ANALYSIS OF MOVEMENT IN SEQUENTIAL SPACE
Perceiving the traditional Japanese tea and stroll garden

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Abstract
The research aims to investigate the spatiality of the sequential Japanese tea (roji) and stroll garden (kaiyūshiki), whose appearance reached its peak during the Feudal period in Japan (1573–1868), in relation to the perceiver's locomotion. The desire of that era to go beyond sensual beauty and to make a philosophical statement, led to the development of a garden where the moving participant perceives a series of successive fragmentary views. Such a concept of space, with the principle of successive observation, is a distinct feature of Japan, and can also be observed in urban design, architecture, painting and literature.

This research is about the necessity of incorporating movement in the design of gardens, as a prerequisite for fully perceiving space. It thereby shows how through analysing those two distinct types of sequential spaces, the Japanese tea and stroll gardens, one arrives at patterns of spatial configurations that encourage active participation on the subject's part. Emphasising the environment-person transaction, the research aims to study the structure and features of the Japanese tea and stroll gardens as sequential spaces, with reference to the affordance possibilities they provide for an individual, as developed by the late James J. Gibson. Although not confined solely to it, the analysis used at the core of this research, is based on Gibson's ecological approach and on Harry Heft's contribution to ecological psychology. The empirical part of the research uses a variety of gardens as examples, as well as the case studies of a model teagarden and the garden of Shisendō (situated in the city of Kyoto).

The research aims to acquire accounts of knowledge of techniques and spatial formations that do not ignore or minimise the central importance of the subject's movement, but on the contrary, fortify and take advantage of it. This body of knowledge can be an initial approach to designing sequential spaces in domains that lack the specific socio-cultural practices by showing some opportunities and potential affordances that every perceiver can pick up using his own background and cultural context.

Keywords: garden architecture, Japanese gardens, sequential spaces, spatial movement
Preface

During the time I spent in Iceland as part of my under-graduate studies, I became deeply engrossed and fascinated at the power landscape can have on human perceivers. Trying to articulate this, I based my Master’s degree on structures that can be employed for observing nature with geothermic activity through man’s locomotion; I further decided to continue my studies in getting closer to objective ways for comprehending the mechanisms that contribute to our experience of the environment. This interest of mine combined with my love for mountainous landscape directed me towards the notion of the Japanese landscape, and specifically the Japanese gardens. A possibility to pursue my post-graduate studies in combination with a Japanese Studies Programme at the department of Architecture at Oulu University in Finland seemed a good opportunity to combine the above, and was reinforced by my desire to live in a Northern environment. My doctoral studies have been conducted initially at the laboratory of History of Architecture, under the supervision of professor Dr. Kaisa Broner-Bauer while at the same time I was participating in the Japanese studies programme that was offered by both the department of Architecture and the department of History, and afterwards at the laboratory of Urban Studies under the supervision of Dr. Anja Allas. Fieldwork was conducted in Kyoto and the surrounding area in Japan, where I had the opportunity to travel twice for research during my studies.

The thesis begins with an introduction to the socio-cultural practices that are demonstrated within the context of the tea and the stroll garden: their history, main features and relation to a selected sphere of socio-cultural phenomena. The purpose of this beginning chapter is to provide a deeper understanding of how and why the sequential Japanese gardens are designed in a specific way. The second part looks at the research traditions that already exist, both in the area of Japanese gardens and in the area of analysis of sequential spaces. It continues with a description of the theoretical background of the analysis used in this research, the ecological theory of perception. Briefly going through the historical background of James J. Gibson’s theory, his antecedents and the main sources used, it continues with the main points to be used in this analysis. The third part of the book concentrates on the notion of affordances as identified in the traditional Japanese tea and stroll gardens. It consistently goes through affordances that relate to posture and locomotion, that afford visibility or visual...
obstruction and are related to possibilities for manipulation. At the same time it specifies which of them are based on socio-cultural traditions and in what way. Examples from a series of gardens from Kyoto and the vicinity are used. The forth part looks at two case studies, the first a model of a teagarden, and the other the garden of Shisendô, a hermitage garden. It carries forward the idea of perceiving as a mode of activity and demonstrates its temporally extended process; it looks at the two types of features that Harry Heft identified in the flow of perspective structure: vistas and transitions, and provides an analysis of the higher order structure of events. The concluding section takes an overview of the key ideas discussed and sets forward some questions and possibilities for further future analysis. All images in the thesis are researcher’s own unless otherwise stated.

The present work has benefited by the critical and supportive comments of many individuals. I am most grateful to my late supervisor Dr. Anja Allas, for introducing me to the work by James J. Gibson and her continuous support, and to my first supervisor professor Dr. Kaisa Broner-Bauer. Further, I have to thank the reviewers of my thesis Dr. Anne Stenros and docent Sonja Servomaa, who took on the considerable task of reviewing the manuscript; the latter additionally for her interest and support through the years, and the love for the Japanese culture she infused to me. Also I am indebted to both Dr. Seppo Aura who took the considerable task of adding his valuable comments and detailed critique within the field of environmental psychology, and to Dr. Kaj Nyman for his helpful observations and comments.

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During the long period of time that it took to complete the thesis I have been provided with unstinting support and encouragement from my parents Diamanto and Evangelos and, needless to say, my husband Timo and son Elias Angelos.

Oulu, 28th January 2005

Despina Sfakiotaki
Glossary of Japanese terms

**Chadōgu 茶道具**: Utensils developed for the use in tea ceremony.

**Chakai 茶会**: Tea gatherings.

**Chaniwa 茶庭**: The teagarden (otherwise rojiniwa 露地庭, or sukiyaniwa 数寄屋庭.)

**Chanoyu 茶湯**: Also known as sadou 茶道 or chadou. The ritual art of preparing and drinking green tea. Chanoyu has been an integral part of Japanese culture since the 15th century, an important wellspring of native aesthetics, and a major inspiration for the development of new styles of ceramics, architecture, garden design, decorative arts and painting.

**Chashitsu 茶室**: Room where the tea ceremony is performed or sometimes a whole building where such a room is the centre.

**Chidorigake 千鳥掛**: Zigzag pattern ways of arranging stepping-stones.

**Chisen kaiyūshiki 池泉回遊式**: A type of pond garden in which one walks around the pond. The most common kind of large stroll style garden, this type of garden includes Heian period shinden style gardens, Edo period daimyō gardens, and many modern Japanese style gardens in Japan and the West.

**Chokūchi 直打**: A straight line as a type of stepping-stones configuration.

**Daikaiyūshiki 大回遊式**: A type of large-scale garden, which is enjoyed on foot.

**Daimyō teien 大名庭園**: The Edo period stroll style gardens that were built by feudal lords either in Edo or in their provincial castle towns.

**Engawa 縁側**: The area beside or surrounding the straw matted floor of a room or veranda in Japanese dwellings.

**Enro 苑路**: The garden walk.

**Enshaku 遠借**: Distant borrowing, one of the four classified types of shakkei.

**Fumiishi 踏石**: Stepping-stones.
**Fumiwakeishi** 踏分石: The stepping-stone used at an intersection of a path, usually a little larger and taller than other stones.

**Fushaku** 俯: Downward borrowing, one of four classified types of *shakkei*.

**Gankouchi** 雁行打: A type of stepping-stones configurations resembling geese in flight.

**Gorenumechi** 五連打: A "five stone set" type of arranging stepping-stones.

**Gyoushaku** 仰借: Upward borrowing, one of the four classified types of *shakkei*.

**Haiku** 俳句: One of the most important forms of traditional Japanese poetry. *Haiku* is a very short poetic form, usually consisting of three lines of 5, 7, and 5 syllables each, and usually containing a special word -the *kigo*- that indicates in which season the *haiku* is set.

**Hakkei** 八景: Literally means eight views and it refers to eight scenic spots from one geographic area specifically chosen to be treated in verse or pictures.

**Hei** 塀: A fence or wall, a spatial device.

**Heichi** 並列: Juxtaposition.

**Hiraniwa** 平庭: Flat garden.

**Hisashi** 廊: The area surrounding the *moya* 母屋 (core of a temple building). A narrow aisle-like area, usually only one bay wide.

**Hitaiho** (非対称): Asymmetry.

**Ichijūroji** 一重露地: "Single roji."

**Ikegaki** 生垣: A type of hedge made of trees, bamboo or other living plants planted in a row and trimmed so as to form a fence.

**Joudo teien** 済土庭園: The large pond gardens at Pureland Buddhist temples that recreate the palatial garden of Amida Buddha's Pureland Paradise.

**Jouge nidanshiki teien** 上下二段式庭園: A modern term designating gardens meant to be seen from a seated perspective.

**Kaiyūshiki** 回遊式: A type of garden designed to be entered and enjoyed on foot.

**Karesansui** 枯山水: A common type of garden, which suggests mountains and water using only stones, sand or gravel and occasionally, plants. Water is symbolized both by the arrangements of rock forms to create a dry waterfall and by patterns raked into sand to create a dry stream.

**Karikomo** 刈込: Large hedges.

**Kiriishijiki** 切石敷: A type of *nobedan* with "cut-stone paving."

**Konoha uchi** 木の葉打: A type of arranging stepping-stones resembling "fallen leaves."

**Koshi** 腰: Wooden grates.
Koshikake machiai 腰掛待合: A waiting place with a bench.

Kubomi-e 萬重絵 (also referred to as uki-e 浮絵): A woodblock print in which the three-dimensionality of a scene is emphasized by using one point perspective.

Ma 幕: The distance between objects in space, and the interval of time between different phenomena. Accordingly on the one hand, the empty space in which the different phenomena take place, lose their specific outlines and finally disappear and, on the other, the instant of passage, full of tension, randomness, ambiguity.

Meisho 名所: The imitation of a famous scenic spot.

Miegakure 見隠: Literally meaning “hidden from sight,” a traditional garden technique that emphasizes only partial exposure of typical garden elements.

Mikiri 見切: Trimming technique.

Mon 門: Gate, a spatial device.

Nakakuguri 中潜: A “middle gate” in the roji.

Nihon teien 日本庭園: Modern Japanese style gardens.

Nijūroji 二重露地: The divided or “double roji.”

Niren uchi 二連打: A type of stepping-stones configuration resembling a chain of pairs.

Nobedan 延段: A method of stone paving in the roji in which a large rectangular stone path is made by paving together numerous smaller stones.

Nori no ishi 乗の石: Stepping-stones that show the guests where to go.

Oku 奥: The interior or the heart of something, the furthermost, innermost or ultimate space in a sequence of spaces; what is located in the deepest zone of a thing, in a physical or spiritual sense.

Renga 連歌: The Japanese poetry form in which a three-line stanza of 5-7-5 on are linked to a two-line of 7-7 on, usually written by two or more persons.

Rinshaku 隣借: Adjacent borrowing, one of the four classified types of shakkei.

Sabi さび (also written 寂): An idea of beauty particularly important in the tea ceremony and haiku poetry; the beauty of materials or spaces which have been worn down over time to become withered and aged.

Sanren uchi 三連打: A type of stepping-stones configuration resembling a chain of threes.

Setchin 雪隠: Toilet.

Shakkei 借景: Literally borrowed scenery. The method of incorporating a distant vista into the composition of a garden. A river, the ocean, fields, forests, large trees, or even a building may all serve as shakkei, but the most frequently borrowed scene is a distant mountain.
Shichi go san 七五三: A way of arranging stepping-stones in the "seven, five, three" stone pattern.

Shinden zukuri teien 寝殿造庭園: The shinden style Heian period garden (794-1185) that was built in the central courtyard of aristocratic residences.

Shin gyou sou 真行草: Grades of formality in the method of preparing tea. The terms originate in the three styles of calligraphy (sho 書) with shin 真 being formal, gyou 行 being semi-formal and sou 草 being informal.

Shisan kuzushi 四三崩: A way of arranging stepping-stones in the "three and four stone set" pattern.

Shitabara setchin 下腹雪隠: The functional toilet.

Sho 書: The three styles of calligraphy with shin 真 being formal, gyou 行 being semi-formal and sou 草 being informal.

Shouji 障子: Partitions out of paper that can divide the interior of a building into separate rooms. They may slide, hang or remain stationary.

Shukkei 縮景: The imitation of a famous scenic spot in a garden through the creation of a miniature or "shrunken" version.

Sotoroji 外露地: "Outer roji".

Sotorojimon 外露地門: Entrance gate or rojimon 露地門.

Souan chashitsu 草庵茶室: The rustic tearoom.

Sudare 簾: Rolling bamboo blinds made from solid stems of bamboo.

Sugoroku 双六: A game similar to the backgammon board game, which became very popular after the Edo era.

Suki 数寄: Literally aesthetic liking. The love for elegant things, particularly poetry and the objects of the practice of tea. At a deeper level, a paradoxical ideal that seeks ultimately to transcend taste and aesthetics.

Sukiya 数寄屋: A tea ceremony room, distinguish from a genuine tea ceremony house, and points to buildings in the teahouse style, or buildings in sukiya style, or include both.

Sumichigai 隅違い: Buildings or streets, which are placed on a diagonal axis in contrast to a grid pattern.

Taki 滝: Waterfalls.

Tamaishijiki 玉石敷: A type of nobedan with "round-stone paving."

Tanzaku uchi 短冊打: A way of arranging stepping-stones resembling an "oblong stone set."

Tobiishi 飛石: Stepping-stones.

Tourou 灯籠: Stone lanterns.
Tsuki yaki築山: Artificial hills.
Tsukiyama築山: Literally constructed mountain. An artificial hill in a garden, the term is used to denote a hill garde.
Tsukubai蹲踞: Low washbasin set.
Uchiroji内露地: “Inner roji”.
Ukiyo-e浮世絵: Literally pictures of the floating world. Paintings and woodblock prints of genre themes developed from late 17th century to late 19th century (mid-Edo to early Meiji periods), supported by the people in the middle class of society mainly in the city of Edo.
Wabi侘び: A medieval aesthetic that finds beauty and philosophical depth in things humble and the poverty-stricken.
Wabisuki侘び数寄: A fusion of wabi with the word suki, or aesthetic liking.
Waka和歌: The ancient term for tanka that is still used for imperial court ceremonies that designating Japanese poetry as opposed to foreign poetry forms. Most Japanese use this term for contemporary work and reserve the word waka for poetry or the ancient poems in the 5/7/5/7/7 form.
Yakuishi役石: “Trump stones” used to highlight the prominent features of the garden scenery.
Yoritsuki寄付: The waiting shelter or machiai.
Yoseishijiki寄石敷: A type of nobedan with ”mixed-stone paving”.
Zakanshiki teien座観式庭園: Gardens meant to be seen from a seated perspective.
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1 Introduction

1.1 The teagarden

1.1.1 Zen and the tea ceremony

Zen is a unique complex of cultural forms that arose in the oriental countries at about the beginning of the 6th century and flourished from the end of the 7th century until the beginning of the 15th. Originating in China, it was also transplanted to Korea and Japan. In the latter country it was introduced around the 13th century with the frequent migration of monks from China to Japan vice versa, and flourished through the 15th, 16th and 17th centuries among monks and laymen equally. The influence of imported Zen through Japan’s own creative individuality, evolved gradually into a new Zen culture, in the domain of architecture (buildings and gardens), literature, painting, calligraphy, Nô performances and music, haiku poetry, the art of swordsmanship, tea ceremony (chanoyu 茶湯) and others. Hisamatsu underlines the unique and integrated cultural expression of Zen that occurred in the tea ceremony.\footnote{As originated by Murata Shukō (1422-1502) continued by Takeno Jōō (1512-1555) and others and completed by Sen no Rikyū (1522-1591), after whom several derivative “schools” developed. (Hisamatsu 1974, 25.)} In it, the Zen aesthetic standard is said to have been wabi\footnote{Wabi (侘び): A medieval aesthetic that finds beauty and philosophical depth in things humble and the poverty-stricken. The concept of beauty is found in waka, renga, and haiku poetry. It also forms the dominant tenet in the tea ceremony (chanoyu). The tenant is often referred to as wabicha (侘茶) or wabi-style tea. The original negative connotations of the word evolved with the more positive view of reclusion that began to develop with regard to the hermit's hut, specifically an appreciation for the imperfect and irregular aspects of nature. The synthesis of wabi and chanoyu was achieved by Sen no Rikyū when he developed the two-room soan chashitsu. Sen no Rikyū added a metaphysical element to wabicha emphasizing the tea hut as the locus for the Zen-like experience} the term connoting poverty that surpasses richness and it is not just an art and
not just a form of culture, but also an integrated way of life with Zen as its basis, including religion, philosophy, ethics, art, manners, clothing, food and architecture. (Hisamatsu 1974, 7-26.) The evolution of tea drinking into a ceremony, and the gradual imbuing of its movements and etiquette with a philosophic content, led eventually to the idea that in the tea ceremony the spirit was everything. (Furuta 1964a, 88.) The roji, built in accordance with the Buddhist idea, must be distinguished from the other types of traditional Japanese gardens in that it is a quiet sequential gardened passage through which one steps forward gradually to the tearoom.

### 1.1.2 History and elements of the teagarden

"The feeling one gets in the roji garden while walking through it never alters even upon entering the tea-house; instead the tea-house is the culmination of this feeling. Neither inside, in the tearoom, nor outside, among the stones, is the feeling ever broken. Building such a garden is extremely difficult, but such gardens actually do exist." (Hisamatsu 1973, 82-83.)

The roji (露地), literally "dewy ground" is commonly known as a "teagarden" [chaniwa (茶庭) or otherwise rojiniwa (露地庭), or sukiyaniwa (数寄屋庭)], referring to the special arrangement of stones, plants, and other objects through which guests pass on their way to the house "chashitsu". Originally roji was written 路次 or 路地 indicating a "path through which one passes" on the way to the chashitsu, and it was usually an empty space -neither planned nor conceived as a garden. According to the Chouandouki, a collection of anecdotes about the tea ceremony published in 1640, Ishiguro Doutei, a disciple of Murata Jukou (1422-1502), took the first step to filling the space between the gate and teahouse by placing stepping-stones (fumiishi 踏石) over the bare earth. In the Momoyama period (1573-1600) roji sometimes included stepping-stones set in gravel so that visitors could avoid stepping in mud rather than as objects of aesthetic appreciation. According to the Nampo roku, tea master Sen no Rikyū (利休) (1522-1591) first recognized the roji as possessing positive value, and it is from that time that the characters 露地 and 露次 were used. These characters were used supposedly in a sutra that describes the place where souls are reborn, and thus the roji symbolized the pure ground in which one is spiritually reborn as he passes from the mundane world to the solitude of the rustic tearoom (souan chashitsu).

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3 Chashitsu (茶室) is the room where the tea ceremony is performed or sometimes a whole building where such a room is the center. Styles can broadly be divided into the tearoom style and the rustic style tearoom. The most common size is 4 and a half tatami mats. The composite elements of the tearoom are a decorative alcove and separate entrances for the guest and for the host.

4 Reportedly, Sen no Rikyū stressed the purity of the roji, filling it with a cluster of small bamboo, a path, and a bamboo wicket or sarudo so that it "appears as if a hermit lives in a hut in an old
The teagarden will generally include the following: a low wash basin set (tsukubai 蹲踞), stone lanterns (tourou 灯篭), stepping-stones (tobiishi 飛石), special patterned stone paths (nobedan 延段), a "middle gate" (nakakuguri 中潜), a waiting place with a bench (koshikake machiai 腰掛待合), and a toilet (setchin 雪隠). Sometimes a "middle gate" divides the garden into a double garden, or, if another fence is added, even a triple one. In Sen no Rikyū's time the roji was generally conceived as a single space, even if it employed some kind of "middle gate" (chūmon 中門). This "single roji" (gradually developed into the divided or "double roji" (niyūroji 二重露地) consisting of the "outer roji" (sotoroji 外露地) and “inner roji” (uchiroji 内露地). Furuta Oribe (1544-1615) is generally credited with developing the more complex and scenic type of roji. In the typical roji of the Edo period, stepping-stones and, in some cases, paved paths, lead from the waiting shelter (yoritsuki 寄付) all the way to the entrance of the teahouse. Lanterns are placed throughout the roji (Sen no Rikyū used only one to provide light for tea gatherings held at night, although later roji often employed two or three), as well as a washbasin, a "middle gate" of some kind, and "trump stones" (yakuishi 役石) set at key positions. (Parent 2004.)

The history of the tearoom chashitsu (the special room, either independent or part of a larger building built for the performance of the tea ceremony) shows a steady progress throughout its history from being large and spacious to small and confined. (Furuta 1964a, 88.) One of the main "obligations" of its architecture is said to be the integration of the room with its gardens, so that one who sits in it can feel like a hermit secluded from the world –even though the surrounding environment may actually be in a bustling city. Nothing showy or gorgeous is permitted in the structure of the chashitsu, and any art should not be ostentatious. Differing from the shoin-style room, which is usually built so as to display technical skill and human power, the chashitsu must stand looking just like part of nature and it must be accordingly small and narrow in size, and simple and plain in style. (Sen et al 1959, 7.)

thicket.” The "simple and quiet” ideal of Sen no Rikyū's wabi tea was best expressed in a roji that included unpolished stepping-stones, a stone lantern and a low water basin set. Leaves should be scattered on the ground like "leaves in a forest so the earth is not shown.” Moreover, the roji should be watered just before the entrance of guests so as to preserve a fresh and clean appearance. (Parent 2004.)
1.1.3 Parts of the teagarden

The "outer garden" (sotoroji)

The passage within the "outer garden" is not straight but a little winding, with a row of mossy stepping-stones bordered by trees and bushes. The formal style of roji consists of two gardens (double garden, nijūroji): the "outer garden" (sotoroji) and the "inner garden" (uchiroji). The sotoroji is the closest to the entrance gate (sotorojimon 外露地門 or rojimon 露地門) and it typically includes the outer waiting shelter (yoritsuki or machiai), the functional toilet (setchin), and part of the garden walk (enro 苑路). The guests rest at the waiting shelter (a rustic structure with a bent roof, three walls and an open front, used also for relaxing during intervals between tea ceremonies) until they are called to the chashitsu to participate in the tea ceremony. The sotoroji is divided from the uchiroji, by the "middle gate" (chūmon).

The "middle gate" (chūmon)

"Then, along the path the guest reaches a middle gate. Yet, this gate is neither stout nor especially luxurious. Gates in ordinary life make no sense unless they serve to separate that which is within from that without, but this is scarcely more than a simple garden wicket. In the mundane sense of dividing inside from out, it is too plain, a gate in form
This simple wicket opens without effort, and one can easily spy through it whatever lies on the opposite side. Though what lies beyond it is merely an extension of the same teagarden, the gate serves as a boundary to make us conscious of a world that exists in a different dimension.” (Sen 1998, xxiii-xxiv.)

Hisamatsu explains that the gate reinforces the roji’s depth, and attributes to it “a restrained, reserved gracefulness” that is conveyed via the impression one gets on passing through it, which is that of entering a region of tasteful reserve, an utterly new world. As if dividing the worldly from the detached. (Hisamatsu 1974, 87.)

The ”inner garden” (uchiroji)

The uchiroji contains the low water basin set, where the visitor crouches down, washes his hands, and cleans his mouth. The stone basin consists of natural stone, the centre of which is hollowed to contain pure water; the water is usually carried down into the basin through a bamboo stalk. It is for purification’s sake that the visitor washes his hands and cleans his mouth here. The Nampôroku states in a passage:

”The first act of the host is to carry water into the teagarden, and the first act of the guest is to use that water. Herein lies the cardinal principle of the dewy ground and the grass hut. This is the basin where both the one who invites and the one who is invited into the dewy ground can wash away the impurities of the world.” (Sen 1991, 3-4).

There is further a lantern, and a waiting shelter. The planting and arrangement of the uchiroji is generally more simple and elegant than that of the sotoroji.

The entrance to the teahouse (nijiriguchi)

Upon arriving before the chashitsu, one will face the exceedingly small entrance called nijiriguchi (literally a crawl-in or wriggle-in entrance). Hosokawa (1563-1645) mentions in his Hosokawa Sansai Chasho that to enter the nijiri, one must first put in one's hands and then one's head. Then one must bend down, kneel on one knee, and slip in sideways. Furuta accordingly mentions “it can only be passed through in a stooping posture, doubling one’s body up and moving with great care.” (Furuta 1964b, 92.) The standard measure of the entrance is 65 cm height x 60 cm width, and the nijiriguchi is usually located in a corner of the tearoom opening onto a guest mat and one of the corner posts serves as an upright for the doorframe. Since one has to crouch in order to pass through it, the view of the tearoom that one has on entering comes as an opening up on the field of vision, almost as though one has passed through a gap into some wider exterior. If one entered standing, the first thing to strike one would probably be the room’s undeniable smallness. Sen no Rikyû aimed to express limitless space within the confines of a small room; he sought to give a psychological impression of spaciousness, and at the same time to bring home to the person entering the room the concept of the void transcending considerations of physical space. (Furuta 1964b, 95.)
Fig. 2. 4.5-mat tearoom, "Yuin" Rikyū-style, façade (Sen et al 1959, 49).

