The Effects of Architectural Treatments on Reducing Oppressed Feelings Caused by High-rise Buildings

ABSTRACT

The authors conducted an experiment to examine the effectiveness of architectural treatments in reducing oppressed feelings caused by high-rise buildings along city streets. To create a virtual experience on the streets, computer graphic images of the streets were projected on an immersive projection display (6.3m x 4.0m) that moved according to the subject's walking pace on the stepping sensor placed in front of the display. The results indicated that installing transparent glass on the walls of buildings and arcading significantly reduced oppressed feelings. The effectiveness of the treatments was found to depend on the extent of the subjects' visual awareness.

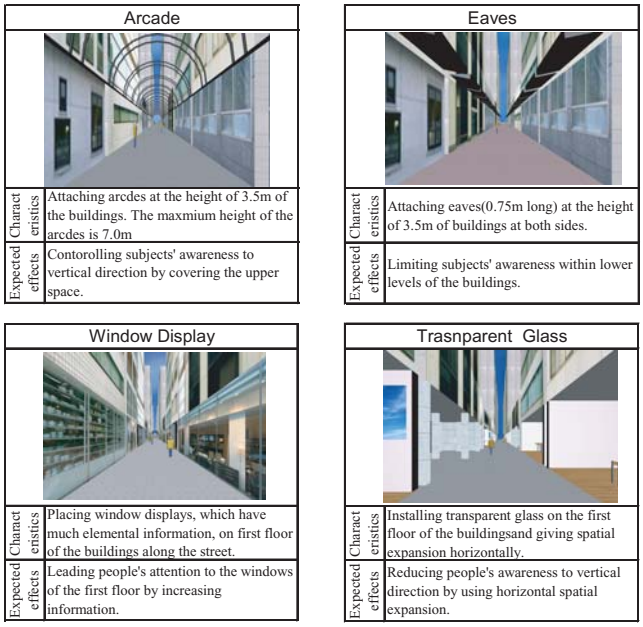


Fig.2 Architectural treatments expected to reduce oppressive feelings

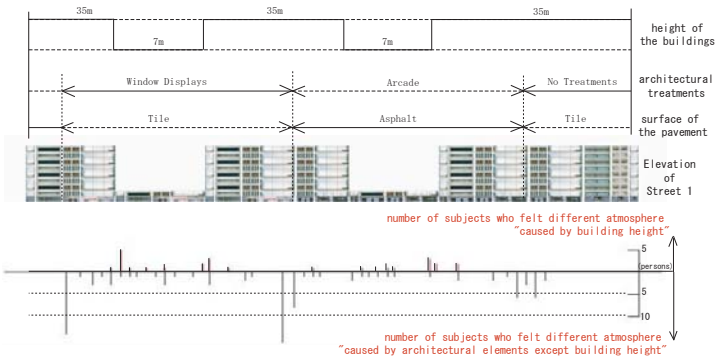


Fig. 5 Relationship between architectural elements of Street 1 and number of subjects who felt different atmosphere

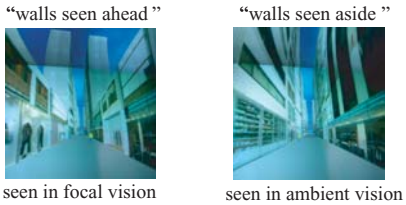


Fig. 6 The ways to perceive the change of the building height

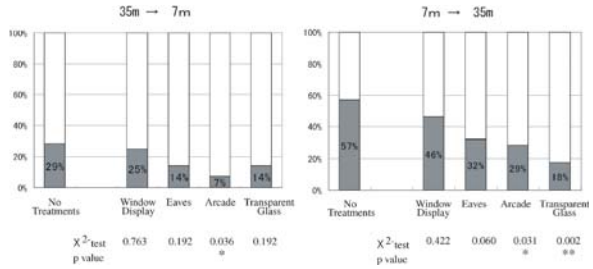


Fig. 7 The ratio of the subjects who felt the difference of atmosphere caused by the change of building height

