

A different kind of cultural frame: An analysis of panels in American comics and Japanese manga

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Abstract: The growing interest and influence of Japanese *manga* (“comics”) in America has inspired comparisons between the properties of the two cultures’ graphic systems. Various theories have hinted to the existence of structural variation between these cultures’ books, yet little quantitative data has served to support these claims. This study seeks to provide empirical evidence for these cross-cultural theories by examining 300 panels in each of twelve American and twelve Japanese comic books. It examines 1) how they highlight amounts of information, 2) their depiction of subjective viewpoints, and 3) the angle of view taken by their representations.

Keywords: visual language / comics / drawing / graphic representation / Japan

Introduction

The growing popularity and influence of Japanese manga (“comics”) in America over the past 30 years has inspired great interest among readers, artists, and scholars alike. Concomitant with these trends is a curiosity for how these graphic narratives differ from American comics in their methods and structures. While several accounts have made theoretical comparisons (McCloud 1993, 1996; Rommens 2000), few works have attempted a quantitative analysis by coding the properties of these populations. This work attempts a foray into analyses of this type, testing previously made claims by comparing panels from Japanese manga and American comics. It examines 1) how they highlight amounts of information, 2) their depiction of subjective viewpoints, and 3) the angle of view taken by their representations.

Background

In one of the only quantitative analyses comparing comics and manga, comic author and theorist Scott McCloud (1993) noticed differences in their use of “panel transitions”—characterized relationships between the content of comic panels. American books dominated in Action-to-action transitions ($\leq 60\%$), which shift between panels showing the representation of an action, followed by Subject-to-subject ($\sim 20\%$) transitions showing shifts between characters in the scene, and finally Scene-to-scene transitions ($\sim 15\%$) shifting between two locations. Manga also dominated in Action-to-action transitions ($\sim 50\%$), and also had several Subject-to-subject transitions. McCloud found that manga used an additional type of transition as well though: Aspect-to-aspect transitions ($\sim 15\%$) characterized by the “wandering eye” that they cast on different aspects of the scene. McCloud attributed these differences to two different “artistic” mentalities, with “Western Art” being fairly “goal-oriented” in contrast to the Japanese focus on “being there over getting there” (McCloud 1993).

McCloud also claimed that Japanese manga use more of a “subjective” view in their narratives than American comics (McCloud 1993, 1996), though he did not use any quantitative coding to back up this hypothesis. He argues that American representations favor lines bound to a moving object as if a static viewer was watching its path of motion—an “objective” view. When the viewer moves at the same rate of the object, it appears still, while the background elements are blurred or depict motions lines. McCloud argues that this latter use is more prevalent in Japanese manga (or at least it was until the 1990s, when it began to appear in American books, possibly through influence of manga).

Another difference regarding manga and comics comes indirectly, through their influence on children’s drawings. Children have been shown to imitate drawings from comics both in America (Wilson and Wilson 1977; Smith 1985) and Japan (Wilson 1988, 1999). Comparing these groups, Masami Toku (2001, 2002) has observed that Japanese children’s drawings departed in structural characteristics from those of American children. While some aspects are similar, Japanese children use aerial and close up (“exaggerated”) viewpoints en masse, which were absent in American children’s representations. Given that both American and Japanese children are exposed to the same visual culture in video games and television, she attributes these differences to the

pervasive role that manga plays in Japanese culture in comparison to American children's readings of comic books.

This study seeks to find evidence for McCloud and Toku's hypotheses by comparing the panels in American and Japanese panels by looking at three properties of panels. First it looks at how panels highlight characters in a scene, to examine McCloud's observations that narratives in manga involve more depictions of parts of an environment and Toku's observation that Japanese children use "exaggerated" views that come from manga. Second, it examines the use of subjective viewpoints to find support for McCloud's hypothesis that Japanese authors do more to place the reader in a subjective view of the story. Third and finally, the angle of view taken in panels will be examined as an influence for Toku's observation of aerial viewpoints in Japanese children's drawings. Each of these areas will be discussed in more detail, along with the results of their investigation.