Fig. 3. 4.5-mat tearoom, "Yuin" Rikyū-style, floor plan (Sen et al 1959, 51).
The idea that the invited guest has to enter a teagarden through such an inconvenient gate is clearly not functional; yet it underlines the spiritual meaning that one must suppress one’s egoism and arouse in one a sense of humility by passing through the nijiriguchi. (Sen et al 1959, 6-9.) The chashitsu is a place for Buddhist religious practice. Sen no Rikyū declared in the Nampōroku that the "tea ceremony in the small room is primarily designed for training in Buddhism and the achievement of enlightenment" and the nijiriguchi as the entrance to such a place has a significance greater than that of the ordinary entrance. (Furuta 1964b, 95.) It is said that in passing through the nijiriguchi, the connection of the tearoom with the roji is severed, and at that point the outer and inner realms represented by the garden and the chashitsu meet: "The person who passes in and out of the nijiriguchi in the right frame of mind has, in a sense, achieved enlightenment through the tea ceremony," (Furuta 1964b, 95) and "no guest, whatever his rank, can enter the tearoom upright; he must cast aside all worldly fame and authority at the entrance and enter in a pure, humble frame of mind" (Furuta 1964b, 94).
1.1.4 Design principles

1.1.4.1 The roji as an enclosed garden

"One should not plant trees or shrubbery in front of a tearoom. No stones, no sand, no pebbles, the reason being that one should not distract people’s eyes from the tea ceremony. /.../ Even trees and shrubbery are superfluous.” Following this old theory, Oda Uraku (1547-1621), a warrior and tea master in 17th century, said: "In the days of old, people preferred to limit the view surrounding the garden. Using trees, they developed a subtle technique of hiding the view.” (Horiguchi 1963, 11.) The roji is an enclosed garden shut off from the landscape around it. In this way the roji creates its own context, and against the scale of the landscape, it sets its own scale. Sen no Rikyū was the first who showed that the greatest spaciousness was to be achieved in the smallest room and it was from the infinite implications of the small and restricted that he produced his wabi type of beauty (Furuta 1964c, 90-91) . The fact that there is nothing worth looking at is its characteristic trait. In that sense it is the opposite of a shakkei (借景) garden that refers to the method of incorporating a distant vista into the composition of a garden.5

1.1.4.2 Indirect approach

The approach towards the chashitsu opposes the straight-line arrangement. Instead, a diagonal-line approach, sumichigai (隅違い), known to have originated in the roji, is often used. Such an approach gives the impression of greater space than the one actually existing. Even if the distance between gate and entrance is quite short, it appears to be longer and therefore more interesting, and the building itself is not straightforwardly revealed. Non-straight arrangements are used often in many aspects of the tea ceremony, such as at the point where guests stop at a stone water basin for a ceremonial rinsing of their hands before entering the tea-house, or at the wooden dipper which is never laid straight across the basin but always on a slant; in the tearoom the utensils are placed in diagonal relationships to one another. The diagonal-line approach has influenced the sukiya style,6 which also excluded the head-on views and direct presentations. Apart from diagonal, the approach may also be L-shaped, where the path from the gate makes either

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5 Shakkei (借景): (literally borrowed scenery) the origin of the method is unclear, but the concept is probably Chinese, as the term is found in the Chinese garden manual Yuanye. The manual classifies four types of shakkei: distant borrowing (enshaku 遠借), adjacent borrowing (rinshaku 隣借), upward borrowing (gyoushaku 仰借) and downward borrowing (fushaku 俯借). A river, the ocean, fields, forests, large trees, or even a building may all serve as shakkei, but the most frequently borrowed scene is a distant mountain. Shakkei are a key part of many gardens of the 17th century. (Parent 2004.)

6 Sukiya (数寄屋): A tea ceremony room is distinguished from a genuine tea ceremony house, and points to buildings in the tea-house style, or buildings in sukiya style, or includes both, and calls them sukiya. (Parent 2004.)
a right- or a left-turn. Again, a longer approach can be obtained, and thus the impression of a larger area is given. Itoh says that "since it is almost impossible to see the entrance from the gate, there is once again the pleasure of suspense and curiosity, as well as that of changing scenery, as one progresses along the path" (Itoh 1989, 110). Finally the approach may also be curved, thought such an arrangement is usually employed when there is a comparatively large area between the gate and the main entrance.

1.1.4.3 Oku and Miegakure

The term oku (奥) refers to the interior or the heart of something, the furthermost, innermost or ultimate space in a sequence of spaces (Parent 2004); what is located in the deepest zone of a thing, in a physical or spiritual sense. This may indicate a reality that is difficult to comprehend, something of hidden significance or a secret of the depths of the soul. The sacred in Japan is hidden in a secret place that can be reached only by means of a path of infinite detours. This compositional principle is applied both to architectural and urban spaces. A succession of elements along the path toward the oku creates a sense of spatial depth [okujuki, as Maki explains as the relative distance or an impression of distance in a given space (Maki 1979a, 53.)] The succession is achieved with the use of the traditional garden technique called miegakure (見隠). Literally meaning "hidden from sight", miegakure emphasizes only partial exposure of typical garden elements such as stone lanterns, waterfalls, an arbor, rocks, etc. These are generally half hidden by trees or bushes. The planning is arranged so that even people as they proceed along garden paths, are occasionally out of view. The hiding of various elements is intended to induce an illusion of distance. The spatial composition is designed so that it is not possible for one to see all the parts at the same time. Miegakure relies heavily on the principle of overlapping perspective and involves making only a part of an object visible, rather than exposing the whole. The purpose is to make the viewer imagine the invisible part and thus create not only an allusion of depth but also the impression that there are hidden beauties beyond. Miegakure is, in short, a means of imparting a sense of vastness in a small space. (Higuchi 1983, 83-84.) The Japanese have used this technique with great skill to allow the mind the possibility of reconstructing a mental image of the entire edifice (Teruyuki 1994, 115). Higuchi mentions the work by Toshi Dezain Kankyūtai,

7 Maki suggests that "at the origin of the formulation of physical spaces in Japan rests the concept of a centripetal space structure, the oku. /…/ The expression oku has settled into our daily spatial experience: it specifies a notion of spatial position- a sense of place-unique to the Japanese. /…/ At the same time one will understand that oku implies something abstract and profound. It is an esoteric concept, and one must recognize that oku is used not only for describing spatial configurations, but also for expressing psychological depth, a kind of spiritual oku. /…/ The oku is the original point (mental touchstone) in the minds of the people who observe or create it, and hence becomes the invisible center; /…/ in many cases the oku has no climax in itself as the ultimate destination begins to be unfolded. One rather seeks drama and ritual in the process of approaching it. What matters is not absolute height or bulk but the representation of reaching the goal. /…/ It is the construction of a spatial expression with a time parameter." (Maki 1979a, 52-59.)
Nihon no toshi kōkan, according to which "miegakure is achieved by one of the three methods: utilizing a barrier, distributing the elements of the garden is a special way, or taking advantage of the particular form of certain elements" (Higuchi 1983, 201).

1.1.4.4 Ma

Another important concept used in the Japanese garden design is that of ma (間). Ma indicates both the distance between objects in space, and the interval of time between different phenomena, and accordingly, on the one hand, the empty space in which the different phenomena take place, lose their specific outlines and finally disappear and, on the other, the instant of passage, full of tension, randomness and ambiguity. Under the influence of the Zen cult, the Japanese endeavoured to infuse unlimited complexity into simplicity. This tendency emerged especially in such arts as architecture, drawing and poetry. For example, the void of empty spaces or of silent pauses is often not devoid of important meaning. Even in the etiquette and conversation of everyday life, silence can be a very positive expression at times. (Nakamura 1971, 565.) The importance of ma in the roji is pointed out in the arrangement of the stepping-stones; irregularly arranged, they determine with their intervals (ma) the rhythm of the steps of the guest, in keeping with the way of walking of the master of the tea ceremony (Teruyuki 1994, 115).

1.1.4.5 Asymmetry and boundaries

Irregularity in the roji co-operates with asymmetry (hitai sho 非対称). Both are characteristic of the traditional Japanese architecture and garden design that reflect the influence of Zen philosophy, according to which the perfection of beauty lies in its imperfection. Nature is not symmetrical; therefore symmetry is considered the opposite of nature: un-stimulating. In asymmetry though, each individual element has its own character, creating a dynamic equilibrium together with the other elements. Uniformity of the elements in their arrangement in the roji is opposed through the juxtaposition (heichi 並列) of heterogeneous elements. Rather than a global hierarchy, there is a multiplicity of local, fragmentary hierarchies. Further, boundaries in the traditional Japanese garden are ambiguous and spaces can be defined as transitional. Rather than a simple division between exterior and interior, a series of spatial devices – gate (mon)\(^8\), wall (hei)\(^9\), hedge (ikegaki)\(^10\), veranda (engawa)\(^11\) and awning (hisashi)\(^12\)– create a multiple border between

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\(^8\) *Mon* (門): A suffix that refers to a gate, of which there are many types (Parent 2004).

\(^9\) *Hei* (築): A fence or wall classified according to the materials used to make it: board fence, itabei, an earthen fence faced with tiles or one with rows of inserted tiles (kawarabei); stone fence (ishibei); clay or mud and plaster fence (dobei or tsuijibe); tile and clay fence, (neribe); and many kinds of fences made with bamboo or brush (Parent 2004).

\(^10\) *Ikegaki* (生垣): Literally living fence. A type of hedge made of trees, bamboo or other living plants planted in a row and trimmed so as to form a fence. Ikegaki (called ikekigaki or “living tree fence" in the Edo period) are different than *itagaki* (“board fences"), *ishigaki* (“stone fences"), *takegaki* (“bamboo fences") and other types of “dead fences” (shinigaki). (Parent 2004.)
them. Interior/exterior interchange is regulated by a sequence of subtle planes with various degrees of transparency and permeability: rolling bamboo blinds (sudare)\(^{13}\), wooden grates (koshi 腰) and, sliding paper doors (shoji)\(^{14}\).

Fig. 5. Examples of different approaches. (From left to right, top to bottom): Isui-en; rear approach to the tea-house, Isui-en; stepping-stones across a stream, Isui-en; passage through a gate, Jizo-in; stepping-stones and fence in a roji, Sento-Gosho; looking over a bamboo fence in the roji, Isui-en; approach to a tea structure.

\(^{11}\) *Engawa* (縁側): The area beside or surrounding the straw matted floor of a room or veranda in Japanese dwellings. *Engawa* nowadays usually refers to a veranda that is either partly inside the building with sliding doors protecting it from rain, or to a completely exposed veranda. (Parent 2004.)

\(^{12}\) *Hisashi* (廂): The area surrounding the *moya* or core of a temple building. A narrow aisle-like area, usually only one bay wide. It can extend entirely around the *moya* or on one, two or three sides. *Hisashi* may also refer to an unclosed veranda or corridor protected by either additional eaves underneath those of the main roof, or, by the extension of the eaves of the main roof over the open *hisashi*. (Parent 2004.)

\(^{13}\) *Sudare* (簾): Blinds made from solid stems of bamboo, the horsetail plant *tokusa*, ditch reed or bush clover. These very slender stems are bound or plaited together with cord. *Sudare* are used in tea ceremony houses designed in the *sukiya* style and the *shoin* style. (Parent 2004.)

\(^{14}\) *Shouji* (障子): A term prevalent in the medieval age (1185-1568) for partitions that can divide the interior of a building into separate rooms. They may slide, hang or remain stationary. (Parent 2004.)
1.1.5 Roji as a pathway

Stepping-stones (*tobiishi*) are the key material for the path of the teagarden; they are essential to the function of the garden and a key component of its aesthetic design. Depending on the style of the tea master or garden designer, they are said to be 60 percent practical and 40 percent scenic, or 40 percent practical and 60 percent scenic. The arrangement of the stones controls the pace as one proceeds through the garden and sets the mood, whether formal, semiformal or informal. Stepping-stones may also be called *nori no ishi* with the implication that they show the guests where to go. "Trump stones" (*yakuishi* 役石) are also used to highlight the prominent features of the garden scenery.

There are many ways of arranging stepping-stones, the most common being: the "straight line" (*chokūchi*), the "two stone set" (*niren uchi*), the "three stone set" (*sanren uchi*), the "five stone set" (*goren uchi*), the "seven, five, three" stone pattern (*shichi go san*), the "three and four stone set" (*shisankuzuchi*), the zigzag pattern (*chidorigake*), the "flying geese" or extended zigzag pattern (*gankou uchi*), the "fallen leaves" (*konoha uchi*), and the "oblong stone set." (*tanzaku uchi*). *Tobiishi* are generally 6 cm from the ground in the Rikyū style, 5 cm in the Oribe style, and only 3 cm in the Enshū style. The stone used at an intersection of path (*fumiwakeishi* 踏分石) is usually a little larger and taller than other stones. (Parent 2004.)

The arranging of the stones was often done according to the ranking system of *shin gyō sō* that can be described as formal, semiformal, and informal. This terminology derives from the one used in calligraphy, which separates the characters into formal block ones (*kai*), informal rounded ones (*gyō*) and cursive (*sō*). The rather small size of the stepping-stones demands direct attention to the ground rather than to the *roji* as a whole. Some larger stones invite a person to slow his walk and have an overall look around the garden.

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15 Tea master Sen no Rikyū said that stepping-stones were 60 percent functional and 40 percent aesthetic, while his follower Furuta Oribe (1544-1615) reversed the percentages. Certainly stepping-stones were the product of a new concept inherent in the teagarden, and they underwent a transformation from the purely functional to the aesthetic. The populace of the Edo period introduced them into the rather spacious gardens of *shoin*-style residences, assigning them both a functional and an aesthetic role, but in courtyard gardens they were treated as purely decorative objects.

16 *Shin gyō sō* (真行草): grades of formality in the method of preparing tea. The terms originate in the three styles of calligraphy (*sho* 書) with *shin* (真) being formal, *gyō* (行) being semi-formal and *sō* (草) being informal. Particularly in the formal style this distinction in ceremony is reflected in both the teahouse and the utensils of the ceremony (*chadōgu* 茶道具). (Parent 2004.)
Fig. 6. Types of stepping-stones configurations: 1. Straight line (chokuchi), 2. Broad curve (ō magari), 3. Chain of pairs linked with extras (niren uchi), 4. Chain of threes linked with extras (sanren uchi), 5. “Geese in flight” (ganko uchi), 6. “Seven-five-three” (shichi go san uchi), 7. Rafts (ikada uchi). (Tanaka 1998, 112.)

Fig. 7. Arrangement of stepping-stones. (From left to right): in "three and four stone set," combination of tobiishi with "label stone", tobiishi with "pedestal stone", and tobiishi with "shoe-removing" stone. (Conder 1964, 59.)

Nobedan is another method of stone paving in the roji in which a large rectangular stone path is made by paving together numerous smaller stones. It may use "cut-stone paving" (kiriishijiki), "mixed-stone paving" (yoseishijiki), "round-stone paving" (tamaishijiki), or a combination of these types. The characteristics of a successful nobedan are given in the Ikei sanbyakkajou: "Make long stepping-stones narrow, short stepping-stones wide. There are many styles. In some places they are 72-75 cm, and the narrower ones are 51-60 cm.” The joints between the different types of stones create interesting shadows, the beauty of which is a key feature of nobedan. The length of the nobedan should allow the tea gathering guests, usually five in number, to stand together when the host greets them. Thus, the nobedan is often near the "middle gate” (chūmon) although it may also be positioned elsewhere. (Parent 2004.) Paved walks are considered useful as a relief from the more tiresome walks laid with stepping-stones, or as a means better calculated to suit practical convenience.
Fig. 8. Pathways. (From left to right): Chion-in, stepping-stones; Daitoku-ji Kōto-in; nobedan.

For Hisamatsu, stones of similar appearance, symmetrical-square and rectangular ones should not be used in the roji; the arrangement is not to form a straight line or single direction anywhere; rather, zigzag lines prevail. Hisamatsu mentions that in a truly well-realised garden, the composition of stepping-stones is accomplished in accord with the "Seven Characteristics of Zen Aesthetics": Asymmetry, Simplicity, Austere Sublimity or Lofty Dryness; Naturalness, Subtle Profundity, Freedom of Attachment, and Tranquillity. According to the above, the presence of each tobiishi is necessary and indispensable to the whole composition: "due to the presence of each stone, the overall symmetry is broken, bringing the whole composition to life". (Hisamatsu 1974, 82-83.) Placing rocks and stones as if they were resting on the ground is avoided, for the natural grace and restraint is increased when the stones are placed so they appear to be emerging from deep beneath the surface. The greatest portion of each stone seems to be buried, with only a relatively small area visible above ground. (Hisamatsu 1974, 82-84.)
1.2 The stroll garden

1.2.1 Categorizing the Japanese stroll gardens

Most traditional Japanese gardens can be divided either into stroll gardens (kaiyūshiki 回遊式) or into gardens that are meant to be seen from a seated perspective (zakanshiki座観式庭園). Gardens of the stroll type are to be entered and enjoyed on foot. Varieties include the large stroll gardens (daikaiyūshiki 大回遊式) and pond stroll gardens (chisen kaiyūshiki池泉回遊式). The "seated appreciation" type of garden, as opposed to the stroll and the teagardens, aims to be "experienced" from a fixed seated position, usually from inside a building or from its veranda. Such is the "dry landscape" garden (karesansui枯山水) and the upper-lower, two-step style garden (jouge nidanshiki teien上下二段式庭園), which features a small pond in their lower section and a hill arranged with stones and plants in their upper section. (Parent 2004)

During the Edo period (1600-1868) stroll gardens were mainly built by feudal lords (daimyū大名) either in Edo or in their provincial castle towns and were called daimyū teien大名庭園. The relative peace and prosperity that characterized the Edo period combined with antagonism among the feudal lords and their desire to legitimize their power through cultural patronage, led to the creation of these large and generously appointed gardens. In the manner of aristocratic retreats such as Katsura and Shugaku-in almost all feudal lord gardens include large ponds around which are arranged artificial hills and a number of pavilions. A teahouse and a roji are usually included. Typically these gardens make extensive use of the technique known as shukkei that is, famous scenic spots from China and Japan reproduced in miniature form. The literary and historical references inherent in shukkei indicate the feudal lords cultural sophistication. The multiple scenes in most shukkei provide an ordering principle that helps move the viewer through the garden. Feudal lord gardens make use of a number of old gardening techniques in addition to elements such as rice paddies, fruit orchards and herb gardens as well as enormous rolling lawns. Because they were built adjacent to castles, the hydraulic and horticultural features of the garden often served practical functions. (Parent 2004.)

The pond stroll garden incorporates a pond, around which one walks. The gardens belonging to that type of garden are the Heian period (794-1185) shinden style gardens

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17 Karesansui (枯山水) (literally dry landscape) refers to a common type of garden that suggests mountains and water using only stones sand or gravel and, occasionally, plants. Water is symbolized both by the arrangements of rock forms to create a dry waterfall (karetaki枯滝) and by patterns raked into sand to create a dry stream (karenagare枯流). The term karesansui usually refers to dry gardens of the Muromachi, Momoyama and Edo periods, although the term kouki karesansui (後期枯山水) has been created to distinguish this later type. Like paintings, these gardens are meant to be viewed from a single, seated perspective. Given the multiple Chinese associations of "dry landscape" gardens, they are the preferred type of garden for Zen (禅) temples (Buddhism having arrived from China in the 7th century) and the best examples are found in the front or rear gardens of Zen abbots’ residences, (houjou 方丈). (Parent 2004.)
(shindenzukuri teien)\(^{18}\), the Edo period daimyō gardens, and many modern Japanese style gardens (Nihon teien 日本庭園) in Japan and the West. The central focus is the pond, although in most cases artificial hills (tsukiyama 築山), large hedges (karikomo 刈込), expansive lawns, pavilions, and miniature “famous scenes” are included to present a series of changing vistas.

1.2.2 Influences incorporated in the stroll garden

The Edo period has been an age of synthesis in all-cultural aspects, and compositional details of that era’s gardens had been developed for the gardens of previous eras. Yet, the distinct characteristic of the moving participant in garden design (specifically the one walking) was first evolved for the teagarden. Gardens designed as re-creations of paradise on earth (and other big landscape areas) also involved this characteristic. Paradise gardens (Joudo teien)\(^{19}\), however, were linked to the spiritual world where the stroller combined walking while intoning prayers before chapels; they were not merely for pleasure. (Itoh 1984, 87.) For Itoh, it was the Zen philosophy that freed the gardens of deep religious overtones, designating all worship halls and chapels as superfluous (since all the phenomena of nature represented forms of the Buddha). And even though Buddhist halls and Shinto shrines can be found in gardens for strolling of the later period, they exist only as features in the landscape and no longer as objects of religious faith or worship. Some characteristics of these gardens may be traced to earlier influences: artificial hillocks, ponds with islands and other land morphologies derive from ancient gardens; stone arrangements combined with raked gravel and minimum pruned shrubbery belong to the Zen garden tradition of the 15th century (dry landscape gardens), and others

\(^{18}\) Shinden-zukuri teien (寝殿造庭園) refers to the shinden style garden, that is, the Heian period garden that was built in the central courtyard of aristocratic residences (shinden). A pond and island garden fills the space within the U-shaped courtyard created by the architecture. Typical shinden style garden ponds are fed by an artificial stream from the northeast that contains several islands reached by a carved bridge on the north side and a flat bridge on the south side. To the west of the pond is a fishing pavilion while on the south side is a spring pavilion, both attached to the main structure by covered passageways. The pond, if large enough, would be navigated in dragon boats. The design of the areas of the pond was often meant to evoke famous aquatic scenery from China or Japan. The shinden style garden, originally a location for ceremonies, developed into a pleasure garden to be enjoyed on foot, by boat, or viewed from the pavilions. No such gardens survive from the Heian period, only written descriptions from the 11th century Sakuteiki 作庭記 (Treatise on Garden Making) and Heian literature. (Parent 2004.)

\(^{19}\) The term joudo teien (浄土庭園) refers to the large pond gardens at Pureland Buddhist temples that recreate the palatial garden of Amida Buddha's Pureland Paradise. Typically during the Heian period, these gardens were built on the west side and in front of the temple's Amida Hall. The main feature of the Pureland garden is the lotus pond that symbolizes the lotus pond of Amida's Western Paradise in which souls are reborn. Because Pureland temples were often built on the sites of aristocratic villas, they were often converted from secular gardens in the shinden style. (Parent 2004.)
(stone lanterns, stepping-stones and ritual water basins) to the tea ceremony gardens of the 16th century. (Nitschke 1972, 88.)

1.2.3 The layout of the stroll garden

According to Nitschke, the main components of the strolling gardens in the Edo period were the following: artificial hills *(tsukiyama)*\(^{20}\) reproducing mountain scenery on a smaller scale, often to be climbed and offering a commanding view of the garden; artificial ponds without rock-piled banks and large beaches of pebbles and sand, but with unusually large stones laid in the riverbed *(sawatari ishi)*, islands with a less dramatic appearance than in the past and with fewer rock compositions. Rock settings are decreased both in quantity and formal discipline, becoming almost casual in character. With their declining significance, the topiary art came to the fore, though that did not mean that all trees were trimmed. Small rice paddies appeared. Concerning the circuit, only about half of it followed the water’s edge, with the rest passing through small groves and across hills. There was an abundance of bridges, larger than their predecessors. Finally, *shoin*-style tea arbours were to be found at the edges of the ponds or steams, so as to provide a rectangular frame for the view. (Nitschke 1972, 195.) But because of the preference for large-scale naturalistic landscapes, architecture was transferred to the background, giving it less significance. Even the original buildings that are nowadays no longer standing must have played only a secondary role. (Nitschke 1972, 203.)

1.2.4 Design principles in the stroll garden

A series of garden design principles relating to the effect the garden designer wanted to transmit was employed in most types of traditional Japanese stroll gardens. Visual devices and auditory effects are extensively analysed by Slawson. These are mainly: 1. The principle of "narrow and widen," which is a zigzag movement into space that enhances the impression of depth by leading the eye up and into the distance along an extended path many times longer than the shortest route straight up into the picture plane. Undulating, swirling shorelines, allow a double use of diagonals (along the main axis of flow and along the undulations themselves), also resulting in a linear perspective; a drawing closed of the two zigzagging lines. 2. Recession in the elevation plane with the use of certain varieties of trees, such as pines, that have horizontal branching patterns and wider spreads at the bottom than at the top and carry the eye up the picture plane and point to the left and right beyond the side limits of the composition. 3. The principle of three depths which relies upon the visual effect of horizontal bands of layers moving up the picture plane; a particular scene can be given the impression of being far off in the distance. 4. Overlapping and *miegakure* ("hide and reveal"), the technique used in the

\(^{20}\) *Tsukiyama* (築山) (literally constructed mountain) refers to an artificial hill in a garden; the term is used to denote a hill garden as opposed to a flat garden, *hiraniwa* (平庭). *Tsukiyama* gardens became particularly popular in the early Edo period (Parent 2004).
case of a path, where at each turn a new vista is revealed and a new one is suggested by the point where the path fades out of sight beyond another bend. (Slawson 1987, 106-122.)

