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## **Research on the Utilizing Design Vocabulary in the Definition of Pedestrian Way**

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### **Abstract**

In this research, initial research was carried out through means of a survey of available reference material to gather design vocabulary, the results of which were then collated, in order to give a general overall picture. Then, through a design survey of pedestrian ways, an initial examination was made, using the design vocabulary, of design techniques and the elements used in the construction of these areas. An attempt was then made to systematize design techniques used in the creation of pedestrian ways. As a result, a general idea of the terms involved was obtained and design vocabulary was able to be arranged in a systematic format.

### **Research Goal**

As part of the standardized language used in the overall design process, design vocabulary plays an integral part in the conception, communication and assessment of design.

These days, the increase in quality and individualization in environmental design is a popular topic. However, to achieve qualitative improvement and individualization, an improvement in the overall design process is necessary, and it is here that the significance of design vocabulary can be seen.

Using design vocabulary as a basis, design techniques and constituent elements used in the construction of pedestrian ways were analyzed by means of a design study, with the aim of arranging them in a systematized format.

### **Method of Investigation and Analysis**

In this investigation, firstly, through means of a survey of available reference material, design vocabulary was gathered, sorted and classified and a general outline formed of the design vocabulary to be used. Next, using the resulting vocabulary, a design survey of pedestrian ways was carried out and photographic documentation of design points was accumulated. In order to record and edit the material objectively, line drawings, which would serve as visual aids, were made, such as shown in Figure 1. In addition, materials used in the construction of pedestrian ways were classified according to constituent elements and design components.

Through the process described above we endeavored to clarify the design vocabulary

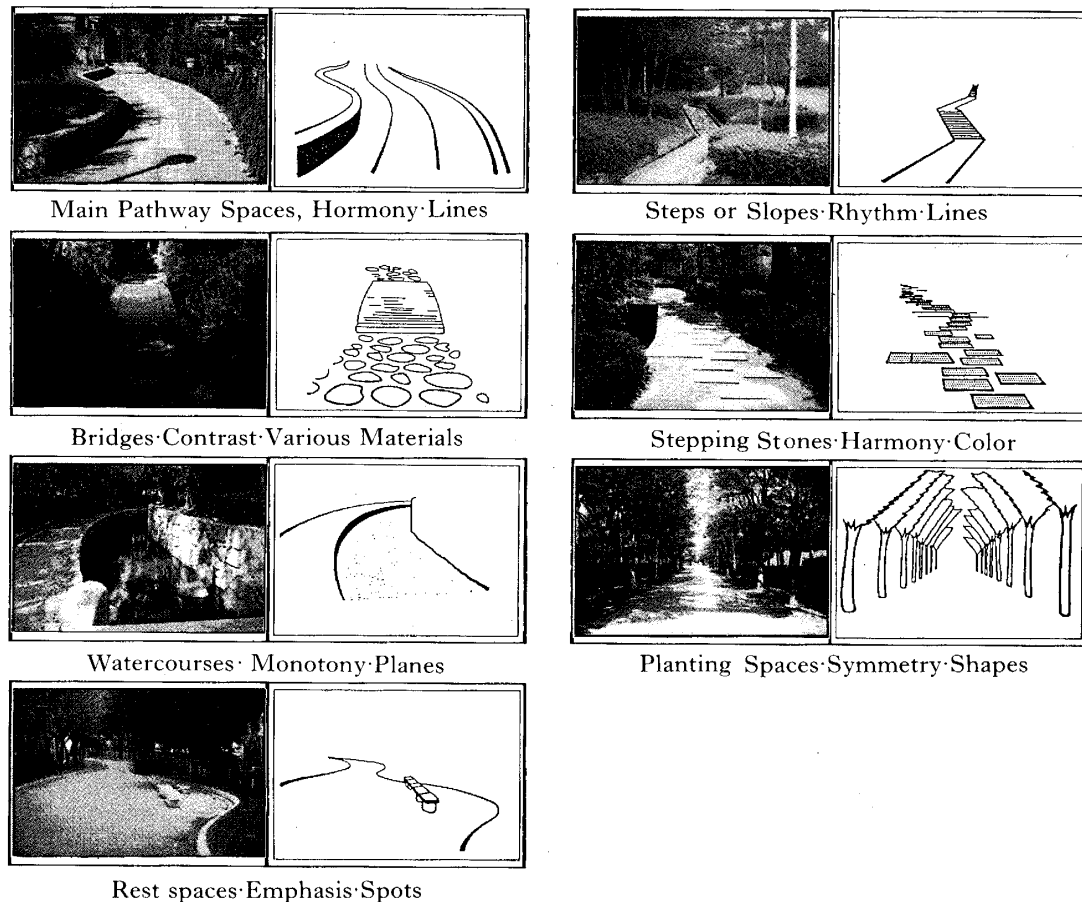


Fig. 1 Photographic Documentation and Line Drawings

associated with each design technique and arrange pedestrian ways design into a systematized format.

