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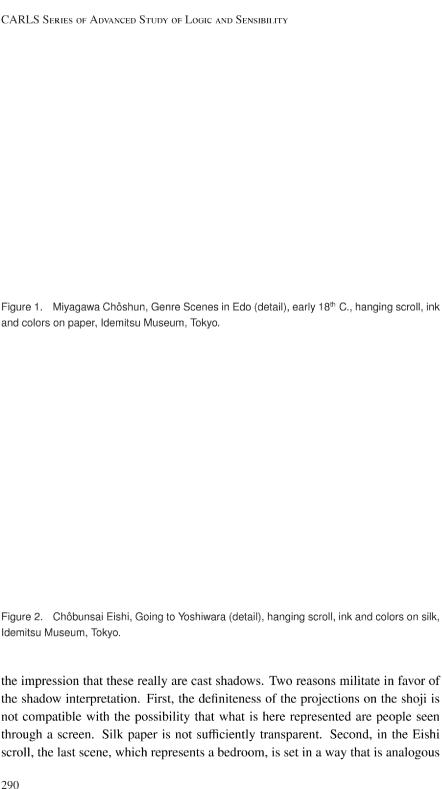# 35 | Impossible Cast Shadows in Ukyio-e Paintings

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A very limited number of shadows is registered in Eastern art (Toyama and Naito 2008). Among these are those that are depicted in two scrolls at the Tokyo Idemitsu Museum of Art. The first is a representation of Scenes from the Life of Edo by Miyagawa Chosyun (1682–1752) (Figure 1). The second, by Chôbunsai Eishi (1756–1829), dating from the first years of the 19th century is entitled Going to Yoshiwara (Figure 2).

In both cases we are presented, in a portion of the respective scrolls, with an interior seen through what appears to be shadows cast on a shoji, the traditional silk paper sliding door. In the Choysun scroll, a set of musicians is playing in a pavilion by the sea; in the projections on the shoji it is possible to recognize a string player, a flutist and a third character. In the Eishi scroll, the projections on the shoji show an undefined person, probably a music player, and two bending servant at a banquet, one of whom offers a bowl to a character in full view.

The projections on the scroll do look like shadows, but are they really shadows? The geometry of the situation seems to exclude it. The top left bending character in the Eishi painting is prolonged in its own shadow in a way that would require the light source to be at an infinite distance opposite to the viewer. Moreover, the figures on the shoji appear to be distributed in the third dimension, partially overlapping each other. In the Eishi scroll, the leftmost player's projection bends around the corner formed by two sliding doors. Indeed, in all those cases these figures are best construed as silhouettes of the people as we would see them were the shoji removed.

However, the intention of the painter seems to have been that of conveying

Figure 1.   Miyagawa Chôshun, Genre Scenes in Edo (detail), early 18th C., hanging scroll, ink and colors on paper, Idemitsu Museum, Tokyo.

Figure 2.   Chôbunsai Eishi, Going to Yoshiwara (detail), hanging scroll, ink and colors on silk, Idemitsu Museum, Tokyo.

the impression that these really are cast shadows. Two reasons militate in favor of the shadow interpretation. First, the definiteness of the projections on the shoji is not compatible with the possibility that what is here represented are people seen through a screen. Silk paper is not sufficiently transparent. Second, in the Eishi scroll, the last scene, which represents a bedroom, is set in a way that is analogous

to the one of the banquet; in both case a silkscreen blocks the view of a part of the room, and were the silkscreen removed, it would be possible to see the rest of the room. But here the silkscreen is immaculate: nothing is seen on it.

The two painters seem to have complied with the request "make it look like a shadow". But then, if these are shadows, why aren't they depicted so as to be geometrically accurate?

Upon reflection, the painters' choice has been judicious. Real shadows would have been subject to contingencies of the projection, and most likely hard to decipher. Truthful as they may have been to a real situation, they would have been useless for indicating what is beyond the screen. In the cases under study, however, we clearly distinguish people and their actions by looking at their projections on the shoji.

The effect produced by these shadows is different from, but related to, the copycat effect described in Casati (2008). The copycat effect solves the shadow correspondence problem (Mamassian 2004) of associating a visible object with its shadow by copying the profile of the object that can be seen by the observer's viewpoint onto the profile of the shadow. In the case under study too the profile of the shadow matches the profile of an object – were the object be visible, it would project on the image a profile that is exactly the same as the one projected by the shadow. The crucial difference is that the shadow caster is not visible. But precisely this is what opens up a possibility for artistic use of shadows. The two scrolls suggest that shadow composition can be used as an instance of image composition. Set free from both the shadow caster and the light source – which is not, or not completely, visible – the shadows acquire a life of their own and can be composed at will in order to convey the intended representational effect.

Shadow depiction offers interesting examples for the study of the way the brain represents shadows. Tolerance for geometrically impossible depictions is matched by intolerance for depictions that do not recreate the correct light conditions. We immediately perceive that something is wrong with the light, but we need some reasoning to notice that something is wrong with the geometry. In the two Edo examples, the mastery of the artists has been deployed in rendering the particular light conditions of shadows cast on a screen. It is quite convenient that the possibility of detecting geometrical inconsistencies is hindered, due to the invisibility of the shadow casters.

Acknowledgments

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