1.2.4.1 Shakkei

Shakkei (borrowed landscape) is one of the techniques of gardening that incorporates the landscape outside the garden as one of the elements to construct the whole prospect of the garden. Many traditional gardens in Japan were designed with the intention of taking advantage of a mountainous landscape, and especially in the Edo period many famous gardens were designed with that idea in mind. (Higuchi 1983, 21-22.) Higuchi mentions that in the earliest times, the borrowed landscape was four to ten kilometres away, a distance at which the atmospheric perspective caused by climatic effects exerts a delicate influence (Higuchi 1983, 22). An interesting change that happened with time involves the fascination with Mount Fuji (and to a lesser extend with Mount Tsukuba) in the Edo period. Edo, the capital, was situated on a large plain, far removed from the nearest mountains. Its’ inhabitants were willing to accept a very distant mountain as the principal view for a house or a garden, even though no visible texture or colours could be discerned, only a flat surface with an outline against the sky. (Higuchi 1983, 22.)

Itoh explains that apart from the garden and the borrowed scenery itself, what is also essential for the realization of the shakkei is the trimming technique (mikiri 見切) with which the garden designer limits the borrowed landscape to the features he wants to be shown. Mikiri can be summarized as three types: the one that makes use of low clay walls, the one that adopts pruned hedges, and the one that relies on hills and earthen embankments. (Itoh 1973, 31-32.) The linking of the borrowed scenery with the foreground of the garden is to be done by means of intermediary objects. The capturing device, occupying the space that seems to be midway between the foreground and the background of the garden, can be described as middle-ground scenery. Its function is to bring together the more distant scenery and the foreground of the garden into one integrated vista. Such devices can, for example, be the trees, the sky, a stone lantern, a pillar or post in a building or a window. (Itoh 1973, 29-32.)
Fig. 12. Examples of “borrowed scenery.” (From left to right, top to bottom): a. Upper Garden of the Shugaku-in Imperial Villa (17th century) at the foot of a mountain peak northeast of Kyoto: in the remote background can be seen the summits of Iwakura, Nagatani, Hataeda, Kurama and Kibune; b. Murin-an Villa (19th century), the borrowed scenery of the Higashiyama range viewed. Designer Jihei Ogawa used two small forests that stand in the background of the garden to capture the scenery; c. Ginkaku-ji (end of 15th century), d. Isui-en in Nara, the borrowed scenery includes the Great South Gate of the Todai-ji and the so-called Three Hills of Nara. The capturing device is the forest of the Himuro Shrine.

21 The construction of Shugaku-in Detached Imperial Palace was initiated in 1655 by retired Emperor Gomizunoo (1596-1680) upon a hillside to the northeast of Kyoto. Located at the foot of Mt. Hiei, the villa commands a spectacular view of the surrounding hills and the valley below, a landscape that not only serves as a backdrop to the gardens of this imperial estate, but essentially extends it visually. The estate measures over 70 acres, and would eventually consist of three levels, each with its own villa and garden. One’s first view of the garden is usually from the Rin'un-tei, or Cloud Touching Pavilion, from which one commands an elevated view of much of the lake as well as the mountains beyond.

22 Murin-an is a private residence near the great Zen temple of Nanzen-ji in eastern Kyoto, constructed in 1894. Considering the relatively small area of the Murin-an garden—the property measures only about 3,000 square meters—it is a remarkably complex design.

23 Yamagata, owner of the Kyoto Villa wrote about Murin-an: “In spring, the mountains are glowing in the dawn. In autumn, the red maple leaves tremble in the moonlight and in winter, Mount Hiei enhances the view with its snowy peak. But nothing can surpass the beauty of the garden in the rain.” (Horiguchi 1963, 176)
1.2.4.2 Shukkei

"Think over the famous places of scenic beauty throughout the land, and by making it your own that which appeals to you most, design your garden with the mood of harmony, modeling after the general air of such places" (Shimoyama 1976, 1).

Shukkei literally means shrunken scenery and it refers to the imitation of famous scenic spots (meisho 名所) in a garden through the creation of a miniature of ‘shrunken’ versions. Mountains, rivers, lakes, seascapes and even man-made structures from China and Japan were incorporated into garden design. Scenic spots frequently used as shukkei included legendary peaks such as Mt. Penglai and Mt. Kunlun as well as literary groupings of real places. The idea of producing miniature garden views originated in China and dates from the Nara period in Japanese gardens. The use of shukkei reached its peak in the large gardens of the feudal lords of the Edo period, where the cultural associations of the practice expressed the learning of the feudal lord patron and where the sequential ordering of the more complex shukkei groups provided a useful organizing principle. (Parent 2004.) The "eight views" (hakkei 八景) were quite popular in Japan and they were eight scenic spots from one geographic area specifically chosen to be treated in verse or pictures. Their concept, apart from the visual image that involved the selection of certain conditions—such as the season, time of day, and weather—that suit a given space represented an attempt to capture the nature of that combination. In time, the number of scenes was not limited to eight; there are examples of ten, twelve, and even groups extending to a hundred.

1.2.5 The sense of space during the Edo period.

Various artists of the Edo era, such as Hiroshige, and Hokusai, drew series of paintings that were called "famous places" and consisted of depictions of sites with no apparent distinction between what was urban or natural. The culture those painting were based on was called the "floating world" (ukiyo) which relied on the constant pursuit of life's transient pleasures; the term "famous places" referred to sites for escape, for illusion and entertainment. (Traganou 1997a, 18.) The technique of the spatial compression used is reminiscent of the Japanese board game sugoroku (which is similar to the backgammon board game), and which became very popular after the Edo era (see figure 13). In it we see "a diagrammatic, almost fragmented description of space" that contrasts with the holistic topographical description type, and in which "space is presented as an enumeration of famous spots" (Traganou 1997a, 22). Traganou explains that optical devices such as telescopes, microscopes, or peepshow boxes opened up a new field of vision, functioning in a different context from that of "western scientific gaze" that was rooted in close and objective observation (Traganou 1997, 22a). Edo’s "sunken pictures" (kubomi-e) forced the viewer downward into illusionist depths instead of expanding the horizon of the viewer, as is required by the western use of perspective. In Edo era, art was still under the influence of the "mind landscapes" of the ancient Japanese culture, and it did not aim to reproduce physical or man-made landscapes in a realistic manner, but...
instead it reproduced the energy of the idea of the place. (Traganou 1997a, 22.) In the words of Traganou:

"For Edo commoners, 'place' was a field of illusion, rather than a field of observation. Depiction of space followed the older literati system of the 'famous places' adding new meisho around Edo, Tokaido etc. It is important to note that a condition of meisho art presumes travel to significant places to view seasonally changing natural phenomena or historically important spots. /…/ Space in meisho is considered to be 'movement-oriented space', a space to be discovered through mobility and travel." (Traganou 1997a, 23.)

Fig. 13. Board game Sugoroku, depicting the "fifty-three-post-stations-of-the-Tokaido walking tour". Author leaves Nihonbashi at lower right point end and finally ends up at to Kyoto. (The "fifty-three-post-stations-of-the-Tokaido walking tour" 2004.
1.2.6 The moving process within a stroll garden

According to Inoue, the stroll garden is literally a "garden tour" and thus, it may be regarded as typical of outdoor movement spaces. Japanese stroll gardens are characterised by the same spatial quality as the *roji* as in the teahouse interior, the path in the *roji* is made to branch and bend so as to prevent an overall view of the garden, and thus to keep certain parts of it hidden, and it is cut off from the outside world by thickets and hedges. (Inoue 1985, 165.)

(See examples of stroll garden plan in figures 14 and 15.)

Fig. 14. Map of the Chion-in (the headquarters of the Pure Land Sect in Kyoto) route. The route that the visitor follows nowadays is predetermined by the authorities; for Japanese speakers a small map is provided; non-Japanese will follow the others and they have the possibility of getting acquainted with space with the aid of a more abstract map in the English-written leaflet. The route follows mainly a clockwise direction and in three cases the visitor has to turn back the same way he came (the narrow passage proves at that point to be problematic) and he often has the possibility of wandering off the prescribed path in the grounds around the garden. (Chion-in leaflet 1999.)

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24 The same spatial principle is manifested in the interior of teahouses. The already tiny space was subdivided by a central post (*nakabashira*) and its connecting wall (*sodekabe*) by the alcove and recessions in the side wall; with areas treated like separate rooms, it was divided into two smaller rooms. According to Inoue, these arrangements are best understood in the context of the tendency to bend and fragment interior space. (Inoue 1985, 165.)
Fig. 15. Plan of Jisho-ji (popularly known as Ginkaku-ji, the Silver Pavilion); underlined in black are the walking possibilities in the garden nowadays. Ginkaku-ji has a stroll garden surrounded by a path that gives access to the islands of a pond ("Brocade Mirror Pond"), and an upper dry garden located along the slope of the ridge to the south of the complex. Between the pavilion and the Tōgudō (Buddhist temple) one encounters an area of raked white gravel representing a silver sand open sea and a cone of gravel representing a moon observation platform. Because the tour of the lower and upper gardens of Jisho-ji is not as clearly circumambulatory, the views presented are somewhat random, although they proceed generally in a counter-clockwise sequence beginning with the pavilion. (Initial map: Bring & Wayemberg 1981, 48.)
1.2.7 Associating the Japanese stroll garden with other spatial phenomena

1.2.7.1 Pilgrimages

The movement of a perceiver within a Japanese stroll garden has some similarities with that of a pilgrimage. In using the term “pilgrimage” we are referring both to a process and a practice whereby people (pilgrims) make special journeys to or through sacred locations and engage in acts of worship; and additionally to an institution that includes and is composed of all the various component parts and elements that surround that process. Sacred locations here are places or settings that are accorded some religious significance by visitors and/or those who guard over such places, such as temples and shrines, as well as features of the geographical landscape, such as mountain peaks or whole ranges of mountains. (Reader & Swanson 1997, 228.) Pilgrimages are defined according to the aspect of process, and may contain the implication of distance and have as a characteristic the question of separation or departure from normal, everyday routines (Reader & Swanson 1997, 229-300). An extra notion implicit within a pilgrimage is that of quest or of seeking something through the process of travel. Such may be within pragmatic goals, such as the granting of favors from the gods visited, or it may be related to notions of seeking mental solace or spiritual advancement. (Reader & Swanson 1997, 231.)

Japanese pilgrimages had their boom from about 1650 onwards; and until today they are an indispensable part of the holiday life of Japanese people of all classes. Two regional pilgrimages, the Saigoku 33 places and the Shikoku 88 places, took on a national form. Simultaneously, local circuits were created: the Saigoku circuit (see figure 18) was endlessly copied in identical patterns within Japan. A characteristic worth mentioning is that sacred places in Japan that are arranged into pilgrimages are not ranked hierarchically, but consist of a fixed number of equally ranked “deities”; this resulted in the creation of homogenous sacred spaces (Speidel 1975a, 16). A pilgrimage can also take place within the boundaries of a city.25

"To pass famous spots, reading or remembering a verse composed for it was a favorite pastime, and a pilgrimage was nothing else but reading a sequence of verses at a sequence of places, of temples and shrines, and with the beauty of the verse, the sentiment of the scenery, the association to other famous places, the mercy of the Buddha is meditated. /.../ The environment being the instrument for making a verse, and the verse becoming an instrument for seeing and designing an environment. The town became a large garden.” (Speidel 1975c, 19.)

25 Within Edo 33 “famous spots” (temples and temple halls) were connected in various ways into sequences, most of which could be walked in one day. In this case, Speidel says that “the verses and their visual realization in a corresponding environment were the main aim of the pilgrimage, the verses were the main mediators and the main means to enjoy the pilgrimage.” (Speidel 1975c, 19.)
Fig. 16. Fushimi-inari-taisha-**torii**: bird eye’s view (The Architectural Map of Kyoto 1998, 176).

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**torii** are gateways at the entrance of Shinto shrines. They are typically made of wood (in which case they are painted in red), stone, or sometimes iron.
Fig. 17. Fushimiinari; "torii" passage.

Fig. 18. The Saigoku 33 Kannon pilgrimage (Speidel 1975b, 17).
1.2.7.2 The sequential garden in China, the Chinese yuanlin

Scholars of Chinese gardens call attention to the phenomenon of “totality being hidden from man”. For an understanding of what that means, one should consider a tourist or a climber who explores a mountain range. What he experiences is only segmented scenes of the mountain that appear in a successive order. In order to create the entire image of the mountain in his mind, he has to piece together accumulated impressions of the fragmentary views he has observed, by means of imagination. Based on the above, a Chinese garden master, named Zhang Nanwei, during the fall of the Ming dynasty, promoted a constructed naturalistic environment accessible to human scale, the Chinese garden (yuanlin) (Tsu 1988, 20.) Chang in the article The Buddhist Teaching of Totality, relates the phenomenon of totality being usually hidden from man, with man’s tendency to see one thing at a time, from one particular frame of reference. Chang calls this the obstruction of concealment and disclosure. He names what is stressed as the disclosed (hsien) or the host (chu), and that which is ignored, or minimized is called the hidden (yin), or the guest (pin). (Chang 1971, 126-128.)

The Chinese garden is a stroll garden, composed in the same style as the Japanese stroll garden. The visitor enjoys different scenes and views while moving from the central hall (huating) to other halls, the belvedere, and the pavilions. The expression bu-ji jiing-ji (“changing step, changing view”) indicates that qualitatively different scenes alternate as the visitor moves along. Sequential planning of space, pursuing a cumulative effect, is practiced both in palaces, temples and courtyard houses and in Chinese gardens, even though for entirely different purposes. Spaces are invariably unfolded one by one in sequences that lead to a climax-fulfilling, individual purpose. (Tsu 1988, 24.) Priority in the design of the Chinese garden is given in the arrangement of the principal buildings, and the relationship among them is of primary importance. Central halls and opposing buildings (duiting) have reciprocal relationships, providing borrowed scenery for one another in a series of interdependent views that are both “mutual” and “intersecting”. Each building, thus, becomes an element in landscape composition for others. (See figures 19 and 20). (Inaji 1998, 112.) The techniques used for separating elements and “winding,” also employ primarily the use of buildings, walls, fences and covered pathways. Thus, there is a contrast with the Japanese stroll gardens that employ primarily nature for the same purposes.

27 For readers unfamiliar with Chinese gardens, a simple description of their basic characteristics would be the following: The garden provides dynamic and contrasting views, and contrast is a fundamental element in sizes, openness, position, and colour achieving a psychological effect that dramatically intensifies the artistic presentation and inspires the viewer’s curiosity for further discovery (Tsu 1988, 136). The implementation of miniature replicas/ simulacrums of famous sites is used. Also, the aesthetic contemplation of the garden environment can be either general, or related to particular (visual, audible, tactile, or olfactory) aspects of the environment. Surprises, and wonders, are caused, apart from rare objects and scenes, by the use in the design of asymmetry, absence of straight lines, and unexpected changing of perspective by corridors and walkways along the way. Researchers such as Siren (1950) have identified the asymmetry and poly-perspectivism as common traits of Chinese art and landscape design.
Shen proposed in the 18th century a garden design strategy that combined illusion, reality, disclosure and surprise in the garden:

"Here is a way to show the real amidst the illusion: Arrange the garden so that when a guest feels he has seen everything he can, suddenly take a turn in the path and have a broad new vista open up before him, or open a door in a pavilion only to find it leads to an entirely new garden." (Shen 1983, 61.)

Separate scenes in the Chinese gardens are not equal in size; rather the main scenes, forming the core of the garden, cover a larger area and are supported by many smaller scenes providing the necessary opposition. Large expansive areas and small concentrated areas rhythmically alternate. Expressions such as "yuân zhòng yòu yuàn" (garden within a garden), "hu zhòng yòu hu" (lake within a lake), "lou-jìng" (divulged views – that is, to avoid abrupt changes by allowing a glimpse of the scenery concealed in one scenic section) indicate the techniques used. (Inaji 1998, 112-115.) Divulged views also arouse the beholder’s curiosity for continuing the garden tour into individual scenic sections. The originality and individuality of garden scenes contribute to the success of a celebrated garden. Every garden scene should have its own point of interest -picturesque as a painting and lyrical as a piece of poetry- but the garden as a whole is unified under a central theme. (Inaji 1998, 138.) Arrangement of the terminal scenes, the vistas, is important in sustaining the participant’s interest. The sight line is not oriented on the axis as it is in western tradition, but it is focused from planes viewing points or led on along the paths and walking galleries by vistas arranged at turning points. The major terminal features of Chinese gardens are generally positioned at spots where the participant is
likely to linger along the touring routes. (Inaji 1998, 142.) Inaji says "the essence of the yuanlin centres on interdependent mutual and intersecting views between buildings, so that each element of the garden’s composition is multifaceted, multi-layered, and kinetic” (Inaji 1998, 116). This contrasts with the Japanese garden, where the static, frontal composition viewed from inside the building, gradually developed into being viewed on two sides, and finally to sequential and multifaceted penetrable compositions. In certain Chinese gardens (or in certain parts of the garden) the point of observation was determined and the observer was guided by the design (pathways, corridor, bridge, tunnel, pavilion, or tower) to move to certain points of observation. In others he was free to choose the point of observation. (Pajin 1997, 3.) Chinese gardens also make use of the "borrowed scenery”, but its application differs from the Japanese shakkei, in that the latter uses distant views and thus liberates the garden from the confines of its site, whereas the yuanlin uses it with the aim of fusing the garden with the adjoining scenery (Inaji 1998, 118).

Fig. 20. Scenic sections and touring routes of the "Unsuccessful Politician’s” Garden (Tsu 1988, 195).
2 Theoretical Background

2.1 Earlier research traditions

2.1.1 Research traditions on the analysis of sequential spaces

Inoue explains the difference between geometrical architectural space and movement-oriented architectural space as follows: architectural space is ”geometrical space” when it is based on either an orthogonal or a polar co-ordinate system and its compositional elements are always subordinate to the axis or pole and ruled by its co-ordinates. In addition, an observer must also comprehend his own relationship to the axis or pole. For this purpose it is necessary to observe compositional elements of space simultaneously, and this is where prospect and vista are important. Palaces, gardens and interior spaces of Baroque architecture employed such effects. When a reference axis or pole does not exist, simultaneous observation is achieved in reconstructing the successive acts of observation by combining the sense of vision with memory, requiring a sense of intellectualisation. In ”movement space,” unlike geometrical spaces, the positions of compositional elements relative to some overall framework are unimportant; instead, as in topology, what is important are the positions of elements relative to each other. The spatial components are observed successively, and this succession is induced by bending the movement of the path or by obstructing the line of vision; the observation of movement in space is always postulated on the viewer’s movement, whether actual or intellectualised. The principle being successive observation, space is never revealed to its full extent at once but is shown instead a portion at a time. (Inoue 1985, 146.) Inoue further says that in Japanese literature exist compositions with fragmentary spaces connected like links in a chain or like beads in a string. Their structure is based on a number of incidents or episodes that are joined in a linear manner. Every episode has its own focus of interest, and is only remotely connected to those that come before or after it. He further highlights the increased interest of the Japanese in the beginning of the medieval period for the insubstantial, aiming to create a space full of movement and change. He parallels
spiritually the twisting movement of Japanese architecture with the Buddhist concepts of mutability (mujōkan), the transmigration of the soul (rinne tenshō), the law of cause and effect (inga ōhō -implying a flow based on temporal extension), sagai ruten (flowing movement of all living things) and shogyō mujō (“all things are impermanent.”) The suggestion of continual change and the uncertainty of what was and what will be are experienced in the winding corridors and rooms of a shoin-style house or the circling path of a stroll garden. (Inoue 1985, 170-171.)

In discussing man’s active involvement in the landscape Berleant highlights the fact that even though a landscape that is rich with interest and detail may be absorbing, it is still incomplete without our thoughts, associations, knowledge, and responses. An active interpretation of person and place requires our personal contribution; we have to activate the environment by engaging with its features and bringing them to a fusion with our memories and associations. (Berleant 1997, 170-171.) For Berleant, an environment results from a joining of person and place; and what we call a sacred environment is, devoid of a human presence, neither sacred nor even environment, since it lacks active physical and perceptual engagement. (Berleant 1997, 171.) He says:

”A characteristic that appears both in the experience of art and in sacred environments it is the sense that the occasion has a distinct and special significance that makes it unique-one is centred, perceiving things with enhanced acuteness and concentration (one’s thoughts, attention, body and senses are intimately engaged) (Berleant 1997, 171-172).

In the article Garden and Landscape Design, from Emotion to the Construction of Self, Conan underlines the following crucial points on the perceiver’s movement: First, that, "movement is not a series of immobilities, but rather a passage from one position to another that is reached by a mental synthesis, and thus cannot be located in space” (Conan 2003a, 6). Second, that the attention of designers to the experience of motion in their gardens is usually not recorded, therefore its purpose remains open to interpretation (Conan 2003a, 4). Relating to the first, Conan quotes the following remark made at Oxford in 1911 by Bergson (1859-1941): "We think of motion as if it were made of stillness, and when we look at it, we reconstruct it with the help of moments of stillness. Motion for us comprises one position and then a new one, and so on indefinitely.” Conan remarks that this is the paradox of both picturesque travel and of contemporary tourist travels, which are thought of as:

”A series of stopovers, moments of rest focused on the contemplation and aesthetic enjoyment of landscapes in perfect stillness, and the more there is motion in the landscape /…/ the more aesthetic enjoyment seems to demand that we stand still in front of the landscape” (Conan 2003, 2).

One of the most important discussions on motion and the experience of gardens (in modern scholarship) on Chinese gardens has been done by Professor Chen Congzhou, published under the title of Shuo yuan in 1983, and in English in 1984 (Chen Congzhou 1984). Professor Chen Congzhou introduces the terms: jīng (stasis, stillness, or quietness), dòng (motion or movement), jīngguān (viewing in repose or viewing in stillness), and dòngguān (viewing in motion) (Fung 2003, 243). According to him, dòng and jīng are to be understood correlatively, for where there is motion there must be
stillness; and where there is stillness there must be motion. In garden scenery, he says, stillness is lodged in motion and motion arises from stillness: "The multiplicity of their transformations and the subtle wonder of the scenery created emerge inexhaustibly layer after layer" (Fung 2003, 244).28

Both behavioural and cognitive psychologists have written major works on motion through contemporary landscapes (Conan 2003a, 7). The work by Appleyard, Kevin Lynch and Myer The View from the Road, (Appleyard et al 1960) together with The Image of the City (Lynch 1960) by Lynch are considered to be amongst the most important contributions to environmental design research (Conan 2003a, 7). Depending upon either behavioural observations or systematic surveys of environmental cognition their major topic stems from a theoretical rather than a methodological concern; and non-cognitive aspects of human experience are neglected. Conan writes about Lynch and Myer’s work that all of their ideas are based on the assumption that environmental behavior is a function of the environment and that motion in an environment is dependent upon identifying objects or events, seeking a goal, thinking, deciding. Consequently, they assume that motion depends on a mental image and they acknowledge only the kinds of motion that happen when a subject consciously attends to his movements. (Conan 2003a, 7.)

Hunt in the article Lordship of the Feet: Toward a Poetics of Movement in the Garden (Hunt 2003, 187-213) postulates three different kinds of movement in gardens and other designed landscapes: the procession (or ritual), the stroll and the ramble. The procession, he defines as a "a ritual movement that follows both a preordained path and purpose, which is, on account of its prescription, repeatable on innumerable occasions” (Hunt 2003, 188). He goes on to say that "this mode of movement implies a specific route with designated paths and even activities, with socially constructed and endorsed purposes and with some higher objective than the mere performance of the rite.” Opposed to the procession are the stroll and the ramble; both involve giving of oneself to movement. The difference among them is that the stroll implies some ultimate purpose within the site and a sense of destination, whereas rambling entails movement with no external prompt, promoted mainly by the will or curiosity of the individual. Strolling also implies a "definite route between whatever incidents punctuate and give rhythm to the movement”; a ramble is spontaneous and therefore more likely to be solitary (Hunt 2003, 189-191).