Methods

Stimuli

This study coded 300 panels in each of 12 American and 12 Japanese comic books for their spatial properties. The books were all mainstream titles from a variety of genres, and are listed in full in the Appendix. The American books were dated from 1986 through 2003, with the mean date at 1996. Japanese books were roughly the same, starting at 1983 through 2003, also with a mean date of 1996. On average, both cultures reached 300 panels across 60 pages, although American books had a higher standard deviation (15.7) than Japanese books (7.8), yielding an average of 5 panels per page for both (SD = American 1.7, Japanese 0.7).

Procedure

Panels were coded one at a time in each of the books examined. Mean proportions for the various categories were calculated for each book by dividing from the total number of panels analyzed (i.e., 300 panels). Means for panels within and between countries were then analyzed using Analysis of Variance (ANOVA) and follow up t-tests.

Because of peculiarities of some authors, certain panels were excluded from the coding because of their redundancy. For example, in Frank Miller's *The Dark Knight Returns*, a rhetorical device of a newscast is used throughout the narrative, often taking up several panels per page. Since these panels are thematically restricted in their spatial properties to a lateral viewpoint of a newscaster's bust, their redundancy would have biased the analysis. Similar panels were excluded if they repeated the exact same image as the contents of several panels, and in such cases only one of these panels per page was recorded to limit the recording of redundancy.

The advantage of using an approach like this is that it concretely allows for looking at properties in comics using quantitative measures. Subjective accounts of how comics might "feel" or "seem to be" different from manga are ultimately unreliable compared with the hard data of consistent analysis and statistical measures across a wide sampling of books.

Attention Units

Within the visual language found in comics, panels can function as a unit of attention to frame whatever the grammar governing the sequential structures might need to focus on (Cohn 2007). In some cases, this framing might lead to additional cognitive processing. For instance, if two characters at the same state are depicted in two separate panels, a cognitive operation is necessary to fuse them together into an understanding that they belong to a common environment (Cohn 2003). Such a viewpoint contrasts McCloud's approach to narrative using panel "transitions," which characterize the *changes* made between juxtaposed panels. Instead, this view seeks to elaborate on the properties depicted by individual panels, embedding those panels within a grammar of sequential structures (Cohn 2007). Given this different perspective, the differences that McCloud found cross-culturally in transitions can be explained by aspects of the panels individually.

Panels contain two types of entities in their representation of imagery: active entities play a role in the expression of the sequence of panels, while inactive entities are backgrounded (Cohn 2007). Entities are not restricted to being a singular person or thing, but could be a group, substance, or object. The variability of what is active and inactive,

and what constitutes an “entity” depends entirely on the context of the sequence the role it plays in the sequence. Things that repeat and change across panels are active, while those that do not remain inactive.

Panels can be characterized based on the number of active entities they show. A *Macro* contains multiple entities in it while a *Mono* shows a single entity in a frame. Next, a *Micro* contains less than a single entity in the frame. Finally, *Polymorphic* panels demonstrate the course of an action by repeating the same figure in multiple positions within a single frame. (See Figure 1.) Thus, the progression from runs from full actions, to full scenes, to single entities, down to less than one entity.