The reason a case study of pedestrian ways was chosen was that vision in such areas is limited to one particular linear area, design components from outside that area are not easily confused and constituent elements are limited.

The design survey of pedestrian ways was carried out in the following areas: Senboku New Town, Senri New Town, Nanko Port Town, Port Island, Seishin New Town, Katsurazaka New Town and Heijosoraku New Town.

### Results of Analysis and Consideration

#### 1. *Common factors of design vocabulary used in this study*

Contrast, Emphasis, Harmony, Monotony, Rhythm, and Symmetry were the words chosen from the lists of design vocabulary shown in Table 1. They were chosen on the basis of their common usage and the fact that they precisely describe the terms employed in the principles of aesthetic construction used in landscape architecture.

As a result, Contrast is taken to be the harmony and emphasis which results from the comparison of two or more different elements or materials; Emphasis is the focus of attention which is brought to bear on a certain area through the existence of certain conspicuous elements or materials; Harmony is the effect achieved through bringing

Table 1 Accumulated Design Vocabulary

Author	G. Ekubo	M. Takahara	M. Uchiyama	S. Crow	G. Stein	Japan Parks & Recreation Association	M. Eyama
Design Vocabulary	Rhythm	Contrast	Symmetry	Unity	Harmony	Unity	Symmetry
	Balance	Similarity	Balance	Scale	Proportion	Simlicity	Balance
	Emphasis	Symmetry	Harmony	Light-Shade	Balance	Repetition	Repetition
		Repetition	Contrast	Texture	Rhythm	Gradiatopn	Gradation
		Balance	Emphasis	Tone-Color	Emphasis	Rhythm	Contrast
		Proportion	Repetition	Style		Symmetry	Harmony
		Movement	Graduation			Balance	Balance
		Emphasis	Unity of			Contrast	Rhytym
		Harmony	Variety			Harmony	Harmony
		Unity				Proportion	

together elements or materials of the same kind; Monotony is the sense of stability where there is no change or variation in the elements or materials used; Rhythm is the lively effect produced through repetition or phase achieved through changes in elements or materials; Symmetry is the formal or stable effect achieved where elements or materials are arranged symmetrically around a central axis.

## 2. Reflections on Findings concerning Pedestrian way Design Techniques

After collating the results of the design survey it was possible to deduce that the elements used in the construction of pedestrian ways vary according to the functional aspects of those spaces and that the space may be divided up into the following areas: the pathway, the landscaping space and the rest space. According to the elements used in the construction of each space, those spaces can further be divided up into seven distinct spaces: the pathway into main pathway, steps or slope, stepping stones or bridge; the landscaping spaces into planting space or watercourse; and the rest space into rest spaces. In addition, elements employed in the design of these spaces include the following 6 types: spots, lines, planes, shapes and different kinds of materials and colors.

Figure 2. is a compilation of the results of the design survey showing the constituent elements. Figure 3. is a compilation of the design techniques encountered.

In looking at the the result, in the main pathway, Contrast, Emphasis, Harmony and Rhythm were discovered. In terms of Contrast, design techniques were employed to produce harmony through comparisons between straight and curved lines, wide and narrow planes, artificial and natural materials and cool and warm colors. In terms of Emphasis, design techniques were employed which used two-dimensional shapes to lead into three-dimensional shapes, thus accentuating those areas. In terms of Harmony, design techniques were used which employed contrasting curves to produce harmony. In terms of Rhythm, spots were used in a uniform pattern to obtain a cross-stitch effect. Design techniques using lines in a regular curve in one set direction to achieve a lively effect were also revealed.