Seamon in his book A Geography of the Lifeworld: Movement, Rest, and Encounter (1979) provides a useful discussion of cognitive and behaviourist theories of movement

28 On the importance of the above, Chen Congzhou writes: "In gardens there is a distinction between viewing in repose (jingguan) and viewing in motion (dongguan). This must be the first and foremost consideration in the design of gardens. Viewing in repose means that visitors are offered many vantage points where one might linger; viewing in motion means that there should be fairly long touring routes. Considering these two [notions] together, in smaller gardens viewing in repose should be dominant; viewing in motion is subsidiary to them. Courtyard gardens are chiefly devoted to viewing in repose. In larger gardens, viewing in motion is predominant; viewing in repose is subsidiary in them.” (Fung 2003, 243.) Here Fung says that a casual reader would be revealed a. the key distinction between the two correlative notions as the foremost consideration in garden designing, and b. the number of different design elements (vantage points and touring routes) and with the relative sizes of sites (larger gardens and smaller ones).
as well as an introduction to the basic concepts of phenomenology applied to
evironmental studies. It concludes with "Movement and Rest" and "Place Ballet as a
Whole", two studies that built upon previous works such as Merleau-Ponty,
Phenomenology of Perception (1962). Here Seamon says that most movements are
accomplished in a habitual way and that cognition plays only a partial role in everyday
spatial behaviour. He explains that most of our body movements involve the body’s pre-
reflexive knowledge: "This bodily knowledge is not a structure separate from the
cognitive structure of spatial behaviour but works in frequent reciprocity with it.”
(Seamon 1979, 38-45.)

2.1.2 Research traditions on the analysis of Japanese sequential
gardens

The oldest and most revered Japanese text on garden design, probably compiled by
Toshitsuna (1028-94), is Sakuteiki, literally Treatise on Garden Making (Shimoyama,
1976) Toshitsuna's treatise is the product of a long oral tradition passed down among
generations of gardeners. It is largely concerned with shinden style gardens and includes
instructions on their proper layout and function. The work details techniques for the
arrangement of waterfalls, waterways, stones, paths and other garden elements. In addition, it indicates the general Heian (794-1185) attitude to garden theory focusing on
the idea that the garden should not only recreate the appearance of nature but also surpass
it in its controlled "ambience" (fuzei). A supplementary volume was added in 1289, and
the subsequent two-volume work called Zensai Hishou (Secret text on gardens) was
secretly transmitted through the Muromachi period. In the Edo period it acquired the title
Sakuteiki and was excerpted in a number of other works on garden design. (Parent 2004.)
A modern translation of Sakuteiki is done by Jiro and Keane (Jiro & Keane 2001).

One of the first significant works on Japanese gardens written in English, was that of
the English architect Conder, entitled Landscape Gardening in Japan and the Supplement
to Landscape Gardening in Japan (1893). Conder was the first to write 25 years after Japan
opened its doors to the West in the Meiji Restoration of 1868, with an emphasis on the
possibility that Japanese gardens contain elements that could be used in the West. He
focused on giving a historical sketch of the development of Japanese gardens, and called
attention to each element used in the gardens separately. Presenting examples, he looked
at a series of garden types. This book’s influence is valued because it brought Japanese
art forms to the West and Western forms to Japan, without a synthesis of the two forms.
In considering the participant in the garden, he emphasized the importance of one
actually participating in them: "They [the gardens in question] should form refreshing
retreats for hours of leisure and idleness, -or, as oddly expressed by a native writer, places
to stroll in when aroused from sleep, -rather than resorts for the pleasures of society”
(Conder 1964, 9).

In July 1892, Hearn [1850-1904] contributed to the Atlantic Monthly several chapters
treating the ethical side of Japanese gardening (Hearn 1892.) Okakura (1862-1913) wrote
The Book of Tea (Okakura 1963) in 1906 in English, with the intention of transmitting
the spirit and the atmosphere of the tea ceremony to readers in the West. Composed at a
time when the Japanese sought to westernise every aspect of Japanese life, it has served as one of the most perceptive introductions to Asian life and thought in English. Following Conder’s book, Newsom’s *Japanese Garden Construction* in 1939 aimed as a guide for designing a “scene with something of the feeling of far mountains and distant lakes, in a comparatively limited area” (Newsom 1939). Slawson in his work *Secret Teachings in the Art of Japanese Gardens: Design principles and aesthetic values*, mentions that both Conder and Newsom failed to raise the discussion of gardens to the same levels as painting or poetry, and that they were both partly responsible for the misconception, popular even nowadays in the West, that Japanese gardens are made in small-scale areas (Slawson 1987, 15). “The only restrictions on size come from the particular site, the budget, and the limitations of the human senses,” Slawson affirmed in 1987 (Slawson 1987, 16).

Since World War II, many books have been published in English on Japanese gardens. Their main approach has been to classify the gardens according to historical periods or generic types, that is, the pond-and-island garden, the dry landscape garden, the teagarden, the stroll garden. These publications include: *Designing of the Japanese Garden* (1938), by Tamura, and by Nitschke *Japanese Gardens: Right Angle and Natural Form* (1972). Slawson comments that by “quantifying” the gardens and separating them from their human purpose, they preserve the idea that the art that lies behind them is a “purely Japanese” phenomenon. Being of the view that the principles of Japanese garden design can indeed be shared with the West, he tried to approach their organization, not by cataloguing selected Japanese gardens, their types, or the historical periods that they have shared, but based on the aesthetic principles governing their art, that is, scenic effects, sensory effects, and cultural values.” (Slawson 1987, 16.)

In *Mountain, Temple, and the Design of Movement: Thirteenth-Century Japanese Zen Buddhist Landscapes*, Johnson describes paths and movements and gives a sense of the difference between our own and a Zen Buddhist experience of motion in a designed landscape (Johnson 2003). He uses as examples two temple garden landscapes, Zuisen-ji and Saiho-ji, that were designed by a Buddhist monk, Muso Kokushi (1275–1357) as places for training monks. Both aimed to imitate his own exploration of mountains during his quest for enlightenment, and they are comprised of a lower level with a monastery, a lake, and its landscape, separated by steep paths from higher levels in the mountain. The ascending paths were designed to create a succession of different experiences: first, a sense of rising above the monastery heightened by the difficulty of the climb; second, an experience of awareness of the mountain nature to be reached through meditation in stillness. The ascent aimed thus to stimulate an experience of contemplative motion. (Conan 2003a, 16.)

Nakamura, connecting Japanese linguistics with spatial organisation, highlights the Japanese language’s adaptation to the expression of intuition and of individual emotion. The expression of feeling and will, he says, comes into the foreground and what man understands in his direct and practical action is extremely well preserved in language. This mode consists in putting together words and phrases that exhibit no connection of cognitive meaning, simply according to identity or similarity of pronunciation, achieving the expression of one complete concrete emotion. (Nakamura 1971, 551.)

Like Inoue, Ching-Yu Chang, in *Japanese Spatial Conception*, emphasises the traditional and distinct Japanese dual and flexible space that he characterises as ”temporary space”. He partly contributes the perishability of the aesthetic and the love of
seasonal expressions to the temporary nature of the Japanese conception of space. Flexibility of space extends to urban planning and housing; in a further, cultural context, it can be traced to Japanese religious beliefs, with plurality of worship playing a crucial role. He uses the term “additive process” to describe the sequence of parts through which one progresses from one place to another, as “from the part to the whole.” Chang further identifies the progressive purification process within sequential space as strictly Japanese. (Chang 1984, 62-64.) Thompson, in A Comparison between Japanese Exterior Space and Western Common Space (Thompson 1988a, 122) says that sequential spaces can be understood as a collection of memories of the experience including not only the beauty of physical space, but also the story concerning the elements along the path (Thompson 1988a, 122). Thompson also proposes that there might be similarities between the Japanese sequential experience of spaces and that revealed in the architecture of medieval Europe; he suggests an exemplary analysis of the medieval cathedral of Spain based on Itoh’s description of space; this way he proposes that we might come closer to medieval man’s experience of a series of spaces through which he progressed in order to gain knowledge through a “distribution of memories” (Thompson 1988a, 122). Bognar, in The Japanese Order of Things, explains that the Japanese have developed a multi-focal approach requiring the perceiver to be situated in space and time during a sequence of events, entering into and interpreting from within:

"An environment understood as a texture of heterogeneous elements without clearly defined order or logically constructed syntax, could not evolve an omniscient viewpoint. A singular, fixed perspective was a missing aspect of Japanese understanding, until this Western mode of representation was introduced to Japan.” (Bognar 1988, 155.)

Stressing the non-hierarchical character of many forms of the built environment that are characterised by a similar layout to the stroll garden Bognar gives examples of the Japanese city and house; all reveal what he calls an “irregular network of small focal points in the manner of hide-and-seek” with no major or dominant central object. A connection to the approach towards shrines can be made, where the intricate and often long paths produce an experience that is "anti-climactic." (Bognar 1988, 152-153.)

Japanese composer Takemitsu connects orchestration in music with that of the garden: "we can think of the orchestra as a garden, especially as a garden for strolling, the popular Japanese landscape garden that has a variety of aspects, all in harmony without a single detail overly assertive.” Aiming to create such an aesthetic in his music, he goes on to say: "In such a garden things sparkle in the sunlight, become sober when it is cloudy, change colour in rain, and change form in the wind.” He wishes to create his "own multiply focused musical garden that still reflects a greater world.” To achieve this he pays importance to the spatial arrangement of instruments. His music, he says, will follow at times the design of an imaginary garden that he has sketched, where time could be said to be the duration of his walk through these gardens. (Takemitsu 1995, 114- 119.) (See figure 21.)
Recent research at the Kyoto University by Hara, Nakamura, Okazaki and Suzuki, aims with the aid of digital means to illustrate the influence that stepping-stones have on pedestrian movement and what they call “fixation behaviour”. The results from the experiments they have conducted show that subjects, after being informed on the “actual” way one walks in the roji according to the ritual, move within it in a differentiated way (Nakamura et al 2002a, 2002b).

Experiments based on computer analysis and endoscopy are also conducted in Tokyo University by Professor Ohno (Ohno et al 1993, 1994, 1997). The object of one of his experiments was to reveal the hidden order or rhythm of spatial arrangements in a Japanese garden. The methodology involved measuring multi-sensory information from the environment with the help of a computer; and was based on the hypothesis that behavior changes at certain places in a Japanese garden, and that the sensory information at those points are responsible for these changes.
2.2 Theoretical background on the analysis used

"Although it may be the case that the vantage point from which I view something may differ from yours, the information I discriminate at this moment, may differ from what you are able to discriminate, and the information having been made available to each of us historically may differ, the fact remains –if the viewpoint offered by ecological psychology is roughly correct –that the perceptual information in question is publicly accessible. This means that there is a possibility for us eventually to experience the same world, even if we live variously within it." (Heft 2001, 397-398.)

In order to give some answers to the question of perception and spatial configurations in the sequential Japanese gardens the researcher employs an analysis that is based on Gibson’s ecological approach to perception. The term "ecological psychology" has been adopted by a number of experimental psychologists (such as James Gibson, Egon Brunswik, Roger Barker, Urie Bronfenbrenner) and Gibson’s programme is one out of several ecological positions that, even though they share a broad viewpoint, hold otherwise different perspectives. What they all have in common is, according to Heft, a general call for sensitivity to environmental conditions that are variously defined (Heft 2001, xxxii.)

Heft provides a summary of the main features of the ecological approach as follows: its main point is the dynamic, ongoing, environment-person relationship, reinforcing thus the importance of relational and temporally dependent phenomena that are of a psychological nature, and the fact that psychological processes can be characterised as situated processes that can never be fully isolable from their contexts. Secondly, natural processes are believed to be structured in a nested hierarchy of relations, which means that apart from reciprocal influences within the psychological level of analysis, the relationships of a between level are also operative. As a result of that, ecological psychology focuses on the influences from circumjacent, extra-individual structures that create opportunities for individuals even as they constrain action. Finally, ecological psychology assumes that human activities are distinctive for their efforts towards meaning. Environmental features that are either inanimate or animate have meaningful properties for action that can be perceived. Structures that are psychologically meaningful and perceptible are rich in tools, are created and embedded in artefacts, displayed in all manners of symbolical representation, and are generated by collective social processes. (Heft 2001, 394.)

2.2.1 The historical background

William James’ (1842-1910) radical empiricism provides the conceptual groundwork for ecological psychology since, by providing an analysis of everyday life, it seeks to offer a descriptively rich account of psychological phenomena from a thoroughly naturalistic vantage point (Heft 2001, 25). Yet, Gibson’s exposure to radical empiricism was indirect, through his mentor Edwin B. Holt (1873-1946), who devoted his studies to the psychological implications of James’s theory. Holt’s work is said to provide the linkage
between James’s radical empiricism and Gibson’s ecological psychology (Heft 2001, xxxi.) Among other influences, Gestalt psychology stemming from the work of Kurt Lewin, Kurt Koffka and Fritz Heider played a major role in the development of Gibson’s ecological program (though James and Gibson’s are not wholly independent bodies of work) (Heft 2001, 209). In the late 1940’s, and contemporaneous with Gibson’s early work on the stimulus information for vision, Roger Barker (1903-1990) began research, and with his elucidation of behaviour settings in the 1960’s, he laid the critical role played by extra-individual ecological phenomena in everyday life (Heft 2001, xvi). Barker and his colleagues studied the structure of dynamics of the social settings within which individuals conduct their daily lives, finding that higher order ecological structures emerge from the dynamic interrelations established among individuals and environmental features; in turn these extra-individual structures are the basis for some of the order seen at the level of individual action (Heft 2001, xxxii).

The past decade has also seen an increasing number of psychologists embrace several ideas that are fundamental to an ecological approach, though Gibson’s theory remains on the periphery of psychology, mainly due to its distinction from standard formulations of psychological processes. Scholarly studies of Gibson’s work have been made by Lombardo (1985) and Reed (1988). Heft, among his other work, has attempted to illuminate a set of foundational ideas that can serve to draw together two of the major ecological programs in psychology, Gibson’s and Barker’s and also to examine the capacity of Gibson’s program to encompass socio-cultural phenomena. Finally, Eleanor J. Gibson’s efforts were, and continue to be directed primarily at developmental issues from an ecological perspective.

The main sources used in this research are Reed and Jones’ *Reasons for Realism: Selected Essays of James J. Gibson* (1982) and a collection of Gibson’s (1964 - 1979) unpublished *Purple Perils* (Pittenger 1997), which include Gibson’s notes for seminars. Heft’s *Ecological Psychology in Context* (Heft 2001) is used both as a reference to Gibson’s work and as a source of his own contribution, as he examines the historical and theoretical foundations of Gibson’s ecological psychology in 20th century, and broadens

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29 Heft says: "In spite of their various commonalities, Gestalt psychology and ecological psychology remain opposed. Ultimately, what separates these views is that ecological psychology grows out of radical empiricism, with its rejection of a physical realm-mental realm distinction, whereas the Gestalt psychology retains the traditional dualist formulation through its Kantian roots. Moreover, ecological psychology rests on a biological foundation rooted in evolutionary theory, whereas Gestalt psychology rests on a physical science foundation." (Heft 2001, 232.)

30 Barker’s eco-behavioral perspective has as a main idea the importance or recognizing a hierarchy of nested levels of analysis among naturally occurring phenomena (Heft 2001, 205-206). Behavior setting are perceivable dynamic environmental structures of collective interdependent actions and milieu that operate on the level of collectiveness of individuals (Heft 2001, 299) -unlike affordances which are specified relative to a particular individual- and demonstrate the critical role that social context plays in individual action (Heft 2001, 206). The main difference between Gibson’s and Barker’s ecological programs is on the level of analysis, with Gibson’s being at the perceiver-environment relation, and Barker’s at an ecological structure that operates at an extra-individual level (Heft 2001, 322) with the interconnections among the behaviour setting components playing a major role (Heft 2001, 310).
the scope of Gibson’s framework by proposing a synthesis between it and Barker’s ecological program.

2.2.2 Gibson’s ecological approach to perception

Gibson’s views on perception and knowing generally, slowly evolved over several decades, with a notable shift in his thinking occurring about mid-career following the publication of *The Perception of the Visual World* (1950), with which he began to formulate his ecological approach. In his first book Gibson drew a distinction between the visual field and the visual world referring to two different modes of experiencing in vision, illustrating thus that he had not yet broken away from the traditional perceptual theory and its perception-sensation distinction. (Heft 2001, 118.) His attitude towards this distinction changed though in his later work, and whereas it was central in his first book, it is absent in his later writings.31 In the succeeding *Ecological Approach to Visual Perception* (1979a) he presented an ecological perspective that had two essential claims: that the relationship between the animal and the environment is best characterised as a mutuality and a reciprocity, and that ecological phenomena are to be found at an intermediate range of scale and duration (Heft 2001, 108):

"Consistent with this shift, a number of Gibson’s most important discoveries that grew out of a phenomenological attitude came after the 1950’s, such as the optical flow32 and its counterpart egomotion, occluding edges, and affordances” (Heft 2001, 109).

The following discussion intends to highlight some of the theoretical commitments of the ecological approach to perception in order to illustrate briefly some of the main points that contribute to the implemented analysis of the sequential Japanese gardens.

2.2.2.1 Egomotion

Concerning the experience that it is I who is moving through the environment, Gibson pointed out that persistent features in the field of view are indications of one’s own bodily presence. That is, that I am the source of action and can literally be seen as the perceiver,

31 Gibson later noted that the visual field and the visual world do not reflect two different modes of perceiving, instead, what is perceived is the world (Heft 2001, 118).

32 “Optical flow is considered a phenomenologically rooted concept and refers to the visual streaming or outflow of environmental features that one experiences when moving forward, and inversely, the convergence or inflow of environmental features in the direction from which one is travelling. These patterns of visual streaming are generated by a perceiver moving in an environment. Optical flow illustrates the relational character of psychological phenomena because it is only present through the joint contribution of an active perceiver and environmental properties. These observations, leading to and including the description of the optical flow field gave rise to a detailed analysis of the visual control of locomotion and object manipulation.” (Heft 2001, 119-120)
a purposive agent (contrary to a Cartesian experience of the I, a disembodied entity that is self-aware as it thinks). Each of the parts of body (nose, head, fingers and hands, trunk, legs and feet) are quite distinctive occluding edges in the field of view, and motions of one’s body occlude features of the environment in distinctive ways. Accompanying these motions, parts of the environment come into view while others go out of view (Heft 2001, 120-121). What these phenomenological observations indicate is that the self is perceived simultaneously with the environment, or, that accompanying exteroception is always ego-or interoception. The optical information to specify the self, including the head, body, arms, and hands, accompanies the optical information to specify the environment. "The two sources of information co-exist." (Gibson 1979a, 116.)

2.2.2.2 Affordances

Gibson has united his various contributions to psychology into a single coherent framework, the much influential and controversial idea of affordance. Affordances are the perceptual functional significances of an object, event, or place for an individual. They point to an important but often overlooked quality of the world: that its features are meaningful for an active perceiver. They are those aspects of the environment that offer possibilities for behaviour to an animal, what organisms perceive and act upon. (Reed & Jones 1988, 300.) Gibson traced the origins of the concept of affordance to the writings of Lewin and Koffka (Heft 2001, 220) and in James’ radical empiricist philosophy and the related functionalist approach to psychology (Heft 2001, 126). Reed and Jones say that the concept of affordances is so integrative and fundamental because it transcends the centuries-old doctrine of animal-environment dualism, which makes the assumption that behaving animals, and their environment can be studied separately (Reed & Jones 1988, 300). According to Gibson, affordances are specific to the potential relations between an organism and its environment but do not depend on an organism’s psychological state for their existence. In that way, they go beyond the dichotomy of subjective and objective; they are neither subjective nor objective but rather both. (Reed & Jones 1988, 300-301.) Reed and Jones further explain that Gibson’s contribution is in showing that there is rich information around us that waits to be used if only we will look, listen and explore our surroundings. This ecological information supports meaningful activity because it specifies the affordances of things for our behaviour. Information does not cause perception, nor do affordances cause action, but both are necessary for the achievements of perceiving and acting:

"Without information specifying the environment and specifying ourselves, we could not apprehend our environment or our place within it. Without an environment of objects and events that afford acting upon, we could do nothing. If we attend, we will perceive; and if we continue to attend, we will learn to perceive more acutely. If we

33 "An occluding edge is a contour of a visible object where a second object or surface either becomes gradually hidden or becomes gradually revealed. The movement of an object creates this change in the field of view as it covers a second object or it goes behind a second object". (Heft 2001, 122.)
act, there will be information for how to achieve our goals; and if we continue to act and attend, we will learn how to accomplish our goals more effectively." (Reed & Jones 1988, 301-302.)

In Gibson’s own words:

"The affordances of the environment are what it offers the animal, what it provides or furnishes, either for good or ill. The verb to afford is found in the dictionary, but the noun affordance is not. I have made it up. I mean by it something that refers to both the environment and the animal in a way that no existing term does. It implies the complementarity of the animal and the environment." (Gibson 1979a, 127.)

The idea of affordances has generated considerable theoretical debate. One of the primary challenges that affordances present is that they are claimed to possess two distinctive and seemingly contradictory characteristics: first, that they are relational properties, and second, that they are properties of environmental features existing independently of a perceiver (Heft 2001, 123-124). The fact that they are specified relative to an individual perceiver means that a feature of the environment may present certain affordance possibilities for an individual, but not for another, owing to some structural and/ or functional attributes of that individual. Their independent character means that in principle it is possible to specify them in a place available to an individual relative to, for example, body-scaling, motor-skills, and so forth, or even available to a group of individuals who share particular functional characteristics. These affordances exist independently in that place regardless of whether or not any individual is presently experiencing them because they are properties of the environment.

A second challenge that affordances present is that as parts of the ongoing flow of immediate experience specified by perceptual information (directly perceived) they are not experienced as belonging to particular categories. Because an individual specifies them relative to some action, they do not have determinate boundaries. Most fundamentally, and in the simplest cases, they are delimitable relative to the body scaling of the individual. Multiple perceptual meanings stem from the multiple functions an object can serve. (Heft 2001, 130-131.)

2.2.2.3 The experience of the body in perception

Perceiving in the ecological approach is more accurately characterised as co-perceiving because through the pick-up of information the individual concurrently perceives the environment and the self. "Exteroception” and "interoception” are inseparable (Gibson 1979b) and a consideration of their inseparability offers considerable insight into the embodied nature of perceiving (Heft 2001,135). Gibson’s discussion of the role of the body in perceiving was developed in ways similar to Merleau-Ponty’s phenomenology of perception, sharing the claim that the self (the body) is a directly experienced facet of everyday activity (Heft 2001,135). Movement of the entire body through locomotion is specified through the generation of perspective structure. As one moves through the environment, there is a flow of optical structure generated by these movements. Simultaneously, invariant structures specifying features of the environmental layout are
revealed. Any motion in the visual field that results from the self-produced actions of the head or whole body differs from all other motions in the visual field in at least one important respect—they are controlled by the perceiver/agent and hence, are usually reversible. Moving one’s body to the left may result in the occlusion of an object behind a surface; the object can be revealed again by reversing the action. (Heft 2001, 135.) In addition to the presence of the body in visual experience, the body plays a fundamental role in how things are perceived by serving as a frame of reference for action. The notion of affordances and much of the research generated by it indicates that the body is at the centre of perceptual experience. (Heft 2001, 136.)

Gibson’s claim that the self is present in the perceptual field leads to the conclusion about the standard distinction between the objective and subjective domains that instead of being separate metaphysical domains, they are different poles of attention (Gibson 1979b). If the environment and the self are co-perceived, then whether individuals are experiencing a feature of the environment or the self at any particular moment depends on what they choose to notice. The information specifying both is simultaneously available to be perceived, and objective versus subjective experience is a matter of selection. Thus, the objective-subjective dichotomy, as traditionally construed breaks down. (Heft 2001, 137.) Gibson develops the synergic relation between behaviour and environment, with directed actions of the individual playing a central role, through his important concept of "perceptual system." He emphasised that the organism as a result of self-produced actions rather than being imposed on the organism obtains stimulation. (Heft 2001, 138-139.)

Gibson’s view of an active organism, whose systematic and controlled actions do not have to be initiated by stimulation, creates theoretical possibilities for an account of perceiving. A perceiver who engages in exploratory actions creates opportunities to detect invariant structure in the perceptual field that otherwise are not readily detected. (Heft 2001, 139.) In Gibson’s framework, the perceiver does not have an "experience" but he experiences the environment through exploratory activity, the process of picking up stimulus information; "perceiving is an experiencing of things" (Gibson 1979a, 178). Gibson’s ecological approach proposes that movements of the individual actually promote perceiving by facilitating the detection of the unchanging or invariant structures that serve as information specifying environmental features (Heft 2001, 176). Perceiving thus is not the passive reception of sensory input, but a function of a dynamic, exploratory system by which the individual becomes aware of environmental features; as such, it subsumes both information pick-up (detection) and acting, which are normally supportive processes. Seeing is normally a collaborative process of acting and of detecting structure, and for this reason, visual experience like tactile experience, is rooted in the activity of the body. The world therefore is revealed through perceiving-active processes. (Heft 2001, 176-177.)