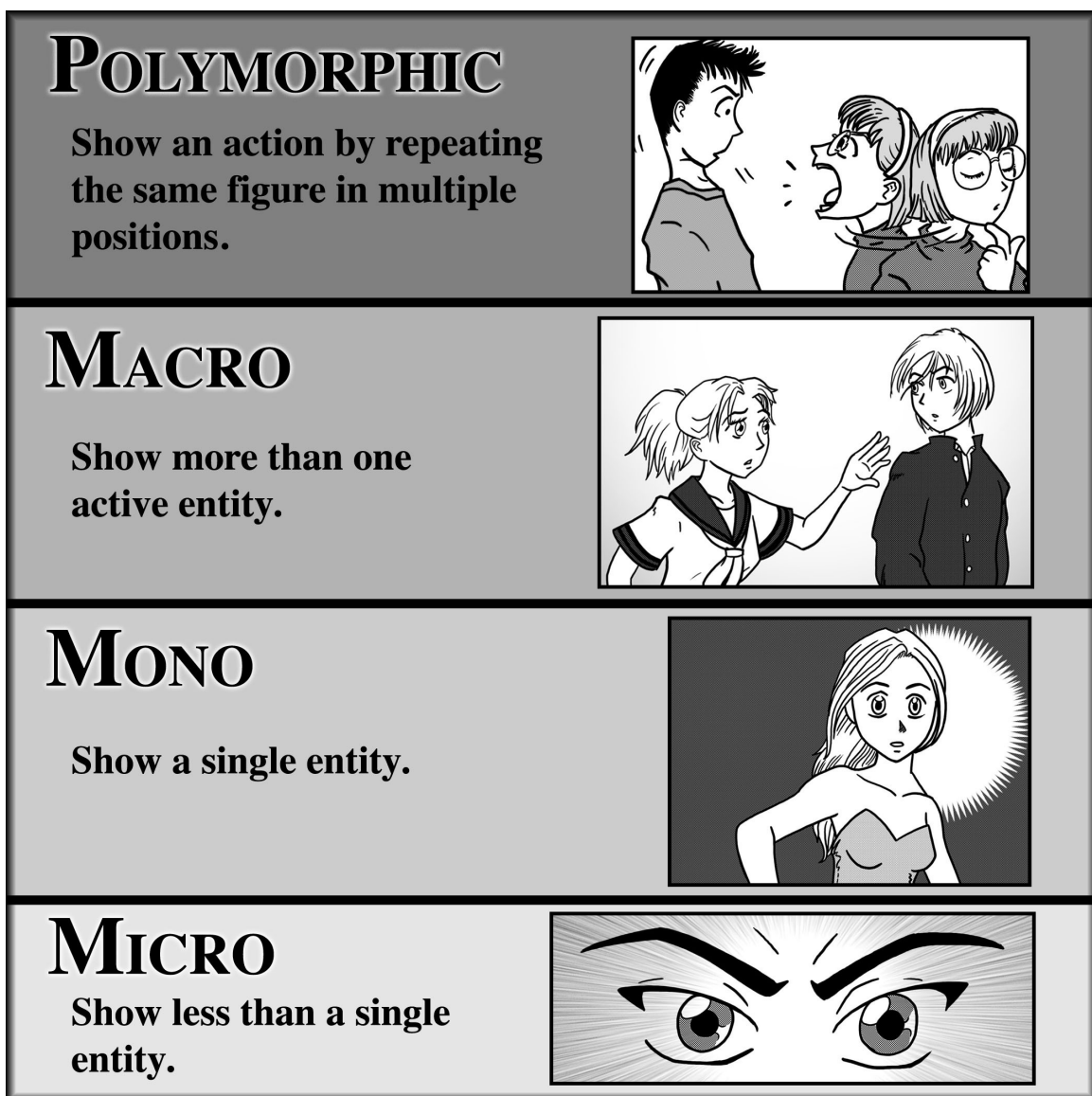


Figure 1: Categories of panel types

While the Micro class might seem to align with the film notions of “close up” and Macros with “Long shot,” these are not perfect fits. While these might appear to have prototypical correspondences, these panel types measure the amount of entities per frame instead of the overall framing of a scene, meaning that a Macro with more than one entity can still have a close-up shot. Furthermore, a Mono of a single entity could take a Long, Medium, and Close shot framing. Only the attentional panel types were measured in this study, in contrast to variations of filmic style framing.

Results

A 4 (Panel Type) x 2 (Country) Mixed Model ANOVA set Panel Type as the within-subjects effect and Country as the between-subjects effect. Significant main effects were shown between Panel Types, $F(3,66)=202.18$, $p<.001$, and a significant interaction was also found between Panel Types and Countries, $F(3,66)=6.65$, $p<.005$. Means for coding of panel types are represented in Figure 2.