In spaces with steps and slopes, as in the main pathway spaces, Contrast, Emphasis, Harmony and Rhythm were identified. With Contrast, design techniques using shapes contrasting steep and gentle slopes lending emphasis to each other were revealed. With Emphasis, design techniques using continuous straight lines intersected at right angles by

		Elements used in the construction of pedestrian ways						
		Pathway				Landscaping space		Rest Space
		Main Pathway	Steps or Slope	Stepping Stones	Bridge	Planting Space	Water-course	Rest Space
Design Vocabulary	Contrast	S	•				•	
		L	•			•	•	
	S'		•					
	M	•		•				
	C	•		•				
	Emphasis	S		•	•	•		•
L		•	•	•	•	•	•	
Harmony	S	•		•			•	
	L		•	•	•	•	•	
Monotony	S							
	L					•	•	
Rhythm	S	•	•	•	•			
	L	•			•	•		
Symmetry	S							
	L					•		

S : spots, L : lines, P : planes, S' : shapes, M : materials, C : colors

Fig. 2 Design Survey Results

other lines, accentuated the space, as well as emphasizing functionality. Through using differences in height, flat areas achieved more of a three rather than two-dimensional effect. Through using substantially different materials and colors in a space, as well as changing the character of the space, differences according to function were also emphasized. With Harmony, through the use of materials and colors of the same kind, the characteristic functions of a space were able to be brought into harmony with each other. With Rhythm, through using lines in a certain direction in a regular pattern, it was possible to produce a lively effect.

























With stepping stones, Contrast, Emphasis, Harmony and Rhythm were also used in the same way as in the main pathway spaces. Different materials and colors were used for Contrast, lines and shapes were used for Emphasis, lines and different materials and colors were used for Harmony and spots and shapes were used to achieve the same kind of Rhythm as in the steps and slopes.

With bridges, only Emphasis, Harmony and Rhythm could be discovered. Emphasis was the most prevalent, employing spots and intersecting lines in continuous lines and different shapes, materials and colors to bring change to the character of a space and to emphasise the function of the bridge itself. With harmony, in contrast to Emphasis, materials and colors of the same kind were used to bring about harmony within spaces of different function and character. With Rhythm, lines were used in a regular pattern in a set direction to achieve a lively effect.

Main Pathway Spaces									
Contrast					Harmony				
Elements	P	M	C	S'	Emphasis	L	S	Rhythm	L
Techniques	A straight line on one side of the edge, and on the other side the use of a broken line of the edge.	Through the use of a flower bed in the middle of the path, changes are made in the width.	Cur stones are used exclusively at the entrance, and then followed by gravel pavement.	Darker colors are used for bicycle path, while lighter colors are used for the main pathways.	Sculptures with a sense of depth are used in the center of the pedestrian way to divide the pathway.	Interrelated curves are used on both edges of the pathway.	Flower beds are arranged in a staggered fashion either side of the main pathway.	A bend is introduced into the general pathway.	
Steps or Slopes									
Contrast					Harmony				
Elements	L	S'	M	C	Emphasis	M	C	Rhythm	L
Techniques	In dealing with differences in height, steeper steps and a more gentle slope are jointly used.	Steps are used to lead up to the main pathway space.	Using steps with differences in height in the main pathway.	Using different materials in the steps from those used in the main pathway.	Using different colors in the steps from those used in the main pathway.	Using the same kind of materials in the steps as those used in the main pathway.	Using the same colors in the steps as those used in the main pathway.	Arranging the steps in a zigzag fashion and thus giving the impression of a change of direction.	
Stepping Stones									
Contrast					Harmony				
Elements	M	C	L	S'	Emphasis	L	M	Harmony	C
Techniques	Using different substances in the stepping stones from those used in the main pathway.	Using different colors in the stepping stones from those used in the main pathway.	Using stepping stones to intersect the main pathway.	Using hewn stone as stepping stones to cross a stream.	Using hewn stone as stepping stones to cross a stream.	Using natural stones as stepping stones to cross a stream.	Using the same kind of material in the stepping stones as used in the main pathway.	Using the same color in the stepping stones as used in the main pathway.	