2.2.3 Heft’s perspective structure of perceiving and dynamic attending

Environments present a diversity of features resulting in the uniqueness of any view of the layout of the environment from a particular vantage point and any path through the
environment. With the perceiver’s locomotion along a path of travel, he or she generates an optical flow of information in relation to the environmental layout which is what Gibson called perspective structure. As long as features along different paths differ, different paths of travel will generate distinct flows of perspective structure specific to each route. (Heft 2001, 183.) As mentioned earlier, perceiving is considered from the ecological perspective to be a process of picking up information that is detected over time in the context of change as one finds it available in the environment. (Heft 2001, 181.)

Heft articulates the nature of the perspective structure based on ideas offered by Gibson and has demonstrated that perceiving can be prospective. Within his conceptual framework, he distinguishes two types of features present in the flow of perspective structure: vistas and transitions. He defines the vista as the extended layout of surfaces that are visible in the present from a particular observation point. As the perceiver travels within a given vista, there will be local changes such as motion parallax as well as the occlusion and disocclusion of features. At certain places along the path of travel, changes occur in the flow of perspective structure of a greater degree than these within the vista events. At these points, a new vista gradually comes into view, and the one that has just been travelled goes out of view. These more momentous changes, Heft calls transitions in the perspective flow, and they are, as he says, especially distinctive and associated with high levels of interests among perceivers. (Heft 2001, 183.) He further says that events typically have a temporally extended hierarchical structure, where some event units are nested within a particular higher order unit of structure, and other event units are nested within a different higher order event unit, and so on. “The nesting of event units between levels gives rise to a discernible hierarchical structure that makes looking ahead, i.e., prospectivity in the context of this complex event, possible.” (Heft 2001, 185.)

Because path information is an event structured over time, it involves looking ahead or, what is called prospectivity. Based on Jones and Boltz’s work (Jones & Boltz 1989, 459-491), Heft says that the use of an event’s dynamic structure acts as the basis for a perspective awareness from the perceiver’s point of view, which he calls “dynamic attending” (Heft 2001, 184). This notion of dynamic attending is different from the standard uses of attention:

“In the present framework, attending is not conceptualised as an intra-orgasmic process distinct from perceiving. Perceiving is intrinsically a selective activity of information pickup, and dynamic attending highlights this selective quality. For this reason, to a considerable degree, the structure of the environmental information controls attending.” (Heft 2001, 184.)

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34 Previously seen features being concealed behind others present in the field of view, and new features being revealed from behind others.
3 Affordances in sequential Japanese gardens

From a spatial point of view, a key to understanding traditional Japanese sequential gardens is the idea of a multi-modal information field explored through movement. The properties of space, which are conducive to such potentialities, can be described as affordances. The term affordance, as seen earlier, describes those aspects of the environment that offer possibilities for behaviour to an animal; they are the properties of the environment that have perceived functional significance for an individual. (Heft 2001, 124.)

3.1 Surfaces related to posture and locomotion.

Gibson has offered a broad classification of affordance types, including a list for surfaces and surface-layouts that provide affordances related to posture and locomotion (Gibson 1979, 36-42). This includes: A stand-on-able surface of support (a place that affords rest); a walk-on-able surface (one that affords "footing," explaining that for terrestrial locomotion the substratum must be nearly level and rigid, with the exception of a water surface); a vertical rigid surface (an obstacle affording collision and barring locomotion); an inter-space or opening between obstacles (affording locomotion); a falling-off place (the brink of a cliff, affording injury by collision with the ground); a gap between the cliff-edges which (depending on its width) may afford jumping; a stepping-down or stepping-up place (affording descent or ascent); a sit-on-able surface (affording sitting); a stand-on-able object (affording a high reach -a climbable layout such as a tree, ladder, stairway); a get-underneath-able surface (affording shelter such as a roof) (Reed & Jones 1982, 403-406).

3.1.1 Surfaces that afford the possibility to walk on

For Gibson, surfaces that afford the possibility to walk on are horizontal, flat, extended, rigid surfaces that afford support, and permit the equilibrium and maintaining of the
posture. Central to his argument is that (ordinarily) there are paths between obstacles and barriers (the terrain features that prevent locomotion), and the openings are visible. His definition of the term obstacle is "a rigid object, detached or attached, a surface with occluding edges, affording collusion." (Gibson 1979a, 229.) Thus, progress of locomotion is related and guided by the perception of barriers and obstacles; that is, "by the act of steering into the openings and away from the surfaces that afford injury" (Gibson 1979a, 131-132). The presentation of the above is illustrated in model 1, figure 22.

However, through inquiry into the potential existing relations within the gardens in question, an additional spatial morphology appears that is differentially qualified. If, according to model 1, "a" and "b" are the obstacles that define the pathway "c" (see figure 22) then in this new model 2, "d" and "e" are areas that afford physically to be stepped on, yet in a cultural-social sense they are not meant to be. (See model 2, figure 23). Those surfaces can be described as transitory, ambiguous or "grey".

Surfaces that afford to be walked on will be examined in two scales. The small scale addresses the following: its components and their arrangements on the whole (their nature, horizontal and vertical dimensions) and the nature of the in-between area (the gaps between them). Further, the possible patterns that emerge. The large scale looks into the pathway as a surface in connection to its surroundings and the affordances that are being provided as a result of these relationships.

![Fig. 22. Model 1: "obstacle/path/obstacle" based on Gibson’s terminology.](image)

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35 Kurakawa has spoken of the sensation of "Rikyū grey", which "represents an aesthetic of ambivalent or multiple meaning". Kurakawa bases its’ existence on the influence of Buddhism on Japanese culture, epitomizing concepts such as "timeless non-sensuality" and "demarcations between disparate dimensions", where contradictory elements coexist. (Kurakawa 1979, 265.)
Fig. 23. Model 2: "obstacle/ grey area/pathway/grey area/obstacle."

Fig. 24. Three sets of pathway elements. Sets 1 and 2 are nobedan whereas set 3 illustrates stepping-stones pathways. In set 1, elements are uniformed (a), with a pattern (c) or consisting of geometrically cut stones arranged at straight angles (b). Set 2 contains combinations of geometrically and non-geometrically cut stones with the insertion of unique differentiated stones (e) or composing patterns (d). Yet, the composition is still that of a nobedan, meaning that the stones are within borders that form an orthogonal shape. Set 3 belongs to the category of a stepping-stones pathway composed with either geometrical stones (g), natural ones (j) that can be inserted with unique stones of differentiated dimensions (h).
3.1.1.1 Small scale level

Paths in Japanese sequential gardens can be organized into three categories, depending on the quality and arrangements of their components. The first, which very rarely appears is of a uniform surface, consisting of "no particles", such as being paved with minute gravel or not paved at all. It is the result of stroll gardens being touristically exploited, and this research will not look further into it since it is not a traditional composition.

The second deals with surfaces that consist of particles, whether uniform or not in quality, size and arrangement, which still appear as specific paths with specific borders. One can use the Japanese term nobedan to characterise it, since it is exactly that: a method of stone paving originating in the teagarden, in which a large rectangular stone path is made by paving together numerous smaller stones. Nobedan may use "cut-stone paving" (kiriishijiki36), "mixed-stone paving" (yoseishijiki37), "round-stone paving" (tamaishijiki38), or a combination of these types. Traditionally there are many styles, and most often the path’s width ranges from 51 to 75 cm. The joints between the different types of stones create interesting shadows, a key feature for the construction of nobedan. The patterns of these joints are called ararekoboshi or ararekuzushi. (Parent 2004.)

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36 *Kiriishijiki*: cut paving stones. The stones may be slabs cut freely in any desired shapes. The stone paving laid at Katsura Rikyū in Kyoto is an example of formal stepping-stones and is considered especially creative. Sometimes small natural stones may also be mixed with the cut stones. (Parent 2004.)

37 *Yoseishijiki*: stone paving in which various sizes of cut and natural stones are arranged in unique patterns. Different sizes of regular and irregular stones are combined at right-angle joints or in a free-style pattern by mixing rectangular stones, small pebbles (6-10 cm) and stepping-stones. The combination of oblong natural stones and variously sized pebbles with cut-stone paving is considered a formal style, while the free-style stone paving is semi-formal. (Parent 2004.)

38 *Tamaishijiki*: a type of paving using naturally rounded stones, *tamaishi*, about 15-30 cm in diameter (Parent 2004).
Fig. 25. Isui-en; nobedan consisting of round-shaped stepping-stones. This surface provides locomotion of a stable slow rhythm, because of the round form of the stones. One has to look both downwards and forwards.
Fig. 26. Stepping-stones pathway. Sento-Gosho.
Fig. 27. Urasenke School of Tea; detail from plan: two types of nobedan with cobbled stones and geometrically cut stones (initial plan: Itoh 1969, 91).

Fig. 28. Urasenke School of Tea; detail from plan: the complexity of the movement in a roji. Stepping-stones and nobedan (initial plan: Itoh 1969, 90).
Fig. 29. Koetsu-ji; walking on uneven stepping-stones the guest is forced by the instability of his footing to look down and focus on the path. A large stone breaks the rhythm of the stepping-stones and allows the guest time and a comfortable setting to stop and look around in the garden. Sketch a) illustrates walking possibilities underlined by the design, b) the obstacles that obstruct locomotion, and c) the direction of the route with the focus on the bigger stepping-stone.
Nobedan affords one to walk with a regular, comfortable, yet slow pace. When the stones are uniformly placed, the visitor walks forward with his head up [case a in figure 24.] This way his attention is not on the path itself but at the end of the path on what the designer has chosen to position there. When patterns appear on the pathway or individual elements are inserted, the visitor has to look more downwards and thus he is being distracted.

In the third case of the small-scale level category, the surface consists of individual elements (stepping-stones) that form a rather arbitrary or ambiguous path. This case appears most often in the roji, and is meant for individuals moving one after the other and not one next to the other. We can identify two subcategories, based on the extent that the non-uniformity appears. The more complicated and dividable into more elements the surface appears, the more this surface necessitates time for locomotion, increased physical movement towards multiple directions (turn of the head, body and rising of the feet at different levels), and increased attention from the participant, reaching to an intricate movement pattern that one could say that resembles a choreography.

The arrangement of the stones controls the pace as one proceeds through the garden and sets the mood, whether formal, semiformal or informal. Traditionally stepping-stones are also called nori no ishi with the implication that they show the guests where to go, guiding them through the garden or highlight key design features. "Trump stones" (yakuishi) is the name of the stones according to their position or function: Directly in front of the low entrance (nijiriguchi) to the teahouse were the "first stone" (ichiban ishi) or "stepping-stone" (fumiishi) the "second stone" (niban ishi) or "falling stone" (ochi ishi) and the "third stone" (sanban ishi). The "front stone" (mae ishi) was placed directly in front of the basin, and opposite the water bucket was the "candle-holding" or "lantern stone" (teshoku ishi). Other trump stones included a "sword-resting stone" (katanakake ishi) below the sword rack (katanakake), a "viewing stone" (monimi ishi), a "general guest's stone" (kijinseki) and "listening to a bell stone" (kanekiki ishi) near the waiting arbour, and a "path-dividing stone" (fumiwake ishi)³⁹ and "temple stone" (garan ishi). There were also stones near the middle garden gate called the "stepping-over stone" (norigoe ishi), "guest stone" (kyaku ishi), "host's stone" (teishu ishi), and "under-the-door stone" (tozuri ishi). (Parent 2004.) The above have been listed as an indication of the extent of the knowledge required (cultural, secondary-knowledge) in order for a visitor to perceive in totality all that the garden has to offer. The conclusion is, that concerning the small scale level, the surfaces provide affordances that let the guest experience the speciality of the garden up to some far-reaching extent; his body movements, orientation, posture and viewing possibilities are very strongly related to the way the elements of the path have been laid. Yet, in order to go to a further level, and experience the ritual, especially in the roji, secondary-knowledge is necessary.

³⁹ Fumiwake ishi (踏分石) is a stepping-stone placed at the intersection of garden paths. Because it is larger than ordinary stepping-stones, sometimes a temple stone (garan ishi) is used. In this case, the top surface of the garan ishi is the same height as the other stepping-stones. When garden paths extend in four directions, they should not intersect at a single stone but usually two fumiwake ishi intersections are made at two points. (Parent 2004.)
3.1.1.2 Large level scale

Based on Gibson’s list of affordances (Reed & Jones 1982, 403 – 406) this research has compiled a series of groups of surfaces that with their character and their relation to their environment provide specific affordances. These are the following:

A straight pathway, a zigzagged pathway

Straight access when used in the Japanese sequential gardens is employed in an "L" or a "zigzag" pattern. When extended in length, it is mainly limited to initial accesses to the main gate of the temple or shrine within the garden precincts. Nowadays changes have been made in multiple gardens to facilitate visits by big groups, and pathways are being transformed into straight accesses. The latter is employed to speed up the visitor. The defining borders (hedges/trees) are of a homogenous nature so that the visitor focuses straight ahead and not on the sideways. (See figures 30 to 34.) His expectation is meant to be intensified by the fact that the straight view mainly drives to a "zigzag" turn so that even though he is encouraged by the design to look straight ahead he does not get a glimpse of what he is to encounter later. According to Itoh, the L-shaped approach to a structure is used when the path from the gate makes either a right-or a left-turn. In that case, a longer approach can be obtained, and thus the impression of a larger area is given. Since the gate is very difficult to discern from the path, there is once again suspense and curiosity as one progresses along the path. Slawson relates the "narrow-and-widen" principle (a zigzag movement along diagonal axes back into depth or, from the standpoint of a two-dimensional surface, up the picture plane) to Gibson’s depth cue “relative upward location in the visual field,” given an added dimension, that of recession into space along diagonal axes (Slawson 1987, 109).

Higuchi also says that when two objects overlap, the one whose part is hidden is at the back, and therefore it is further away from the others. For this reason overlapping leads to a certain sense of perspective; in distant landscapes overlap perspective may play an important part in depth perception, particularly when, as in Japan, the typical landscape contains mountains that rise in numerous ridges. He explains that the Japanese principle of overlapping perspective (miegakure) involves making only a part of an object visible, rather than exposing the whole. The purpose is to make the viewer imagine the invisible part and thus create not only an allusion of depth but also the impression that there are hidden beauties beyond, imparting thus a sense of vastness in a small space. (Higuchi 1983, 83-84.) Miegakure is said to be achieved by one of the three methods: a. utilizing a barrier, b. distributing the elements of the garden is a special way, or c. taking advantage of the particular form of certain elements (Higuchi 1983, 201).

A very good example of an "L"-shaped approach is that of the access to the entrance to Kōto-in. (see figures 31 and 32). Three considerations play a role in the participant’s motivation here. First, when the guest progresses to a contoured passage after being initially on open ground, his attention is directed to the actual initiation of the procedure. Second, by framing the contour with an obstacle such as the bamboo pole set at an average body height level, there is no visual obstruction. But thirdly, the fact is that the eye is directed at a focal point that reveals nothing of what is expected, but a fence-surface continuation; that entails the anticipation of the visitor that the vista will grow.
Only after the guest makes in a self-aware manner a 90° body turn, can he come into another vista, which is the passage to the second gate of the temple. Following it the visitor feels as though he is within a tunnel. The rougher surface of the nobedan, consisting here of randomly-shaped stones yet strictly bordered by linear elements and dense trees, hint at an atmosphere suggestive of being deep in a forest. Another example of an L-shaped approach is given in the entrance to the lower garden of Taizo-in in which the slightly descending direction reinforces the impression of "moving into another reality" (see figure 33).

Fig. 30. Jishou-ji [also known as Ginkaku-ji]; on the left, the fifty-meter-long pathway between the main gate and inner gate is lined with a distinctive type of bamboo fencing that has come to be known as Ginkaku-ji fencing. Originally meant for protective purposes—separating the temple from the outside world—this long "L" shaped approach, prepares the guest for a surprise upon arriving to its end. The sketch on the right illustrates six stationary points for the participant ("po" is point of observation).
Fig. 31. Daitoku-ji Kōto-in; "L." shaped approach to the second gate. Sketch a) illustrates the surface that affords locomotion, sketch b) the surfaces that act as obstacles for locomotion and viewing, and sketch c) the locomotion-viewing direction at the turning point.
Fig. 32. Daitoku-ji Kōto-in. Sketch a) illustrates the surface that affords locomotion, sketch b) the surfaces that act as obstacles, and sketch c) the direction for locomotion and visibility at the turning point.
Fig. 33. Taizo-in; access to the lower garden. At sketch a) the surface that affords locomotion directly ends in a 90° turn to the right. Geometrically pruned hedges [sketch b)] and geometrical paving afford fast locomotion with straight viewing directed ahead, at the element the garden designer has chosen to place there for focus [sketch c)]. Elements of confusion and heightened expectancy can arise for the actual garden to appear to the right [sketch d)]. Slightly descending steps reinforce the impression of entering into a differentiated reality.
Fig. 34. Isui-en; the pathway afforded by the surfaces in sketch a) is straight, composed of resting and diverting (to the structure on the left) stepping-stones. Though direct and fast locomotion is provided, it is at the same time highly ambiguous because of the actual physical possibilities illustrated at sketch b). The obstacles [sketch c), wooden structure and vegetation], restrict vision and lighting, causing an effect that resembles the feeling of being in a tunnel, which activates the guest to move in a faster pace. Upon reaching the end of the straight pathway [sketch d)], a majestic view appears in front of him with the "borrowed scenery" vista that is depicted in figure 35.
Fig. 35. Isui-en; view of Great South gate, Todai-ji. A "borrowed landscape" (shakkei) composition.

Fig. 36. Chion-in; zigzag approach in small scale on the bridge; the poor condition of the old wooden bridge and the slight curve fix one's attention on the adjacent environment which is the lake. The slight movement to the left and right allows one to observe the impressive fishes in the lake. Sketch a) illustrates the water margins, sketch b) the surface that provides locomotion, and sketch c) the obstacles in viewing and locomotion after crossing the bridge.
A curved pathway

Unless the pathway falls to the category of a straight pathway as part of a larger turning point access, pathways in the roji and the stroll gardens are curved in a variety of ways. Alternating turns alter both velocity and the field of attention of the participant. The curved approach, according to Itoh, is one the three traditional lines of approach in a Japanese garden and is usually employed when there is a comparatively large area between the gate and the main entrance (Itoh 1989, 110).

Fig. 37. Isui-en; the visitor’s sense of depth is reinforced by the fact that the approach is not straight but winding. The curve affords alternating viewing points and locomotion.
Fig. 38. Jishou-ji; approach to Tōgudō (Buddhist temple): photograph and detailed plan illustrating the diagonal approach to the temple.

*Fig. 38. Jishou-ji; approach to Tōgudō (Buddhist temple): photograph and detailed plan illustrating the diagonal approach to the temple.*

*A pathway that affords diagonal approach to a structure*

The second of the three traditional lines of approach is the pure diagonal (see examples on figures 38 and 39), which gives an impression of greater space than the one that actually exists. Even if the distance between gate and entrance is quite short, it appears to be longer and therefore more interesting, and the building itself is not straightforwardly and prosaically revealed.
Fig. 39. Konchi-in in Nanzen-ji; approach to the Hōjō (main sanctuary) through raked gravel.
A forked pathway

Quite often the path comes to a point where it diverges into two, mainly of the same size paths, and one is offered the possibility to choose between the two. The dilemma the guest is encountered with is reinforced by the fact that most often the scenery does not reveal what is to come next, having chosen the one or the other option. Dense vegetation and lack of information by means of signs intensifies the feeling (see figure 40).

Fig. 40. Konchi-in in Nanzen-ji; example of forked "Y" shaped pathway.

3.1.2 An obstacle, affording collision and locomotion.

Gibson gives the following terminologies: An "obstacle" is a rigid object, detached or attached, a surface with occluding edges. An obstacle affords collision. An opening is an aperture, hole or gap in a surface, also with occluding edges. An opening affords passage. (Gibson 1979a, 229.) The preventers of locomotion consist of obstacles (an animal-sized object that affords collision and possible injury), "barriers" (a more general case, such as a cliff, a wall or a fence; some usually prevent looking-through as well as going-through, but not always both together), "water margins" (that prevent pedestrian locomotion), and "brinks" (falling-off places that afford injury such as the edges of cliffs). A path must afford footing; it must be relatively free of rigid foot-sized obstacles. (Gibson 1979a, 36-37.) Obstacles in the Japanese sequential gardens can either be physical and/or "cultural," in which case they are referred to as "kekka."
The word *kekkai* in Japanese means according to Itoh’s definition, simple markers that symbolize boundaries and special architectural devices that physically partition space. Such markers could be a fence, a rope, a shadow or a light beam or even a sound. Itoh argues that firm separation of places and people is assumed by Westerners to produce privacy, whereas in Japan “boundaries are traditionally less absolute and are understood to separate and join the spaces and people they stand between.” Itoh explains that crossing over such *kekkai*, as well as watching and conversing with people on the other side, though it seems to be obviously an easy matter is not done in Japan. ”Spaces can be made to appear and disappear almost immediately, or can be made larger or smaller as the situation dictates.” (Itoh 1982, 47.) Two examples of *kekkai* are illustrated on figure 42. Physical obstacles can be walls of structures, gates and fences; hedges, trees and other types of vegetation; and objects such as stones and water.

Interfaces or openings between obstacles or barriers, affording locomotion are illustrated in figures 41 and 43 to 48 (tall hedges in figure 41, gate, structure and low vegetation in figure 43, a light fence in figure 44, tall trees in figure 45, and water in figures 46 and 47). A surface that affords locomotion through water margins appears often in traditional sequential gardens. Figure 48 illustrates a case of a non-sequential garden, a dry garden, where the surface that provides locomotion through water margins (here gravel) is solely symbolical.

![Fig. 41. Shisendō: passage (photograph and detailed plan) within tight obstacles (dense hedges.) The opening affords locomotion only for one person at a time, and provides a tense feeling of spatial experience.](image-url)
Fig. 42. Two examples of kekkai. From left to right, top to bottom: Jizo-in; wrapped stone prohibiting access to the veranda, and Ryogen-in; bamboo pole dictating prohibition to the nobedan. Sketches a) and b) illustrate locomotion affords with the contribution of cultural information; sketches c) and d) illustrate locomotion prior to cultural locomotion.
Fig. 43. Examples of passages with very definite, exactly defined borders. From left to right, top to bottom: Isui-en, through a gate to a teahouse; Jishou-ji, opening through walls on wandering on the grounds of the garden; Daitoku-ji Kō-to-in, passage through dense low vegetation.
Fig. 44. Example of ambiguous opening. Jizō-in; approach through a low bamboo fence.
Fig. 45. Example of ambiguous opening. Isui-en; access through dense trees to a teahouse.
Fig. 46. Surfaces that afford locomotion through water margins. From top to bottom: Isuien; a stepping-stone for passing through the stream, Isuien; bridge out of slab stones.
Fig. 47. Surfaces that afford locomotion through water margins. Isui-en; stepping-stones placed in a zizag manner for crossing to the other shore. The stepping-stones are mementos of the garden’s original 17th century owner, for they once served as mortars in preparing the sizing for the fine quality ramie cloth in which he traded (Itoh 1973, 217).
Fig. 48. Daitoku-ji Daisen-in; stone bridge in a dry landscape garden where gravel symbolizes water.
3.1.3 Surfaces that afford sitting and shelter.

Fig. 49. A surface that affords sitting and a surface which one can get underneath to find shelter.

3.1.4 A surface that affords stepping up or down, and a climbable layout

Another category of surfaces with affordances related to posture and locomotion is those that afford stepping up or down. Gibson distinguishes a step from a brink, in that the first is relative to the size of the subject, affords pedestrian locomotion and can afford both descent and ascent (Gibson 1979a, 36-37). It should be noted that for Japanese people, the mountains have always been a vital aspect of a religious landscape. It is then obvious that the ascent of and descent from a mountain continues nowadays to be necessary to its experience. It is said that inclined, often nearly vertical movements of people, are still required in order to experience gardens in their entirety (Johnson 2003, 157). And in most societies it is common for people to crouch upon approaching a place considered holy, or in some other sense very special.