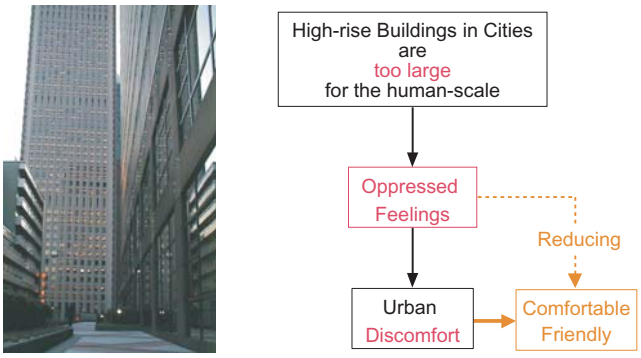
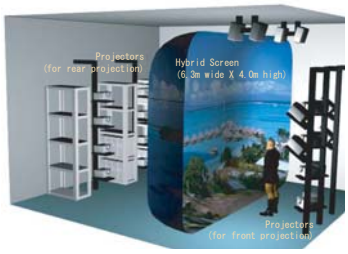


Fig.1 An example of high-rise building in cities

Fig.3 Elevation of the streets shown to the subjects



D-vision enabled a wide field of vision (180 degree both horizontally and vertically) which is essential for testing oppressed feelings.

Procedure:
Using D-vision, the subjects were asked to walk through the three streets (Fig.3) and to ring a bell held in their hands when they felt that the atmosphere of the street had changed.

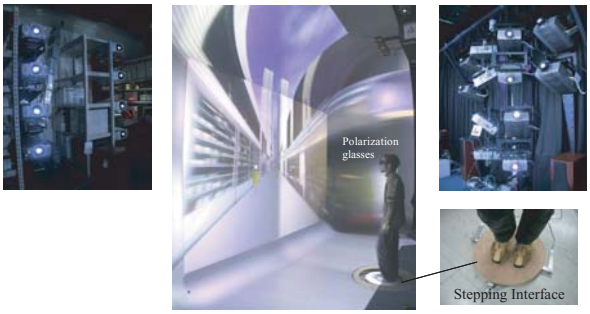


Fig.4 Visual simulation system <D-vision>

Table 1 Individual differences of awareness to vertical direction

Group	Subjects	No Treatments			35m→7m				7m→35m			
		35m→7m	7m→35m walls seen aside	7m→35m walls seen ahead	Window Display	Eaves	Arcade	Transparent Glass	Window Display	Eaves	Arcade	Transparent Glass
A	17	O	O	O	O	×	×	O	O	O	O	O
	19	O	O	O	O	×	O	×	O	×	O	O
	8	O	O	O	O	×	O	O	×	O	O	O
	13	O	O	O	O	O	×	×	O	O	O	×
	14	O	O	O	×	×	×	×	×	×	×	×
B	20	O	O	×	×	×	×	×	O	O	O	O
	3	O	O	×	×	O	×	O	O	O	×	×
	18	O	O	×	×	×	×	×	×	O	×	×
C	21	×	O	×	×	×	×	×	O	×	O	×
	24	×	O	×	O	×	×	×	O	×	×	×
	2	×	O	×	×	×	×	×	O	×	×	×
	22	×	O	×	O	O	×	×	×	×	×	×
	23	×	×	×	×	O	×	×	×	×	×	×
D	1	×	×	O	×	×	×	×	O	O	×	×
	9	×	×	O	×	×	×	O	O	O	×	×
	16	×	×	O	×	×	×	×	×	×	×	×
E	10	×	×	×	O	×	×	×	O	×	×	O
	11	×	×	×	×	×	×	×	O	O	×	×
	15	×	×	×	×	×	×	×	O	×	×	×
	12	×	×	×	×	×	×	×	×	×	O	×
	4	×	×	×	×	×	×	×	×	×	×	×
	5	×	×	×	×	×	×	×	×	×	×	×
	6	×	×	×	×	×	×	×	×	×	×	×
	26	×	×	×	×	×	×	×	×	×	×	×
	27	×	×	×	×	×	×	×	×	×	×	×
	7	×	×	×	×	×	×	×	×	×	×	×
	28	×	×	×	×	×	×	×	×	×	×	×
	25	×	×	×	×	×	×	×	×	×	O	×
Total		8	13	8	7	4	2	4	10	6	7	4

O: felt different atmosphere caused by the change of building height
X: did not feel different atmosphere caused by the change of building height