Within American comics, a 4-way ANOVA found Panel Types to be significantly different from each other, $F(3,33)=84.53$, $p<.001$. American books were dominated by Macros, followed by almost half as many Monos, and very few Micros and Polymorphic panels. Pairwise t-tests showed significant differences between each pairing of panel types (all $t>9.0$ or <-3.1 , all $p<.01$).

A 4-way ANOVA found that Panel Types in Japanese manga were significantly different from each other, $F(3,33)=151.94$, $p<.001$. Japanese panels used only slightly more Macros than Monos, with a small amount of Micros, and hardly any Polymorphic panels. T-tests found that all pairwise relationships between panel types were significant ($t>9.8$ or <-6.6), except for the relationship between Macros and Monos, which was not significant, $t(11)=-1.27$, $p=.230$.

Comparisons between countries for each panel type yield significant differences. An Independent Samples t-test showed that American books used significantly more Macros than Japanese books $t(11)=-2.52$, $p<.05$, while Japanese books used significantly more Monos than American books, $t(11)=3.27$, $p<.005$. Japanese books used more Micros than American books, although this was not a significant difference, $t(11)=1.42$, $p=.170$. Polymorphic panels were higher in American books, but also were not significantly different between countries, $t(11)=-1.3$, $p=.205$.

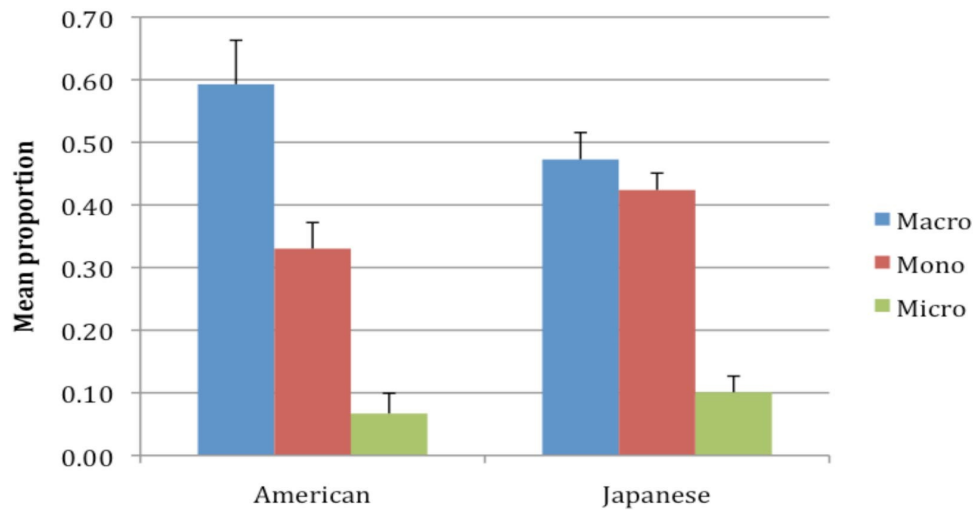


Figure 2: Panel types between American comics and Japanese manga

*Polymorphic panels are excluded because means were less than .1 for both countries

Discussion

These results show that there are significant differences between American comics and Japanese manga with regard to their framing of entities in panels. By using almost twice as many Macro panels as other types, American comics *show the full scene* in panels far more often than they show parts of scenes. In contrast, Japanese panels use far fewer Macro panels and far more Mono panels. When Mono and Micro panels are combined in Japanese panels, they outnumber Macros, meaning that Japanese manga show *less than a full scene* in over half of their panels.

These results would seem to support a view that Japanese panels allow for detailing aspects of the broader environment, since they are breaking up the single environment into smaller parts. By giving focus to the smaller parts instead of to the larger whole, the elements of the environment take on greater specificity instead of being merely a part of an overall scene. This forces readers to construct the whole environment in their minds, since it is not provided (Cohn 2003, 2007). In a way, manga panels are providing both the environment *and* the detail of the objects.