As mentioned in the introductory chapter the entrance of the guests in the teahouse (the nijiriguchi), is raised not more than 60 centimetres from the floor level, and one has to crouch on entering it (Isozaki 1986, 69). According to Isozaki this type of entrance demonstrates a spatial transition between the stepping-stones of the outdoor path and the tatami of the interior. Further, to crouch on all fours creates psychological tension (Isozaki 1986, 69-70). Apart from the nijiriguchi, sequential gardens often contain
surfaces that provide the affordance of stepping up or down (for example the points from which one is meant to view something with extended attention or to perform an activity), and furthermore, a climbable layout (see figures 52 to 54). Climbable layouts provide affordances that are not only crucial for posture and locomotion but also for viewing:

"It has been proved that a downward view is free and open whereas an upward view is limited and apt to be closed because the process of looking up at an object tends to limit the mobility of the human body and to cut off the line of vision at a point above the horizontal. With the most stable line of vision for the average person being about 10 to 15 degrees below the horizontal, it follows that the very process of looking up involves a certain amount of stress." (Higuchi 1983, 46.)

Speaking about depth, Higuchi explains that the presence of a concave terrain between the viewer and a mountain has a remarkable effect on depth perception, and that the space viewed from above appears larger than that viewed from below; thus the effect of the concavity is to make the view more majestic (Higuchi 1983, 72).

Fig. 50. Examples of stepping-stones that lead on a raised level veranda. From left to right: Daitoku-ji Köto-in, Isui-en.
Fig. 51. Heian Jingu shrine; stepping-stones for viewing the pond from stationary points.

Fig. 52. Sanzen-ji; ascent/descent on irregular steep stepping-stones.
Fig. 53. Example of two types of ascent/descent with stairs. From left to right: Chion-in and Konchi-in in Nanzen-ji.

Fig. 54. Jishou-ji; slightly descending/ascending passageway formed with comfortable nobedan-style steps.
3.2 Surfaces that reveal or conceal; transparent or opaque

Gibson’s keen attention to immediate experience is associated with his discovery of the *occluding edge*, which is a contour of a visible object where a second object or surface either becomes gradually hidden or becomes gradually revealed. The movement of an object creates this change in the field of view as it covers a second object or it goes behind a second object. Occluding edges also accompany movements of the perceiver in the production of motion parallax. (Gibson 1969.)

An interface or opening between obstacles or barriers affords viewing. An interface or opening between obstacles or barriers affords viewing. The extendedness of a surface or layout is seen through an aperture. This case might be called the window-phenomenon to distinguish it from the figure-ground phenomenon. The aperture must be sufficiently large; otherwise a “film-colour” appears in it. A case related to the “window” is that of the “door” beyond which extends a phenomenal environment. There is also the awareness of space “around the corner” of a passageway, and this is related to the acquisition of “cognitive maps.” Similarly, there is the perception of a “visual cliff”, or depth downward at an edge; but the unseen space in this case does not afford locomotion. (Gibson 1965.)

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40The oriental mode of representation suggests depth without making use of perspective, by putting objects in the far ground at the top of the composition, those in the mid-ground in the middle, and those in the foreground at the bottom. Looking out over things from an elevation puts the viewer in a commanding position. Also, in Japan the post-and-beam structural system allows post-to-post openings obstructed by wall materials, such as sliding panels. Those function as partitions in the inner areas of the building, and as windows in the periphery. Based on this structure distinction, the view of the outside in Japan is delineated at the top by the line of the eaves, at the bottom by the floor, and on either side by the shadowlike existence of posts. (Isozaki 1986, 72-73.)
Fig. 55. Daitoku-ji Kōto-in; gate with low opening. Sketch a) illustrates the opening that affords locomotion and viewing, sketch b) the concealing surface, and sketch c) the extension of the vista and the "T" type locomotion and visibility possibilities.
Fig. 56. Shoden-ji; opening that affords passage and visibility to the veranda and the dry garden.

Fig. 57. Example of surfaces that simultaneously reveal and conceal. Taizo-in; layers of vegetation conceal the impressive open view of the lake.
Fig. 58. Examples of surfaces that simultaneously reveal and conceal. From top to bottom: Koetsu-ji; fence from interwoven bamboo, Chion-in; bamboo forest.
Fig. 59. Zuiho-in; approach to the temple. Sketch a) illustrates the surface that occludes, and sketch b) the surface that affords stepping on and encourages the perceiver to keep on moving, bending sideways the hanging bamboo screens.

### 3.2.1 Borrowed scenery

An important combination of surfaces that reveal and obstruct is that of the "borrowed scenery" (shakkei as mentioned in the introductory chapter). Numerous traditional gardens have been and still are designed in Japan with the intention of taking advantage of a mountainous landscape (Higuchi 1983, 21-22). Higuchi explains that in the earliest times the borrowed landscape was between four to ten kilometres away, a distance at which the atmospheric perspective caused by climatic effects exerts a delicate influence (Higuchi 1983, 22). But in the Edo period, an interesting socio-cultural phenomenon occurred that was related to the obsession with Mount Fuji, and to a lesser extend with Mount Tsukuba. Edo was situated on a large plain, far removed from the nearest mountains. Therefore, its inhabitants were willing to accept a very distant mountain as the principal view for a house or a garden, with its view having no visible texture or colours, being only a flat surface with an outline against the sky. (Higuchi 1983, 22.)

Regarding the importance of the background, Gibson says that "there is literally no such thing as a perception of space without the perception of a continuous background surface" (Gibson 1950, 6) and Higuchi explains that "it is not the object we are looking at that gives us a visual sense of space but the object's background" (Higuchi 1983, 62).

The term san en refers to the three types of distances used for mountains in Chinese ink painting as defined by the famous landscapist of the Northern Sung, Kuo Hsi (after
They are based on his own observations of nature: 1. High distance (*kou-en*) looking up at a mountain from below. 2. Deep distance (*shin-en*) looking out from the front of a mountain and to see other mountains behind it; and 3. Flat or level distance (*hei-en*) looking out from a mountain to neighbouring low-lying hills. (Parent 2004) Slawson calls it the “principle of the three depths” (Slawson 1987, 111). According to Bring and Wayembergh:

“The usefulness of the three depths in landscape garden design is that the elements of the composition are not restricted in size by any fixed laws. Important features can be magnified to indicate their significance, while distant features that might otherwise be inconspicuous can also be enlarged.” (Bring & Wayembergh 1981, 185.)

Higuchi also accepts the traditional division of distance into foreground, middle ground, and background. These categories, he says, “are founded on the theory of space in painting and photography where they serve an important compositional purpose in the creation on three-dimensionality on flat surfaces.” (Higuchi 1983, 11-12.) He speaks of short-distance views, middle-distance views, and long-distance views, taking as a standard for the Japanese landscape trees and forests. On the relationship of trees and short-, middle, and long-distance views he says that in the short-distance view trees are recognizable as individual units from any point of observation. The leaves, trunks, and branches are detectable as belonging to particular trees, and people are able to relate the size of each tree to their own height. We are dealing with a short-distance when we are able to hear the wind blowing through woods or see the branches waving and the leaves fluttering. In a middle-distance view the outline of the treetops is visible but not the details of individual trees. At this range the trees are too distant to be sensed as units, although they form the texture of the visible surface. In the middle-distance range mist and haze begin to influence the general appearance of the view, causing subtle changes in lighting and perspective. In a long-distance view the contours of the treetops cannot be perceived; the eye can observe only the major topographical features. Because of the influence of atmospheric perspective, the texture is uniform, and colours are visible only as lighter or darker parts of an overall blur. (Higuchi 1983, 13-14.)

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41 Kuo Hsi's *san en*, together with the following, are called the *roku en* or six distances employed in landscape painting in China: 1) broad distance (*katsu en*), generally a wide stretch of water with a shore in the foreground and a spacious sweep to distant mountains; 2) hidden distances (*mei en*), thick mists and fogs that interrupt streams and plains, and cause them to disappear; and 3) obscure distance (*yuu en*), scenery that becomes obliterated in vagueness and mistiness. (Parent 2004.)
Fig. 60. Jishou-ji; dense vegetation concealing the pathway.
An association can be made at this point between the treatment of the three depths in landscape design and the tool used in narrative painting, particularly in *emaki,* \[42\] *kasumi.* *Kasumi* refers to the mist that usually spreads horizontally in bands and appears not only as a pictorial element but has definite functional purposes. By dividing the foreground, middle ground and background, *kasumi* creates depth and suggests changes of scene and the passage of time. Higuchi observes that the viewer’s sense of depth and distance is lost when there is an area of invisibility between the viewer and the object (Higuchi 1983, 80). The distinguishing characteristics of Japanese landscapes cannot be discussed without reference to atmospheric perspective since it makes the scenery seem deeper or more distant that it actually is: "The mountains are in a seeing-and-being-seen relation to each other, and /.../ when it rains, the visual depth of the space seems to increase, and psychological oppression diminishes" (Higuchi 1983, 82).

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\[42\] *Emaki* (絵巻) (also called *emakimono*) is a painting format of several genres where a long painting (*e*) or series of paintings illustrates a narrative; done on paper or silk and, wound (*maki*) into a scroll (*makimono*) around a roller (*jiku*) of ivory or wood. The scroll is traditionally unrolled one section at a time in the hands of a single viewer, usually while laid on a low table, and thus is called a hand scroll distinct from the hanging scroll format. Typically a text requires a set of several hand scrolls. The viewer, unrolling with the left hand while re-rolling with the right hand to expose about 30 cm at a time, looks at the paintings from right to left in a temporal and spatial progression. The painting style of this work stresses movement and action with a clear awareness and skilful manipulation of the possibilities of movement inherent in the format. (Parent 2004.)
Fig. 62. Sketch illustrating the use of *kasumi* on painting (Parent 2004).

Fig. 63. Murin-an; *shakkei* view, capturing the scenery of the Higashiyama range of hills with the aid of two small forests that stand in the background of the garden. The layout is so arranged that the borrowed scenery can be viewed as one strolls from a number of different angles through a notch between the two stands of trees. Here the crest of the range forms an almost horizontal line between the two small forests.
Substances with affordances are explored in this research in relation to their connection to locomotion, and are categorised as following: First, a substance that affords pouring, dripping, or dabbling (a liquid.) (See figures 65 and 66.) Then, a substance that affords smearing, painting or, trace making (a viscous substance) (see figures 67 and 70.) Third, a substance that affords being shaped by manipulation (a plastic or malleable substance) (see again figures 67 and 70.) And finally, a substance that resists change of shape and size (an object) (see figure 71.) In the teagarden the guest will possibly rinse his hands in the washbasin, and he might brush his elbow when he walks on the pathway to the close-by pine tree or some other type of vegetation. In the stroll garden he might not even be able to do the above; he will though contemplate on a possibly existing dry garden composition, and he will marvel at the artfully pruned bushes. Often he will also have the possibility to see the actual people who maintain the garden at work, such as pruning the bushes, cleaning the moss or raking the gravel (see figures 68 and 69.) Even though the guest is not himself parataking on those actions connected with the creation and maintenance of the specific gardens, by being in so close proximity to them and kinaesthetically experiencing them he initiates a procedure in his mind where he comes closer to the tactile experience.
Fig. 65. Example of substances that afford pouring (liquid): Isui-en.
Fig. 66. Example of substances that afford pouring (liquid): Heian Jingu shrine.
Fig. 67. Example of substances that afford tracing (here gravel) and substances that afford manipulation (here moss): Zuiho-in.
Fig. 68. Maintaining the garden. From left to right: Raking the gravel at Ryoan-ji; separating the overgrowth from the moss at Ryoan-ji.

Fig. 69. Woman cleaning the moss at Kinkaku-ji.
Fig. 70. Example of substances that afford tracing (here gravel) and substances that afford manipulation (here pruned hedges): Konchi-in.

Fig. 71. Example of a substance that does not afford manipulation (an object): Isui-en.
4 Case Studies

The purpose of this chapter is essentially to reverse direction, to shift the perspective from the partial experience of segments of the gardens to the juxtaposition of all that make up the total complex. The chapter has four parts. The first part is a brief introduction to each case study - its general characteristics and history. The second part is devoted to the analysis of the affordances within the case studies, based on the categorisation made in the previous chapter. The focus here is on segments of the garden that are vaguely illuminated in the sequence that is provided to the guest. It consistently goes through the affordances that relate to posture and locomotion, that afford viewing or obstruction and are related to the possibilities of the surfaces to be manipulated, and at the same time specifies which of them are based on socio-cultural traditions. The third part carries forward the idea of perceiving as a mode of activity; it thereby shows how, through the perceiver’s exploratory actions within the gardens in question, opportunities are created for detecting invariant structures in the perceptual field that otherwise are not readily detected; acknowledging thus that, in the words of Heft, “the body is at the centre of perceptual experience” (Heft 2001, 136). It further demonstrates that perceiving within those gardens is a temporally extended process; it looks at the retrospective and prospective structure of the detection of invariants and it specifies the importance of differentiating observation points in the setting of the gardens. It also carries forward the distinction between tangible and intangible features and identifies the extended use of both in the garden of Shisendō. Finally, the forth part sets forward the two types of features that Heft identified in the flow of perspective structure: vistas and transitions; it looks at their distribution within the specific gardens. Further, it makes a beginning analysis of the higher order structure of events, exemplifying thus how they are nested within other events.
4.1 Introduction to the case studies

4.1.1 A model of a teagarden

According to Brown tea in Japan was a living organism that evolved through time into different and often hostile "schools", each with its own practice, theory, and own set of "sacred" texts. The tea evolution matched the requirements of its patrons, and wabi tea reached its peak during the Momoyama period during which there is no single set of values or practices. Its’ main advocates are Sen no Rikyū (1570s to the 1580s), continued in following decades by his conservative disciples, and Furuta Oribe (1543–1615) between 1590 and 1615. (Brown 1997, 61.) The dominant form of the Momoyama period chanoyu was the wabi style whose main characteristic was the small, rustic teahouse. And:

"Although each sōan teahouse had a unique design and each tea gathering had a distinct character resulting from its combination of guests, the vessels and art objects used, and the season, weather, or time, nonetheless we can distinguish an overarching style and ethos of wabi tea. The physical and symbolic structure of wabi tea discussed here is an ideal. No matter the ulterior political and economic motives that may have stimulated tea men to host or attend tea gatherings, when they crossed the threshold of the sōan, they entered into a make-believe world; when they lifted a bowl of tea to their lips, they partook in a shared fiction." (Brown 1997, 62.)

Since no roji survives intact from the Momoyama period, the analysis of the ideal on the teagarden is based on reconstructions from the early 17th century roji and texts from primary texts on wabi tea such as Yamanoue Sōjiki, the 1589 diary of Rikyū’s contemporary Yamanoue Sōji (1544–1590), and Nanpōroku (Writings of Nanpō), the teachings of Rikyū as supposedly set down in 1593 by his disciple Nanpō Sōkei (dates unknown). (Brown 1997, 62.) The first case study is a model of a roji in Sen no Rikyū’s style (Sen et al 1959, 6) reproduced from the book Chashitsu: The original drawings and photographic illustrations of the typical Japanese tea architectures and gardens (Sen et al 1959). (See figure 72.)

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43 Literally "grass hut"; rustic tea arbour.
Fig. 72. Model plan of a roji (Sen et al, 1959, 19).
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4.1.2 The case study of the stroll garden

The second case study, the garden of Shisendō (詩仙堂), was selected based on its type – a hermitage garden [a sequentially experienced garden that combines a variety of elements from the traditional Japanese gardens (Nitschke 1972, 199)], its convenient scale (approximately 5,500 square meters) and location, and its accessibility to the researcher. A further reason for its choice was the existence of material about it in the English language, especially concerning the extended range of socio-cultural elements that can be attributed to it. The temple of Shisendō is located in the district of Ichijō-ji, in the area known as Kudarimatsu, at the foot of the northern mountain range of Higashiyama at the northeast suburbs of Kyoto44. The area is nowadays famous for a number of beautiful gardens and teahouses, constructed during the Edo period. (Rimer et al 1991, 96.) It was designed and built as a relatively isolated residence for samurai Ishikawa Jōzan (1583-1672) from 1636 until 1672, as a place for a poet to live in quiet retirement from the city. Today it functions as a Buddhist temple of the Sōto sect of Zen. The garden was neglected after Jozan’s death in 1672, up until 1825, when it was rebuilt with slight modifications. After World War II, the lower two garden terraces were added. The research looks at the complex of Shisendō as it is nowadays including the newer gardens. Both the older building and garden are of a small scale and their design was based on the idea of creating a mutual affinity between the designer’s poetry and the natural setting that was his home.45 The name “Shisendō”, or “Hall of Poetry Immortals,” refers to Jōzan’s selection of thirty-six famous masters of classical Chinese poetry (shi), as symbols of his hermitage, which he decorated with their portraits (Rimer et al 1991, 93.) Thus, it became the ”shisen”. “Dō” means hall (Rimer et al 1991, 96). Within the garden, Jōzen identified ten ”locales” and twelve ”scenes,” a device that many cultivated people in the Tokugawa period employed for the purpose of entertainment.

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44 Being located on a hill, one must climb upwards along a narrow road to reach the gate of Jōzan’s retreat. The small size of the gate surprises many visitors and the spot gives a sense of being altogether deserted.

45 The ideal of the Japanese poet was to live in serene solitude in the countryside, enjoying the beauties of nature. Jozan’s particular ideal was to create, in a variety of forms, a mutual rapport between the poetry and the natural setting that was his home. "Those were ideals shaped by many Japanese poets in his day (known as literati, or bunjin), who glorified nature in their poetry and at the same time apprehended the world of nature through the poetic medium; those gardens sought to express meaning through poetic symbols.” (Rimer et al 1991, 93.)
Fig. 73. Plan of Shisendō (Bring & Wayambergh 1981, 120-121).

Fig. 74. Shisendō section illustrating the height differences in the garden (Bring & Wayambergh 1981, 122-123).
4.2 Affordances in the case studies

4.2.1 Affordances in the roji model

The researcher goes through a series of affordances that appear in the case study as a perceiver detects them with his locomotion over the passage of time. Figure 75 follows an exemplary route.

Fig. 75. Plan of the roji model illustrating an exemplary route for the perceiver (from points 1 to 15). More detailed: In "outer garden" (sotoroji): 1. Outer gate (sotomon); 2. Waiting arbour (machiai); 3. Dustbin (chiriana); 4. Washbasin (tsukubai); 5. Toilet (setchin); 6. Lantern (chakai); 7. "Middle gate" (chūmon) and 8. Lantern (chakai). In "inner garden" (uchiroji): 9. Waiting shelter and gate to the waiting shelter (koshitake and nakakuguri-koshitake); 10. Toilet (setchin); 11. Washbasin (tsukubai); 12. Lantern (chakai); 13. Washbasin (tsukubai); 14. Dustbin (chiriana); 15. Entrance to the teahouse (nijiriguchi).
Relating to the tea ceremony ritual, the following passage by Sen illustrates the rhythm of its attendance:

"Just as there is an order to the days and months and to the law of nature, so there are sequences that must remain inviolate. Any given performance of tea has its own sequence of procedures, and each of these in turn has its own internal pattern /.../ when the sequence is on track, one knows naturally what to do, and there will be seamless flow in performance. There will be an artless modulation of movement just as if one were following the rhythm of a silent verse." (Sen 1998, 185.)

The outer gate (sotomon) is an opening in the surface that surrounds the roji (fence); it provides locomotion and visibility through it. The dimensions of the actual opening are approximately 1 m to 1.25 m wide, providing access for two people to pass simultaneously through it. Its height and structure does not allow the guest to perceive the other side when the gate is closed, apart from vegetation that is discernible through the opening between the moving element (the door) and its roof. (See figure 76.)

Fig. 76. From left to right: Gate with thatched roof (kayamon) Rikyū-style outside elevation and plan (Sen et al 1959, 32) and gate (baiken-mon), elevation and section (Sen et al 1959, 34).
The nobedan that spatially follows the crossing of the gate is a stepping-on surface consisting of particles/stones paved in close proximity to each other so as to form a uniformed level that affords a comfortable steady pace and locomotion. As mentioned in the introductory chapter, the perceiver though paying attention to the interesting patterns and shadows of the stones and joints, mainly directs his attention forwards. In the case of this roji model, the nobedan, curved and with a diagonal approach, is bordered with vegetation and the side of an indefinable structure; thus the visibility it allows is restricted up until the point where the perceiver concludes its passing, where he encounters an open view, including the elevation of a structure, which is the first of a series that comprises what the researcher names the "functional" area. The structures it is comprised of are a roofed waiting arbour (machiai) (see figure 78,) a dustbin (chiriana), a washbasin (tsukubai) and a toilet (setchin). A guest, who is not acquainted with the tea ceremony and has not taken part in one, will find the possibility of resting in the waiting arbour after a possibly tiring trip. There he can prepare himself for a more relaxed state of mind for exploring the garden, take refuge in case of rain and bad weather, or simply continue the exploration of the garden. The toilet, dustbin and washbasin provide no special function for him, apart from a possible refreshing of the hands and the face in the washbasin, especially in times of extreme heat. A guest though, who is partaking in a tea ceremony, will wait in the arbour until the host calls him to proceed. The dustbin and the washbasin, in that case symbolise the first act of cleansing and of leaving behind the impurities of the outside world. Locomotion is now directed, by single stepping-stones that are laid in configurations that one has to follow step-by-step, though one does not have to follow them if not partaking the ritual. The stepping-stones crossing requires extended attention and time; space takes different dimensions –is enlarged, and is transformed into a partial focusing on the ground and a partial focusing on the surrounding elements.

Fig. 77. Daitoku-ji Kōto-in; forked pathway composed of stepping-stones.
Fig. 78. Waiting arbour (*machiai*) Genso-style, façade and plan (Sen *et al* 1959, 20).

Fig. 79. Jizo-in; on the front, bare ground with stepping-stones, waiting arbour and a lantern.
Upon returning to the part of the pathway that forks from the nobedan either towards the "functional" area or directly towards the inner roji, the perceiver continues going forward on stepping-stones that are here laid on what can be called open "bare" ground. Even though it affords locomotion in itself, according to the tea ceremony principle, one has to follow the path defined by the stepping-stones. Being further in a visually unobstructed area, the guest has the possibility of looking around up to 360°, though the view is restricted within the outer roji and glimpses from the inner roji are only possible, as far as the separating fence and elements allow it. The path eventually forks towards either a secondary gate to the second waiting shelter, or towards a narrow short passage that leads to the "middle gate". The lantern appearing here and in other instances within the roji, is a visual focus by itself and further regulates the lighting atmosphere. There is an anecdote saying:

"Once, on entering the roji to attend a tea gathering at dawn, [Toyotomi] Hideoshi (1537-98) turned to his attendant and pointed out the low-burning lantern with wonder. The attendant, misunderstanding his meaning, adjusted the lamp to make it brighter. Seeing this, Hideoshi lamented: Already the atmosphere has been spoiled.” (Okuda 1991, 14.)

Fig. 80. Koetsu-ji; stepping-stones within the roji with the wider stepping-stone affording a moment of rest and concentration on the surroundings.
The "middle gate" (chūmon) unlike the "outer gate" (sotomon) is of smaller dimensions and lighter construction permitting visibility of what lies ahead (example in figure 82.) As mentioned in the introductory chapter it reinforces spiritually the roji’s depth, giving the impression that one is entering a region of an utterly new world; in that case the "middle gate" is the ultimate stage in the roji before the nijiriguchi that separates the worldly from the non-mundane. In the case of the model of the roji discussed here, the surrounding fence is composed of vegetation. Other possibilities are that the fence is constructed from bamboo or wood, such as illustrated in figure 83, where the first two are surfaces that reveal and conceal simultaneously, coming into opposition with the last two where the surface obstructs visibility. In the case of this model, the guest, upon passing through the "middle gate" faces a lantern and the borders of the roji; within a narrow and restricted area he has to turn 90° to the left, to face the inner roji.
Fig. 82. "Middle gate" (sudo chūmon) Rikyū-style, elevation (Sen et al 1959, 34).

Fig. 83. Four examples of fences. From left to right: mezeki-kaki Rikyū-style, shirataki-hishikaki, shiba-kaki, otsu-kaki (Sen et al 1959, 36-45).

The procedure in the garden is continued via stepping-stones set on a diagonal approach towards a second "functional area," similar to the previous in the outer roji. The difference here is that the waiting shelter (koshitake and nakakuguri-koshitake, see figure 85) has an open elevation, is of larger dimensions and has stepping-stones which lead directly to the sitting benches, elucidating thus one's locomotion towards them as more detailed, requiring time and precision. Apart from the dustbin located here, the washbasin is more isolated, intensifying thus the importance of the actions involved with it.
Fig. 84. Daitoku-ji Kōto-in; "middle gate" (chūmon).