S: spots, L: lines, P: planes, S': shapes, M: materials, C: colors

Fig.3-1 Design Techniques

Stepping stones		Bridges						
Elements		S	L	S'	M	C	M	
Techniques	 Arranging stones of uneven sizes along a curve at regular intervals.	 Creating a bend in the main pathway and using a bridge.	 Locating a hedge clipped in a curved pattern along the straight lines as the edge stones.	 Using boards of the same shape arranged in a zigzag pattern to provide a change.	 Entering the pedestrian way by means of a bridge intersecting the main pathway.	 Using an undulating bridge, such as an arched bridge.	 Using different colors in the bridge than those used in the main pathway.	 Using the same kinds of materials in both the bridge and the pathway.
Bridges		Planting Spaces						
Elements		C	L	S'	S'	L	P	
Techniques	 Using shades of the same color in the bridge as used in the main pathway.	 Locating trees in an alternating pattern alongside the main pathway.	 Arranging short, medium and tall trees in a set pattern.	 Arranging evergreen and deciduous trees in a set pattern.	 Arranging well formed trees to the left and right of the main pathway.	 Scattering rocks in the bed of a stream alongside an orderly pathway.	 Creating curves in the stream.	 Creating a stream symmetrical to the pathway.
Watercourses		Planting Spaces						
Elements		S	S'	S'	P	P	P	
Techniques	 Locating trees of the same kind along the main pathway.	 Combining trees of a distinctly different shape.	 Locating trees of the same kind along the main pathway.	 Locating trees of different kinds, but if the same shape, along the main pathway.	 Locating a large hedge alongside the main pathway.	 Creating an orderly stream alongside an orderly pathway.	 Creating curves in the stream.	 Creating a stream symmetrical to the pathway.

S: spots, L: lines, P: planes, S': shapes, M: materials, C: colors

Fig.3-2 Design Techniques

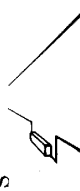

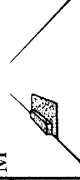
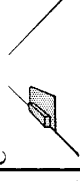
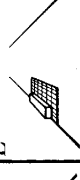



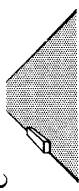
		Rest Spaces										
		Emphasis					Harmony					Monotony
Elements	Techniques	S	S'	M	C	L	M	M	C	M	M	
												
		Creating an indented rest space with a straight line of edge stones on the opposite side.	Locating a large tree beside a bench.	Creating a rest space in different materials from the main pathway.	Creating a rest space in a totally different color from the main pathway.	Locating the bench and face in the same direction as the main pathway.	Using the same kinds of materials in the rest space as used in the main pathway.	Creating a rest space in shades of the same color as the main pathway.	Using the same materials in both the rest space and in the main pathway.			
S: spots, L: lines, P: planes, S': shapes, M: materials, C: colors												
		<b>Rest Spaces</b>										
		<b>Monotony</b>										
Elements												
Techniques		Using the same colors in both the rest space and in the main pathway.										

Fig.3-3 Design Techniques



With planting space, Contrast, Emphasis, Harmony, Monotony, Rhythm and Symmetry were all used in extremely diverse ways. In Contrast, straight and curved lines were contrasted and harmony was achieved through contrasting different forms. With Emphasis, through introducing unique forms in prominent positions, it was possible to change the center of focus of a space, and to introduce an air of expectation into that space. With Harmony, things of different kinds were arranged around a set axis to provide a sense of direction, and to achieve harmony through combining different elements into a common form. With Monotony, things of a different nature were brought together into conformity, to achieve a sense of stability and oneness in a space. With Rhythm, two or more forms or colors were arranged in a regular pattern to produce a lively pattern in a cross-stitch fashion. With Symmetry, things of the same material and shape were arranged around a central axis to provide stability or formality to a space.

With watercourses, Contrast, Monotony, Rhythm and Symmetry were identified, all of which used flat surfaces.

With rest spaces, only Emphasis, Harmony and Monotony were discovered and, as with bridges, the most prominent was Emphasis. Spots, shapes, and different colors and materials were used to provide a sense of change and function to the area and to emphasize the rest space function. With Harmony and Monotony, in contrast to Emphasis, through introducing materials and colors of the same kind in a particular space, harmony, stability and oneness could be achieved.

### Conclusion

Initially, design vocabulary was edited and a general overview of the terms employed obtained. These terms were then used in a design survey of pedestrian ways to compare construction techniques, and to arrange the design of pedestrian ways into a systematic form. Then using the resulting design vocabulary, a design survey of pedestrian ways of comparatively simple structure was carried out and the results arranged in a systematized form.

In the future, it is possible that in regard to the design of pedestrian ways spaces design techniques such as these can be used as reference as increasing improvements in quality and individualization continue to take place.

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