface articulations sought in the movement route of the body will give the space a reproducible and transformable quality. The ecological and sustainable structures of the environmentally sensitive and interacting space can be achieved with an architectural design strategy that produces a flexible and dynamic spatial fiction, corresponds to the needs emerging in everyday life, and structures it by being included in the city. Various spatial intervals belong to the city and can be produced by examining and reproducing the movement intervals in which the observed actions of the body in movement in the city are sheltered by examining the fragmental relation possibilities.

CONCLUSION

The two-dimensional movement fragments obtained in the first two experimental phases "phases of fragmentatioan of video recording" and "phases of the experiment of multiple exposures" revealed spatial connection codes and the relations produced between them for the direction and temporality of the movement. In the third experimental phase “kinesphere experiment visualizing inter-surface connection codes”, it was possible to increase the spatial intervals by opening them to experience to discover new three-dimensional relations in the computer environment. A dynamic spatial narrative was discovered in the surface articulations augmented by the topology produced by the movement-body experience route. The dynamic spatial narrative that supports urban flow has been transformed into urban furniture image design samples by examining it in a fragmental relation in the context of cinematographic spatial fiction. The approach developed in the study has an experimental reading interval and the connections established within the scope of movement-body experience carry a new perspective. The interrogative process, which deals with the movement-body experience in the context of its relation with the city, aims to explore the spatial possibilities of the movement experience instead of developing a formulation over the experimental phases. This study produced an experimental reading style to increase the spatial sensitivity developed by the body's unique ratio and proportion (Results in chapter 4).

Surface articulation, explored through the movement-body experience, defines its own space, and gives reference to performative urban furniture through routes that differ according to needs. This urban furniture articulates flow in the city. In the architectural design proposal, the body-movement-surface relation is transferred to the space, and this information is used to produce the space. By making information understandable, performative urban furniture images become visible as architectural design. Cinematographic spatial fiction offers a geometry-based reading interval developed from the ratio-proportion of the body

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to the production intervals presented to the architectural design in the context of time-space through the produced urban furniture image. The codes of the architectural design strategy were produced in the experimental phases of this study. With the introduction of a generative system proposal, the expectation achieves its purpose. The concept of space derived from the interval of movement of the body will enable the production of intervals corresponding to the spatial uses needed in the city where the body is in movement. The unique reading intervals offered by cinematographic spatial fiction to architectural design are analyzed through the urban furniture image developed at the end of the experimental phases. Aiming to incorporate the practices of thinking and reading in the context of geometry-based architectural design, new relation possibilities should be further researched in the cinema-architecture inter-section in future studies. Urban furniture designs are proposed that respond to the new experiences revealed by digital technology in the urban flow and the actions needed in public spaces in the future. Ecological, sustainable, and interactive designs are sensitive to the environment, can produce energy, can structure the urban fiction with their body-interactive performative surfaces, and can offer solutions to transforming and changing needs. However, the acceptance of movement-body, with its unique proportions, as a defining parameter in the reading of space in the current age is similar to the concepts of change, transformation, and speed in digital technology. The interface designed in this study is expected to offer a solution proposal that can be developed from the body scale for the urban furniture needed in public spaces in the cities of the future. It is expected that the fieldwork and method used in this study, which aimed to investigate and make visible the movement-body experience in defining the space in the cities of the future, will offer a new reading interval and lead to the next studies.

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NOTES

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Resume

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