Fig. 85. Waiting shelter (nakakuguri-koshikake) Genso-style, inside elevation and plan (Sen et al 1959, 24).
At this point it should be mentioned that the most symbolically significant feature of the roji is considered the washbasin (tsukubai), the low hand-washing basin surrounded by several stones. In Nanpōroku, Sen no Rikyū is quoted as having said that the first act in the roji is to rinse one’s hands to “wash off the stains of worldly dust” (Brown 1997, 98). The tsukubai, its name deriving from the verb tsukubau, to “squat,” is placed low so one has to bend down as if rinsing in a mountain stream. With its obvious conflation of purification with the experience of nature, Brown says that the tsukubai epitomizes the roji (Brown 1997, 65). It was Rikyū’s intent that, for their part, guests were to rinse their hands and mouth at the basin in the garden as a form of mental preparation for the occasion of cleansing their own spiritual impurities (Sen 1998, 170). In it we see in practice the implementation of one of Rikyū’s four principles of tea, that of “purity” (sei) (Sen 1991, 5). Two activities of the host evoke the character of purity: cleaning and watering, and both require a special attitude for it. Okuda Shōzō says: “When we become aware of a speck of dust, we sweep it away and constantly maintain the purity; this is the essence of cleaning” (Okuda 1991, 19). Once the cleaning of the roji has been completed, water, which is called “dew,” is sprinkled to enhance the feeling of freshness. It has previously been mentioned that the characters for roji can also mean “dewy ground,” and there is a method of purifying the garden called the “three dews” (Sen 1998, 209). The three waterings are performed just before the guests pass through the roji, during the break in the tea gathering, and again before the guests depart in order that it is always kept in a pristine state (Brown 1997, 65). The way one sprinkles water has to be correct, correctness referring not only to the amount of water but to the care and attentiveness of the host, who must make adjustments according to the weather conditions (Okuda 1991, 20). The concern for purity in the roji, according to Sen Soshitsu, is of a spiritual rather than a strictly physical nature:

“The act of cleaning enables one to sense the pure and sacred essence of things, man, and nature. Harmony, respect, and purity taken together lead to tranquillity. These are the principles of tea, left to us by Rikyū that those who enter the Way of Tea must always strive for.” (Sen 1991, 6.)

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46 The four principles of tea are: Wa “harmony,” which embodies the Chinese Taoist concept of harmony between humans and nature. Kei “respect,” which reflects the Confucian ordering of society overlaid on harmony, although all are meant to be equal in the tearoom. Sei “purity”, valued in Shinto and Japanese culture in general, is both actual and ceremonial purity of the setting and utensils and, most importantly, purity of heart. Jaku “tranquillity,” is a natural result of following the first three principles. (Fling 1998.)

47 Okuda says that when the heat is extreme drops shall fall from the tips of the branches of the trees, but the stepping-stones should not be drenched: “One should try to reproduce the atmosphere of a heavily wet path deep in the mountains, or the scene after an evening downpour has passed”. Similarly, in heavy winter “one should use water to melt the snow that covers the stepping-stones, but leaving the rest.” (Okuda 1991, 20.)
Fig. 86. Daitoku-ji Kōto-in; washbasin (tsukubai).

Fig. 87. Daitoku-ji Kōto-in; washbasin (tsukubai).
Fig. 88. Daitoku-ji Kōto-in; stepping-stones leading to the shoin.

Fig. 89. Stepping-stones before the entrance to the teahouse (nijiriguchi).
The stepping-stones pathway, from the second "functional" area forks within a short distance to three directions: diagonally to a secondary entrance to the tea structure, and towards a washbasin that precedes the *nijiriguchi* with a diversion to a dustbin, or a side approach to/from the precincts of the *roji*, materialised as a non-uniform straight *n obedan*. Brown says that the *nijiriguchi* is a highly contrived entrance to the *sōan*, which is reminiscent of the birth process and expresses the symbolic importance of the teahouse. Further, the small size of *nijiriguchi* meant that military men could not enter the *sōan* wearing their swords, the clearest emblem of status. (Brown 1997, 66.)

"By creating artificial barriers and then passing through them, by adding symbols of natural purity and then acknowledging them, tea practitioners fashioned a highly artificial but effective evocation of the liminal experience of journeying through a mountain wilderness. If the gate at the entry to the *roji* symbolizes leaving the mundane world, garden shrubbery the mountain flora, and the *tsukubai* a limpid stream, then – in the make-believe world of tea- the *sōan* is the hermit’s hut hidden deep in the wilderness. As the movement through the *roji* is a ritual pilgrimage, the entry into the tea hut represents the culmination of the physical and metaphorical journey. Both the location of the tea gathering and its pre-eminent physical manifestation, the *sōan chashitsu* is the pre-eminent symbol of liminality as well as of the ritual poverty and communitas that lie in the heart of the *wabi* tea." (Brown 1997, 74.)

**Fig. 90.** Daitoku-ji Kōto-in (from left to right): entrance to the teahouse (*nijiriguchi*); view from the *nijiriguchi*. 
Fig. 91. Entrance to the teahouse (nijiriguchi), elevation (Sen et al 1959, 115).

The figures that follow illustrate an approach to looking at affordances on surfaces that relate to posture and locomotion, obstruct and reveal, and substances that afford manipulation to some degree in the totality of the roji model. Figure 92 illustrates surfaces that afford walking, both without and with socio-cultural restraints. Figure 93 demonstrates the nature of the pathway, whether straight or curved, and the diagonal approaches in the garden. Figure 94 shows the points where the pathway is forked, and figure 95 indicates exemplary cases of obstacle-opening spatial relations. Figure 96 illustrates surfaces that afford sitting down and refuge. Figure 97 demonstrates viewing possibilities from 8 exemplary points in the roji. Figures 98 to 100 illustrate substances that afford tracing, manipulation, and are solid objects.
Fig. 92. Two plans of the roji model, with grey areas indicating surfaces that afford locomotion, without the socio-cultural restraints in the upper one and after the socio-cultural restraints have been applied on the lower one.
Fig. 93. Plan of the roji model illustrating the direction of the pathway, curved and straight, and the diagonal approaches towards structures of the garden.
Fig. 94. Plan of the roji model illustrating 14 points where the pathway offers more than one possibility for locomotion (forked pathway).
Fig. 95. Plan of the roji model illustrating 12 indicative cases of openings among obstacles affording locomotion.
Fig. 96. Plan of the roji model illustrating surfaces that afford sitting down and refuge.
Fig. 97. Plan of the roji model illustrating visibility possibilities from 8 exemplary points. Grey areas indicate visual obstacles.
Fig. 98. Plan of the roji model illustrating with grey shading substances that afford tracing (here gravel and earth.)
Fig. 99. Plan of the roji model with grey shading illustrating substances that afford manipulation (here vegetation.)
Fig. 100. Plan of the roji model illustrating with grey shading substances that do not afford manipulation (objects -here structures, stepping-stones and stone objects.)
4.2.2 Affordances in the stroll garden

Initially, an analysis of affordances within the garden of Shisendō is elaborated; the analysis is indicative and therefore not complete, meaning that not all possible affordances within the garden of Shisendō are mentioned. Affordances that surfaces provide in relation to locomotion, concealing and revealing, and affordances that substances provide, are elaborated simultaneously. The text follows a garden route as perceived from the moment the guest enters the first gate throughout its totality (but not the reverse route of going back). Since the garden layout is at some points flexible with the possibility of alternative choices, the route that the text follows is the same as the one that the researcher instinctively followed when she visited the garden for the first time.

4.2.2.1 The procedure from the first gate to the Shisendō temple

The opening—a light gate structure with a raised roof- simultaneously hides and reveals what lies ahead. A series of stone steps of approximately 13.5 meters in length raises the level about 2 meters high. The pathway that follows for 16 meters is a nobedan—a path centrally located and composed of naturally shaped small stones (width of 60 cm) bordered on its left and right by earthen paving. Two different layers, one composed of a low bamboo fence and another of high dense tree vegetation, obstruct and simultaneously define the opening that provides passage.

Fig. 101. The main gate to Shisendō, composed of a cedar-shingle roof and bamboo siding.
Fig. 102. The ascent of the first steps following the passage of the first gate. The sketch illustrates the two layers of obstacles and the straight direction of the pathway.
The passageway is straight and the visual focus is straight ahead on a flat stone surface leaving both directions—that to the left and that to the right—open for the possibility of further locomotion. The centrally located pathway accentuates the central direction of the axis, which dissolves at the end of the straight line. On approaching that point two possibilities of locomotion are revealed to the guest, a main one to the left and a secondary one to the right.

**Fig. 103.** The end of the nobedan and the continuation of the passage to the left.
The 90° turn to the left invites the guest to move on by seven steps upwards. The guest focuses on the second gate that offers an oblique view (Nitschke 1972, 37). The ascent is full of tension; the guest’s pace slows down before the ascent when he discovers and focuses on the small level area with the raked gravel and stone-elements. Looking downwards and at the same time paying attention to the ascent of the stairs, the guest has his attention directed at the gate that is now fully revealed at the top of the stairs after a rotation of his body by 90° to the right. Space is here enlarged and there is a fast accumulation of smaller experiences, contrasting markedly with the previous lengthy approach that the guest hastened to cross.

**Fig. 104. The steps that provide access to the second gate.**

The alternative approach offered is at the right side of the guest and is indicated by the paved earthen opening. The stairway and continuation of the pebbled path, however, intensifies the primacy of the approach to the left, so that there is normally no point where a question of choice is set. The secondary approach is for functional purposes.

The second gate is smaller and lighter than the first one and gives the impression that it leaves more to be revealed, because of the see-through gate extension constructed by light elements of bamboo and low vegetation, and the vast expense of white gravel that lies ahead and makes illumination better.
Fig. 105. The second gate of the Shisendō grounds.

Once one passes through the gate, focusing momentarily at the stepping-stones that intensify the kinaesthetic experience on both sides of the passage, one is urged to follow a slightly curved-diagonal approach to the building.
Fig. 106. Looking back at the second gate.

The pathway does not directly face the building entrance, but is set diagonally after 2 meters straight access of stepping-stones. It reveals gradually little by little the open view on the other side. The area where the pathway lies is raked by white gravel, with sparse vegetations and ornate stones. The nobedan that provides locomotion simultaneously draws the guest’s attention downwards at the cobbled stones arrangement, balancing thus his attention.

Fig. 107. The arrival at the entrance of the temple building.
In addition to the temple entrance, a side gate exists in the right hand fence that extends as a continuation of the temple structure. The gate’s size indicates it to be of primary importance, yet its existence is ambiguous since there is no path leading to it defined on the ground gravel. The gravel itself affords locomotion, yet according to its socio-cultural meaning, it is not meant to be stepped on, since it is raked and no path is designated. Therefore the opening signifies a possibility for passage and viewing and an extension to another space that is no longer valid, but must have previously existed.

![Fig. 108. The point of entry to the temple building.](image)

One nowadays has to pass through the building in order to proceed to the southern gardens. Yet, as already mentioned, two additional approaches exist that one could physically use to visit the grounds without visiting the temple. The building itself is composed of open, half-open and closed spaces and is arranged in one level apart from an observation tower.
Fig. 109. Side gate on the right side facing the main entrance to the building of the Shisendō temple.

Fig. 110. The room facing the garden.
Upon entering the temple building one can look, via an opening in the wall across the forecourt straight into the garden ahead. A narrow corridor constructed of wooden planks overruns the southern rooms/spaces apart from the openings that interlink them. When one moves along that corridor, one can view most of the adjacent garden spaces.

Fig. 111. The corridor that runs on the southern side of the temple.

Fig. 112. The corridor that signifies and affords passage from the veranda to the adjacent rooms. Simultaneously it affords visibility towards the southern part of the garden.
4.2.2.2 The veranda

The southernmost room is an orthogonal surface (3.5 x 2 tatami) covered by a roof, open on two sides, and affording simultaneously locomotion, refuge, sitting and the possibility of viewing a semi-circular karesansui\textsuperscript{48} garden that lies ahead.

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\textsuperscript{48} A common type of garden, which suggests mountains and water using only stones, sand, or gravel and, occasionally, plants. Water is symbolized both by the arrangements of rock forms to create a dry waterfall and by patterns raked into sand to create a dry stream.
Fig. 115. Aspect partially of the veranda and the adjacent southern dry garden

A stepping-down of the possible distance, creating thus a paradox, lowers the level of the surface viewed; the latter is reinforced by the facts that the surface affords simultaneously during walking and the fact that there exists no obstacle to prohibit locomotion. The substance in the immediate proximity in the whole southern side is uniformly spread, thinly -raked, white gravel.

Fig. 116. Detail of the dry garden adjacent to the veranda of the temple, towards a southerly direction. The sketch indicates the technique of the three layers used: 1. The cropped azalea bushes are in the foreground; 2. The proximate trees are the in middle-ground and 3. The far away-trees are in the background.
Fig. 117. Detail of the dry garden adjacent to the veranda of the temple.

Fig. 118. The covered veranda of the temple.
Fig. 119. Eastwards aspect from the corridor of the veranda. The sketch on the right indicates the wide openings of the veranda that afford broad unobstructed visibility.
4.2.2.3 Descending the temple.

An opening in the cultivated surface and two wide stepping-stones provide descent/ascent down the temple building to a gravelled surface. The thin white gravel spread on the open area affords comfortable passage and explorative movement, and the waterfall and the washbasin (meant for ritualistic purposes before re-entering the temple) located to the right after the guest’s descent intrigue the guest into making exploratory movements.

Fig. 120. The opening from the corridor at the south side of the temple building.

Fig. 121. The access to the southern area of Shisendō from the temple building.
Fig. 122. Detail of the fencing.

Fig. 123. The water source at the southeastern corner of the temple building.
Fig. 124. Detail of the water source.

Fig. 125. The washbasin (tsukubai).
4.2.2.4 The descent to the newer gardens

The descent to the newer gardens is possible through an opening in the dense azalea bush vegetation. One has to go down a series of narrow stone steps that form a slight curve. In both directions, downwards and upwards, the visibility is very restricted, causing a strong element of surprise one reaches the final step in each direction.

Fig. 126. The access from the southern garden to the temple building.

Fig. 127. Detail of the passage, southwards direction.
Fig. 128. Detail of the passage comprising azalea bushes and stone steps, from south to north.
Fig. 129. The stone passage, from south to north.
The newer garden is an extended area bordered by vegetation and structures that contains within it small entities of interest planned with low vegetation, a lake (figures 130 and 133), a sheltering arbour (figures 136-138), two teahouses (figures 134-135 and 139-140), and an adjacent enclosed garden approachable via a small bridge (figures 144-145). The area is arranged in different levels with very little though height differentiations among them; the different segments have no apparent hierarchy. Here we have the case of a multitude of different paths of observation from which an individual can perceive an object. Thus, the invariant positions specifying an object can be detected from any number of positions in the specific environment (see figure 131).

Fig. 130. Partial arrangement on the newer garden, provided with a circular meandering path around lightly bordering, low yet bold vegetation, with open visibility towards the teahouse, the arbour, and the pond. The surface that affords locomotion is once again free of texture.
Fig. 131. Diagram illustrating abstractly the structure of the newer garden in Shisendō. "A" to "D" are adjacent structures and "e" to "h" are gatherings of vegetation and objects that do not afford locomotion, located within.

Fig. 132. The sozu.⁴⁹

⁴⁹ Called sozu or shishiodoshi this device is constructed from a bamboo pipe and was originally designed to scare away wild boar and deer. Hinged about its middle it catches water from a streamlet, and when it is filled dips down with the weight of water, emptying the pipe that then tips back onto a stone.
Fig. 133. Area surrounding the lake.

Fig. 134. View of the first teahouse from the lake.
Fig. 135. The first teahouse.

Fig. 136. Approaching the sheltering arbour from one direction.
Fig. 137. The sheltering arbour.

Fig. 138. The stairs that afford ascent (and descent) from the sheltering arbour to the second teahouse (and the other way).
Fig. 139. Approach to the second teahouse.

Fig. 140. Approach to the second teahouse, detail of the stone pathway.
Fig. 141. Pathway in the newer garden

Fig. 142. Pathways within the garden, in the foreground crossing over a small stream, in the background ascent.
Fig. 143. Pathway with steps.
Fig. 144. The bridge that provides passage to the southeast garden.
Fig. 145. Within the southeastern garden, from its easternmost point.

The figures that follow illustrate an approach of looking at affordances on surfaces that relate to posture and locomotion, obstruct or reveal, and on substances that afford manipulation to some degree, in the totality of the Shisendō. Figure 146 indicates surfaces that afford walking-in, without the socio-cultural restraints and after the socio-cultural restraints have been applied. Figure 147 illustrates the nature and direction of the walking path and figures 148 and 149 present surfaces that afford stepping up/down, ascent/descent, body rotation and changes in the stature of body. Figures 150 and 151 indicate 26 areas where openings among obstacles afford locomotion. Figure 152 illustrates visibility possibilities from 12 exemplary points and figures 153 to 155 substances that either afford pouring, tracing, manipulation or are objects that cannot be manipulated.
Fig. 146. Plans of Shisendo with grey areas indicating surfaces that afford walking-in, without the socio-cultural restraints on the top one, and after the socio-cultural restraints have been applied to the bottom one.
Fig. 147. Plan of Shisendō illustrating the nature of the walking path. From points 1 to 2, it is straight and zigzagged; from 2 to 3 it is slightly bent, a diagonal approach to the entrance of the temple; from 2 to 4 it is straight and zigzagged, and from 4 to 5 it is straight and slightly bending towards the end; from 6 to 7 it is direct with a wider range of locomotion possibilities than the previous pathways; from 7 to 8 it is narrow and curved; from 8 to 9 and from 8 to 10 it is wide and indirect; from 9 to 11 or to 12 it is narrow and restricted; from 11 or 12 to 13, 14, 15 or 16 it is wide with the possibility of optional locomotion; from 14, 15 or 16 to 17, 18 or 19 it is narrow, curved and restricted; from 17 to 20 it is narrow at the start but wider in the middle and curved.
Fig. 148. Plan of Shisendō (part 1) indicating surfaces that afford stepping up/down, ascent/descent, body rotation and changes in the stature of body. More detailed they afford: Surface 1: passage through a gate with stepping up and down on wide stepping-stones positioned for that purpose on both sides of the gate structure; Surface 2: ascent/descent via a series of even comfortable steps; Surface 3: body rotation by 90° to the left and ascent of steps; Surface 4: ascent; Surface 5: passage through gate structure with stepping up and down stepping-stones; Surface 6: stepping up on a wide stepping-stone before the temple entrance; Surface 7: stepping up to the temple building level; Surface 8: stepping down on stepping-stones as one descends from the temple.
Fig. 149. Plan of Shisendō (part 2) indicating surfaces that afford stepping up/down, ascent/descent, body rotation and changes in the stature of the body. More detailed they afford: Surface 9: descent via a series of narrow steps with slight body rotation; Surface 10: crossing over a small stream; Surface 11: descent via steps; Surfaces 12 and 13: crossing over small steams; Surface 14: crossing over small steams by single steps on steppingstones; Surfaces 15-22: descent/ascent via steps, slight body rotations.
Fig. 150. Plan of Shisendō (part 1) illustrating 8 areas where openings among obstacles afford locomotion.
Fig. 151. Plan of Shisendō (part 2) illustrating 18 areas where openings among obstacles afford locomotion.
Fig. 152. Plan of Shisendō illustrating the viewing possibilities from 12 exemplary positions for the participant. Grey areas indicate visual obstructions. More detailed: The view from positions 1 to 3 is very restricted with very little visual information. At position 4, for the first time, the perceiver has the possibility of 360° visibility, though within a short range. Within the southern side of the temple building (position 5), there is extended visibility of the open area under the eaves. From within the temple building and towards the garden, a wide view of approximately 180° is provided from position 6, which is meant for static contemplation. Here again the view, though wide, is within a short range, with vegetation prohibiting totally the visibility of the newer garden. Similarly, from position 7 of the descent from the temple building, though the perceiver can see straight ahead to where the gravelled area denotes further possible locomotion, he is not visually aware of it due to dense vegetation and the abrupt descent of the level. In the newer garden, positions 8 and 9 offer wide unrestricted visibility with low visual obstacles. Here is where the perceiver has the maximum of far-away visibility, though again structures and vegetation specify the newer gardens as an entity in itself with no possibilities nowadays of vision outside its borders. (Also visibility towards the older garden is restricted.) Positions 10 and 11 are examples of existing short and narrow views towards small targets, such as the second teahouse and the adjacent garden there. From position 12 of the latter, one has again 360° visibility within a moderately close distance.
Fig. 153. Plan of Shisendō indicating with grey shading substances that afford tracing [here gravel (un-patterned and patterned) and earth].
Fig. 154. Plan of Shisendō illustrating with grey shading substances that afford manipulation (here low vegetation, bushes and trees).
Fig. 155. Plan of Shisendō indicating with grey shading substances that do not afford manipulation (objects -here structures, stepping-stones, decorative stones and stone objects such as washinbasins and lanterns) and with black shading those substances that afford pouring (water).
4.3 Perceiving and temporality

As already noted in the chapter on the theoretical background, Gibson’s ecological theory of perception inverts the traditional view of perceiving where the perceiver is conceptualised as a spectator (a recipient of visual impressions) rather than a “participant in the world,” and proposes that movements of the individual actually promote perceiving. To employ Heft’s own words, “from the perspective of ecological optics, movements facilitate the detention of the unchanging or invariant structures that serve as information specifying environmental features” (Heft 2001, 176). Further, the process of perceiving is a temporally extended one, and perceptual awareness is possible, as long as “that which is presently out of sight can be brought into sight by changing one’s vantage point” (Heft 2001, 182). That means that objects and environment layout are both perceived prospectively and retrospectively. To analyse this more:

“Perceiving can be prospective when the individual is aware of what would be experienced in the environment with appropriate action; and it is retrospective when the individual is aware of what was already in the environment. /…/ In both cases, it is awareness of what would accompany the pick up of information.” (Heft 2001, 181.)

In the case of a large object the invariant information specifying it might require a minute of exploration before it is fully revealed. And in the case of a building it might require hours, whereas for a city it might require days. And if perceiving involves the detection of information over time, it is very difficult to choose a temporal criterion for distinguishing perceiving from other cognitive processes. (Heft 2001, 179-180.) The invariant specifying the object’s shape can be detected over a brief interval of time. It is the information that is revealed to be constant over time, that which does not change as the object is viewed from different vantage points. (Heft 2001, 179.) Once the perceiver has detected the invariant and is aware of the whole object, including surfaces that are presently hidden from view, he can anticipate what the object would look like, if he returned to a prior observation point, and what it would look like, if he adopted a new observation point. Heft specifies here the meaning of the word “anticipating” as “an awareness that is coupled with the intention of picking up information.” (Heft 2001, 180.)

A concrete example of the retrospective and prospective structure of the detection of invariants in the case studies can give us a firmer grasp of this concept.

4.3.1 Perceiving and temporality in the case studies

In the case of the roji model, 6 exemplary points have been chosen to illustrate the above, as can be seen on figures 156 to 159. When standing at the threshold of the outer gate (sotomon) which is observation point 1 at figures 156 and 157, the perceiver has a restricted view of the "outer roji" (sotoroji) apart from the vegetation that borders the curved pathway (nobedan) and the side of the indefinable yet structure of the waiting arbour (machiai) ("A" in figure 157) whose façade will be revealed to him once he adopts observation point 2, at the end of the nobedan. At that point he will additionally have a wide-range visibility of the "outer roji," with structures "B" (lantern), "C" (toilet),
and "D" (waiting arbour within the 'inner roji') now revealed to him. Yet, in order to view all the hidden surfaces of the structures, he has to keep on walking on the stepping-stones pathway. When at observation point 3 (as in figures 156 and 158), the perceiver has a very narrow restricted view of what exists behind the "inner gate" (uchimon). Only a surface of a lantern situated after it is discernible, and some vegetation. However, invariants that specify the "inner roji" will be detected once the perceiver moves through the gate and crosses observation point 4, as in figures 156 and 158. Similarly, at observation point 5, he detects very little of the information that specifies the inside of the tea house, due to the restricted dimensions of the entrance, and upon crossing it he is revealed of the room where the tea ceremony takes part (see figures 156 and 159).

Fig. 156. Plan of the roji model with 6 exemplary observation points, illustrating the idea that the perceiver can perceive retrospectively as well as prospectively by anticipating the object’s appearance from a different observation point in the setting.
Fig. 157. Sections of the roji model illustrating the visibility range when the perceiver is situated (from top to bottom): at observation point 1; at observation point 2.

Fig. 158. Sections of the roji model illustrating the visibility range when the perceiver is situated (from top to bottom): at observation point 3; at observation point 4.
Fig. 159. Sections of the roji model illustrating the visibility range when the perceiver is situated (from top to bottom): at observation point 5; at observation point 6.

In the case of Shisendō as seen in figure 160, exemplary positions 1, 3, 5, 7 and 9 have been selected. The perceiver detects the invariants of respectively steps, stepping-stones, stepping-on area, open area, passage after the bridge, and he is aware of the whole object, including the surfaces that are presently hidden from view. He is capable of anticipating what the object would look like if he returned to a prior observation point, and what it would look like from some observation point not yet adopted (positions 2, 4, 6, 8, and 10 respectively).
Fig. 160. Plan of Shisendō with 12 exemplary observation points, illustrating the idea that the perceiver can perceive retrospectively as well as prospectively by anticipating the object’s appearance from a different observation point in the setting.
4.3.1.1 Tangible and intangible views in Shisendō

"In sum, these twelve scenes which extend the Shisendō beyond the villa proper were chosen to stimulate the imagination; they are an aesthetic method. Each includes some aspect that cannot be seen from the villa itself, yet because each puts the poetic imagination to work, all of the natural beauties of Kyoto that surrounded the villa were brought into Jōzan’s environment. /.../ The scenes also included distinctive time elements—spring and fall scenery, the mood of dusk, a rainy, cloudy, or windy day, so that expanses of both time and space were incorporated into the world of the Shisendō. Though they were not actually visible, Jōzan included famous places and buildings that surrounded the Shisendō—sites rich in historical and cultural associations such as Osaka castle, the Kamo River, and Mount Hiei.” (Rimer et al. 1991, 109.)

As mentioned, Ishikawa Jōzan attributed to Shisendō ten locales and twelve scenes, whose choice owes a great deal to his awareness of the eight scenes derived from the Chinese sources. These Eight Views are: 1. View of clear-weather mists above a mountain market-village; 2. View of a fishing villa at sunset; 3. View of a sailboat returning to a distant inlet; 4. View of the confluence of the Hsiao and Hsiang rivers in rain; 5. View of a temple bell in the evening mist; 6. View of the autumn moon over Tung-t'ing Lake; 7. View of geese descending to a sandbar; 8. View of snow falling on a river at dusk.

Fig. 161. Eight Views of Kanazawa- Kanazawa Hakkei by Ando Hiroshige. Produced in 1835-6. Published by Koshimuraya Heisuke. From top to bottom, left to right: Evening Snow at Uchikawa; Evening Rain at Koizumi; Autumnal Moon at Seto; Vesper Bells at the Shomyoji Temple; Boats sailing back at Ottomo; Geese Flying Down at Hirakata; Sunset at Nojima Island; Clearing Weather at Suzaki. (Ando Hiroshige Eight Views of Kanazawa, 2004.)

The "10 Locales” that Ishikawa Jōzan included in Shisendō are the following (see figures 162 and 163): 1. The "lesser paradise cave” (the gate located on the entrance); 2. The "old plum gate” (the gate located on the place from which the approach was reached); 3. The "hall of the poetry immortals Shisendō” (poets' room); 4. The "nest for hunting among the rue” (reading room); 5. The "tower for whistling at the moon” (Shogetsu-ro, Dojo's tall building; 6. The "spring of the vital region” (the well); 7. The "pavilion of leaping from the deep” (the pavilion behind Shisendō); 8. The "waterfall for washing away ignorance” (the waterfall); 9. The "shallow of floating leaves” (the pond where the
The "12 scenes" are the following (see figure 164): 1. Cherry blossoms filling the path (a small cherry tree with blossoms on the small path along the valley in the garden); 2. Ploughing in the rain at the village in front (the sight of the farmer in the neighbouring village ploughing his field in the rain); 3. The waterfall down the cliff wall (the sound of the water of the cascade to wash away ignorance, as it splashes on the rocks); 4. The moon’s reflection in the stepping-stone (the sight of the moon reflected on the surface of the pond in the garden); 5. Red leaves along the stream (coloured leaves near a stream coming from the mountain); 6. Snow piled high on the mountains all around (snow on the peaks of the four surrounding mountains); 7. Leisurely clouds above the peak of mount T’ai (peaceful clouds that can be seen far off the top of Mount Hiei, to the north of Kyoto); 8. The long flow of the Kamo river (the leisurely flow of the Kamo river, far to the west); 9. Evening mist over the capital (smoke from the cooking of the evening meal rising from Kyoto); 10. The city walls of Osaka (the sight of Osaka castle); 11. The sound of the pines from beyond the garden (echoes of the wind in the pines planted outside the garden); 12. The shrine in the woods at the neighbouring hamlet (a small shrine amidst the trees in a neighbouring village.) (Rimer et al 1991, 108-109.)

The scenes selected included distinctive time elements, so that expanses of both time and space were incorporated, at sites rich in historical and cultural associations. Five of the "twelve scenes" are purely intangible (moon’s reflection, clouds, evening mist, rain on a field) as opposed to the remaining seven that can be characterised as tangible. Two of the five intangible ones are acoustic (ploughing in the rain on a faraway field, the sound of the pines). Four of the twelve scenes are associated with the element of water (the waterfall, rain on the field, the flow of the Kamo river, red leaves on a stream), from which the last one requires the seasonal timing of autumn that turns the leaves into red before falling. As with the red leaves, cherry blossoms and snow piling on the mountain, are also associated with seasonal phenomena. Only the two remaining scenes, the city walls of Osaka and the neighbouring shrine in the woods, are concrete artefacts, though it was in reality impossible to glimpse the outlines of Osaka castle from Kyoto. Also, since the Shisendō was constructed in the foothills of a mountain, Mount Hiei could not have been visible from the garden, and it was further unlikely that the Kamo River could have been seen from the villa either.

From the ecological perspective, Lombardo explains that intangible sources can be explained through traditional optics, but do not appear as they really are; this opposes tangible sources that as he says, do look like what they are and cannot be explained in terms of radiant, divergent optics (Lombardo 1987, 297). Gibson attributes to intangible sources the quality of being ephemeral unlike surfaces and objects of the world, based on the fact that perceptions are not invariant despite varying sensations of light (Gibson 1970).
Fig. 163. Sketch of the earlier garden of Shisendō with arrangement and pictorial representation of the "10 locales" (Shisendō leaflet, 1999).
Fig. 164. Sketch of the garden of the Shisendō with pictorial distribution of four of the "12 scenes" that are applicable within the garden: 1. Cherry blossoms filling the path; 3. The waterfall down the cliff wall; 4. The moon’s reflection in the stepping-stones; 5. Red leaves along the stream;
4.4 Vistas, transitions and nested events

So far we have looked at a. affordances in the series that they are provided within exemplary routes in both the model of the teagarden and the garden of Shisendō; and b. the distribution of different categories of affordances within the case studies as total entities. Those diverse features that we went through populate the environments in question and attribute them the characteristic of being extended, meaning that any view of their layout from a specific vantage point will be distinctive and unique, and in turn, so will any path through the environment. When the perceiver moves along a path, he or she will generate an optical flow of information that is related to the environmental layout – what Gibson calls "perspective structure." Heft tried to articulate, based on the nature of this perspective structure, that perceiving can be prospective, by as mentioned previously, distinguishing in it two types of features, namely the vistas and the transitions. (Heft 2001, 183.)

A vista stands for the expanse of surfaces that is visible from an observation point, which more or less remains the same with only local changes occurring as the perceiver travels within it. Transitions are greater changes that occur in the perspective structure, such as dissocclusion as a succeeding vista is gradually revealed. Transitions are especially distinctive among perceivers and are associated with high levels of interest. (Heft 2001, 183.) Through experiments Heft has suggested that perceivers can reliably identify transitions in the path as units of structure, and of the way that those are revealed over time; also that some features are experienced as being nested within the units demarcated by these transitions (Heft 2001, 185). Through experiments it has further been shown that perceivers detect increasingly higher order structural units with increasing experience; therefore they are better able to look ahead, that is, they are better able to engage in prospective perceiving (Heft 2001, 186).

Based on the significance of the above, the following part on the case studies concentrates on attempting to identify within them how vistas and transitions are distributed as the perceiver moves along the before mentioned exemplary routes.

4.4.1 Vistas, transitions and nested events in the roji model

Figure 165 illustrates the distribution of vistas and transitions for the model of the teagarden and in figure 166 the structure of nested events in it.
Fig. 165. Plan of the roji model with vistas (V) and transitions (black circles) according to Heft.
Fig. 166. Plan of the model roji illustrating the structure of nested events. The roji is composed mainly of two events: A (the outside roji "sotoroji") and B (the inner roji "uchiroji"). Within event A are nested: a. entrance through the outside gate "uchimon"; b. movement through the nobedan that leads to the waiting and resting area event c. (which is divided further into 1: approach to the waiting shelter "machiai," 2: approach to the dustbin "chiriana" 3," 4: the washbasin "tsukubai" and 5: the toilet "setchin"), d. movement on stepping-stones towards the inner-roji gate "sotomon," or e. diversion to the gate of the resting shelter "nakakuguri koshikake." Within event B are nested: a. diagonal procedure on stepping-stones; b. the resting area; c. approach to the teahouse (further divided into 1: approach up to the wide diverting stepping-stone; 2: approach to the wash basin 3.; moving towards the entrance to the teahouse "nijiriguchi" 6. with a visit to the dustbin, 5. d. diverted route for entering the teahouse from the secondary opening 1.; and e. entrance to the roji via a secondary gate, used for functional purposes.
4.4.2 Vistas, transitions and nested events in Shisendō

Figures 167 and 168 illustrate the distribution of vistas and transitions for the garden of Shisendō. Figure 169 demonstrates a first fragmentation of the same garden into 6 events and figure 170 what the researcher calls the first of the events, that is, the action of passing from the first gate up to reaching the second one, event a. To actually pass the gate (event A) is a distinct entity in itself, with a clear beginning and an end. Though the duration might be considered short from a practical point of view, the transformation that occurs is rather significant. The subsequent fragment of the route, which is part of the long narrow pathway (event B), the climbing of the 17 steps or nested event 1, is a rhythmically arranged process through time and space that reveals with every step some extra amount of visual information. This rhythmicality stops abruptly with the last step, and starts at what the researcher calls nested event 2, where the perceiver moves straight ahead, eyes focused at the end of the cobbled pathway. Just before reaching the end of the nobedan, she is presented with the abrupt switch to the left, the apparent access to the second gate (event C) and the secondary option of a turn to the right, an indefinite direction (event D). Event C, if she chooses it, is fragmented into three parts: climbing up the stairs (nested event 1), rotating comfortably her body – an act that now clearly reveals what lies behind the gate now (nested event 2) and actually crossing it and stepping to the stepping-stone that lies after it (nested event 3). If she had chosen the secondary approach, before taking the earthen pathway (nested event 2), she would have to go through the small nobedan (nested event 1). Here then, is the segmentation of an event into four parts, with no apparent hierarchy. Those four parts can be further fragmented into other “smaller” events of no precise number, each one having a distinct start and end, even though they will often overlap each other.
Fig. 167. Sketch of Shisendō (part 1) with vistas (V) and transitions (black circles) based on Heft’s concept.
Fig. 168. Sketch of Shisendō (part 2) with vistas (V) and transitions (black circles) based on Heft’s concept.
Fig. 169. Plan of Shisendō illustrating the events "a" to "f."
Fig. 170. Event a: the passage from the first gate to the second, with the nested events: A. The gate of the Shisendō entrance; B. The approach of a long paved pathway (nested events: 1. the stone stairs; 2. the nobedan); C. At the end of the nobedan, the main approach to the second gate (nested events: 1. the stairs; 2. the 90° rotation of the body; 3. passing through the second gate); D. Process to the garden via the rear secondary pathway (nested events: 1. the cobbled stones path; 2. the earthen approach).
Figure 171 illustrates the second of the sub-divided events (event b) which is the approach towards the temple building, a process within the courtyard upon stepping through the second gate (event A). The pathway consists initially of a few distinct stepping-stones that face directly towards the temple building; they introduce slow locomotion and the opportunity for the perceiver to look attentively to his left and right (nested event 1). The diagonal nobedan that continues (nested event 2) diverts to either a secondary approach to the left side of the building composed of a few stepping-stones (nested event 3), or ahead to a wide flat stepping-stone (nested event 4) with which one steps to the preparatory small hall where he will take off his shoes and enter the temple (event B).

The temple building (event c) as seen on figure 172, is subdivided into two events: event A, the building as itself [with nested events its entrance (1), locomotion through its rooms (2), and the walkway under the eaves (3)]; and event B, which is the veranda that interconnects the outside (the dry-garden) with the inside.

The descent from the temple building towards the newer gardens is done through a small garden (event d), as seen on figure 173. What is distinguished here as event A is comprised of the actual descent from the building corridor with the aid of two wide stepping-stones cross a small stream (nested event 1), the wide earthen approach towards the steps (nested event 2), the intense curved descent bordered by azalea bushes (nested event 3), and the final stepping-stone over yet another stream to the newer gardens (nested event 4). Event B is comprised here of the adjacent to the southern side of the building waterfall and functional washbasin, and event C of an open area for optional wandering before forwarding to descent.
Fig. 172. Event c: Within the temple building, with the nested events: A. The building (nested events: 1. the entrance to the building; 2. the walkway under the eaves to the path to the garden); B. The veranda overlooking the dry landscape garden).

Fig. 173. Event d: the small garden, adjacent to the southern exit of the temple building, an approach to the newer garden, with the nested events: A. The descent from the building to the lower garden (nested events: 1. descent from the corridor to the stepping-stones; 2. approach to the steps; 3. descent via the steps; 4. passage over the stream on a wide stepping-stone); B. The waterfall; C. The open area near the stairs.
Fig. 174. Event e: the second garden, with the nested events: A. The "open area" (nested events: 1. the immediate area after the descent; 2. narrow passage; 3. approximate to the lake; 4. passage over small stream; 5. the lake; 6. open central area; 7. narrow passage adjacent to the lake; 8. steps over stream; 9. secondary approach by-passing the temple; 10. stone steps; 11. short narrow steps; 12. steps; 13. sitting arbour; 14. open area adjacent to the arbour; 16. approach to the bridge; 17. lower passage; 18. narrow passage; 19. the "sozu"); B. The first teahouse (nested events: 1. entrance to the teagarden; 2. stepping-stones pathway; 3. stone to the nijiriguchi; 4. rear main stone; 5. rear stone pathway); C. The second teahouse (nested events: 1. approach to the site of the teahouse; 2. the teahouse.)

The first subcategory of event e (event A) is an extended area that involves wandering around through alternating earthen open areas and narrow passages with steps, around a small lake, a sheltering arbour, and approaches to adjacent structures. The latter are the first small teahouse and the second bigger one, considered here as distinct events B and C. Events A, B, and C are further subdivided into nested events as illustrated in figure 174.

Finally, event f (as seen on figure 175) is composed of event A: the approach to the adjacent garden via a bridge over a stream (nested event 1) and a narrow approach (nested event 2); event B: an open earthen area bordered by dense vegetation which is by itself a circular route around an "island" of plantation; and C: a shorter circular route on a higher level, that can be further subdivided into 4 nested events, each a short-distanced direction with steps.
Fig. 175. Event f: the approach to the adjacent garden, with the nested events: A. The approach to the adjacent garden (nested events: 1. the bridge over the stream; 2. the narrow approach); B. The long circular route; C. The shorter circling route (nested events 1 and 2: short-distance directions with steps, and 3 and 4: short-distance earthen pathways).
**5 Conclusions**

The ground that has been covered so far has been an initial approach to getting closer to an understanding of the sequential Japanese gardens with an emphasis on the reciprocity between perceiver and environment, as highlighted by Gibson’s ecological approach to perception. The discussion intended to take a longer view of the argument that Gibson’s framework proposes, that a perceiver who engages in exploratory actions creates opportunities that actually promote perceiving. Affordances in the Japanese tea and stroll gardens can and do provide us with a broad body of knowledge to understand the ways in which the environmental features are synomorphic to actions as demonstrated in chapters three and four.

One of the most general conclusions regarding spatial configurations in those gardens is that space becomes a transformed entity from the surrounding environment, even though contained within it (see sketch in figure 176.) In the case of the roji, differentiated space is meant to be spiritual, as though belonging to another world. Simultaneously, its spatial arrangement aims to imitate the atmosphere of being situated deep in a forested area; the spatial experience of its passage relates to the procession of advancing towards a hermit’s hut, which is realised in the structure of the teahouse. The roji generally does not incorporate elements and visual imagery from its surrounding environment, and can thus be described as a totally enclosed garden. The kaiyūshiki, though, employs fragments of the outside environment, with no restrictions in size through any fixed laws. Important features can be magnified and distant ones that might otherwise be inconspicuous enlarged. Their framing is skilfully done using specifically chosen elements that highlight the attempted effect (by trimming walls, hedges, hills and embankments), and elements used as intermediary objects (capturing devices) are used to direct the perceiver’s sight towards them (see sketch in figure 177). A further differentiation among those sequential gardens is that the teagarden contains configurational patterns that fall under a general topic, the wilderness situation, under which different vistas appear in the process, vistas that are all diminutive in comparison to the general one. The stroll garden though is composed under no general theme, by a sequence of concrete entities that aim to imitate a broader, mainly secular range of existing or fantastic scenery in nature and literature, with a strong socio-cultural supporting background.
Fig. 176. Sketch illustrating that teagarden space "x" is an isolated entity, unrelated though inclusive to surrounding space "o."

Fig. 177. Sketch illustrating that stroll garden space "x" has framed fragments "f1" and "f2" of the surrounding space "o".

An implication regarding the occurring space transformation, is that the real dimensions of space are altered in the perception of the perceiver, most often being enlarged (see sketch in figure 178.) This is achieved and manipulated with the aid of different methods that are mainly concentrated on the nature of what can be called the backbone of the designed spatial structure that is the pathway on which the perceiver moves. The study of its design illustrates its function as a surface that leads the perceiver, through his own body locomotion, in non-direct approaches to sequential structures and scenes. Those comprise being (one or a combination of) curved, diagonal, zigzagged or forked (see sketch on figure 179.)
Fig. 178. Sketch illustrating how real dimensions garden space "x1" takes different dimensions and becomes "x2."

Fig. 179. Sketch illustrating from left to right a diagonal approach, a curved approach, a zigzag approach and a forked pathway, all comprising non-direct approaches.

During the exploration of the garden the perceiver’s locomotion is regulated by means of openings in obstacles that vary in degree and obstruct simultaneously locomotion and visibility, from a minor degree up to the totality. Therefore, in most cases, when one proceeds through the garden, the visitor is provided with not only the possibility of going forward in terms of the route covered, but also with images that were either suspected (through apertures and see-through surfaces) or totally unpredictable. In order to succeed in this the designer has to work at multiple levels, which is the next implication to refer to (see sketch in figure 180.)
The small scale design gives possibilities for surfaces to provide affordances that let the guest experience the spatiality of the garden up to a detailed extent; his body movements, orientation, posture and viewing possibilities are strongly related to the elements of the path. The pathway is designed up to the detail of each step. In reference to affordances that are related to posture and locomotion, the researcher focused on two categories: First, to the study of “step-by-step” locomotion, which led to a large amount of knowledge on different surfaces that manipulate the perceiver’s locomotion and body rotation in all possible directions, implementing the element of time by monitoring the rhythm of his body movement. He often does not have the option to act otherwise, whereas there are cases when he is provided with more than one choice. The role of kinaesthesia is of major importance here and the question of its extent is essentially a question of whether lack of knowledge of the socio-cultural background is a prerequisite for perception or simply fortifies it, remains fundamental to the argument.

By looking at the larger scale design of affordances that relate to posture and locomotion, we extend our viewpoint to spatial arrangements and relationships that involve a goal/target (materialised as a vista or structure) and a direction towards it (the pathway). Yet we also have to take into consideration and not undermine the medium “m” that constitutes the affordance provided as possible (see figure 181.) Though the environment that surrounds the surfaces that provide these types of affordances is included, however, the study has not yet shifted to the totality of the garden, since the pattern “goal-direction-medium” is only one event out of many that appear within a sequential garden. The presentation of the argument has been facilitated in chapters three and four with the introduction of examples in the design of the case studies.
On the larger scale, (if we extend our view to the garden as a totality,) the structure of the environment is seen to be comprised of a route that is segmented into structurally meaningful units with no apparent hierarchy and an overlapping and nesting character (see sketch in figure 182.)

Fig. 181. Sketch illustrating the direction "d" (pathway) to the goal/target "g" and the medium "m".

Fig. 182. Sketch illustrating the segments that compose the totality of garden space, which are of no apparent hierarchy, often with an overlapping and nested character.

As the perceiver moves along the path through the environment of the roji and stroll garden, he or she experiences continuous series of vistas that are interconnected with transitions. These structures in the roji and kaiyūshiki afford a notion of dynamic attention, meaning that attending to the unfolding of the events affords looking ahead. This prospectivity of perceiving (which is tied to the structural qualities of the event and is structured over time by the layout and the features of the vistas) allows the reinforcement of its selective quality, that is, the selective quality of information pickup.
The meaningful features in the teagarden are products of individual and collective actions, and at the same time, are both fundamental and constitutive of the individual knowledge that grows very much in this case out of social processes and socio-cultural contexts. This means that the kind of individual knowledge in the case of the teagarden relies very much on the social patterns of actions, tools, artefacts and representations and is inadequate without them. In the case of the stroll garden, however, socio-cultural practices as detected in this research, appear to be constitutive but not so much dependent for the particular affordances in their behaviour setting to be meaningful.

The present research has possibilities for applications with three distinct aims: the study of Japanese gardens, the design and realization of sequential spaces in general, and the analysis and comprehension of an extended range of traditional and contemporary sequential spaces.

The research discloses two main qualities that can function in analyzing sequential Japanese gardens: First, to comprehend the range of possibilities the perceiver is provided with that are independent of their socio-cultural background. Second, to study the garden as a totality. The commentaries above suggest that there is a liability in this approach, which is substantially different from merely putting down historical, functional and aesthetical knowledge of material and/or focusing on still moments of the garden.

Further, this thesis lays out an analysis that is based on ecological psychology, a western approach to perception, and by this route it aims to comprehend and make accessible to its audience a non-western environment. The importance of making a transcultural connection between the two types of space is clearly vital.

The field of this research can be extended in wider/new directions or interfaced with other fields of inquiry, such as the extensive study of the Japanese gardens aesthetics and in-depth study of the implications of kinesthesia. Seen as such, the present research is only a part of a wider attempt to comprehend the gardens in question in a holistic manner. Relevant to implications in the practice of designing spaces that are movement-oriented, the analysis provided here does not aim to be regarded as setting guidelines. Instead, it presents an initial set of knowledge of techniques and their effects on the perceiver: Principles that govern spatial arrangements and configurational patterns (such as non-direct approaches, hide-and-reveal situations, framed scenery and direction changes imposed by the placement of boundaries in space). Simultaneously, it hopes to succeed in stimulating designers towards creating spaces that require the perceiver’s active participation through his locomotion. This design promotes looking deeper into the design in detail, encouraging the perceiver to become part of the plan and supporting the person-environment transaction. The critical factor is the emergence of a motivated and particular way of thinking about the perceiver’s locomotion within space, and a predisposition towards active participation.

Finally, this research can be extended by looking, based at the line of affordances and event structure at: First, contemporary sequential Japanese architecture and urban design. For example, the Garden of Fine Arts, which was completed in 1994 by Tadao Ando, and was conceived as a contemporary version of a stroll garden displaying reproductions of famous masterpieces. A suggested association that can be further made is with the Japanese and worldwide phenomenon of popular theme parks. Second, one can look at sequential spaces, traditional and contemporary, that are situated outside the area of Japan, such as the English landscape garden.
References


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The Shisen-dō (1999), leaflet, Kyoto, Shisendō.


Appendix 1 Locations of Representative Gardens

In Kyoto:
1. Chion-in (知恩院): 400 Rinka-chō, Higashiyama-ku
2. Daitoku-ji Daisen-in (大徳寺 高桐院): Daitoku-ji-chō, Murasakino, Kita-ku
3. Daitoku-ji Kōto-in (大徳寺 高桐院): Daitoku-ji-chō, Murasakino, Kita-ku
5. Jishou-ji (慈照寺) [also known as Ginkaku-ji (銀閣寺)]: Ginkaku-ji-chō, Sakyō-ku
7. Koetsu-ji (光悦寺): Takamine, Koetsu-chō, Kita-ku
8. Konchi-in (南禅寺) in Nanzen-ji (南禅寺): 86-12 Fukuchi-chō, Nanzen-ji, Sakyō-ku
10. Ryogen-in (竜源院): Daitoku-ji-chō, Murasakino, Kita-ku
11. Sanzen-in (三千院): 540 Raikoin-chō, Ohara, Sakyō-ku
13. Shoden-ji (正殿寺): Nishigamo, Kita-ku
15. Taizo-in (退蔵院): 35 Myōshin-ji-chō, Hanazono, Ukyō-ku
16. Ura senke School of Tea (裏千家): Honpojimae-machi Agaru, Kamigyo-ku
17. Zuiho-in (瑞峰院): Daitoku-ji-sannai, Murasakino, Kita-ku
Fig. 183. Map of Kyoto with location of representative gardens (11 to 17.)
In Nara:

Fig. 184. Map of central Nara with location of representative garden (18.)