Given these results, an alternative explanation for McCloud's (1993) findings of transitions in panels can be presented. Transitions describe the relationship between juxtaposed panels; however, the characteristics of each individual panel must play a role in the determination of the relation between them. The large number of Action transitions in American comics found by McCloud could be motivated by the domination of Macros. Since they show a full scene, these panels are more likely to depict full actions, especially when more than one entity is involved. For example, if the scene shows one character punching another, only a Macro can encapsulate both entities engaged in the action, while Monos would individuate the entities' roles. In contrast, Japanese panels feature a larger quantity of Monos and Micros than American books, which better suit McCloud's characteristics of Subject or Aspect transitions, since they deal with individuating the entities of the scene. Thus, instead of just picking up on the relationship between panels, McCloud's coding could be sensitive to the internal contents of the panels themselves.

In addition, the proportion of Micros in Japanese books echoes Toku's (2001, 2002) observation that Japanese children use an "exaggerated" view in their drawings. This would support her claim that children are influenced by the images in manga. While Micros were not statistically significant in Japanese manga compared to American books, the sheer presence of them in manga may be enough to allow such influence. Indeed, Japanese children are known to imitate the drawings in manga far more than American children imitate the drawings in American comics (Wilson 1988, 1999; Wilson and Wilson 1987). Thus the influence of manga could be attributed simply to the fact that more children read comics in Japan compared to America (Schodt 1983).

Subjectivity

One of McCloud's (1993) claims about the difference between American and Japanese comics is that manga allow for a more "subjective" experience for the reader. He bases this claim in part on the proportion of Aspect-to-aspect transitions which, he argues, immerse the reader into the environment of the story. He also proposes that subjectivity is enhanced through the use of various types of speed lines, which in manga often depict lines behind objects, making it seem as if the reader is moving at the same speed as the moving object.

Another more direct method of depicting subjectivity is one that McCloud does not address: whether or not the image shown by a panel depicts the viewpoint of a character within the narrative itself. This technique has been common in filmmaking since early experiments in cinema (Bordwell and Thompson 1997), and has been discussed in comics as well (Driest 2005; Lacassin 1972). Coding panels on this property can give a quantitative measure on whether American comics and Japanese manga differ in their representation of subjective viewpoints.

Results

Neither group used subjective viewpoints in excess, with a mean rate of .016 of Japanese panels (SD = .11) and .0097 of American panels (SD = 0.098). That is, for both cultures, subjective viewpoints in panels were close to 1% of all panels. However, a t-test between countries showed that Japanese panels did use significantly more subjective panels than American panels, $t(11)=2.41$, $p<.05$.

In addition, for panels in Japanese manga, subjectivity showed correlations with panel types. Subjectivity showed a significant positive correlation with Monos, $r(10)=.782$, $p<.005$, though it had a significant negative correlation with Macros, $r(10)=-.809$, $p<.005$. Micros also showed a positive trend towards significance with subjectivity, $r(10)=.524$, $p=.081$. American panels showed no significant correlations with subjectivity.

Discussion

In sum, it does appear that Japanese manga use more subjective viewpoints than American comics, supporting McCloud's (1993) theoretical stance. However, it is interesting that these subjective viewpoints were most correlated with Macros and slightly with Monos, though they were less likely to appear with Monos. This provides a clue as to what sorts of things are being depicted from a character's viewpoint in Japanese manga. The prevalence of Macros implies that authors are showing characters' vision of an entire scene, while the trending significance with Micros would imply that subjectivity is used to also show a character looking at details. The decreased likelihood of subjective viewpoints used by Monos would hint that characters are not shown simply

looking at other characters, or at least that such representations are not obvious as subjective viewpoints.

Angle of view

Five major categories were used to judge the *angle of view* in each panel. In relation to the primary objects in the panels, representations were determined either as having a 1) high vertical view (aerial), 2) high-angled view, 3) lateral view, 4) low-angled view, or 5) a low vertical view (ground-up). One study by Neff (1977) examined angle of viewpoints in different American comic genres (Adventure, Romance, Mystery, and Alien Beings or States), though he coded only lateral, high, and low angles. While lateral viewpoints were primarily dominant in all genres, Mystery comics did show some variation in angles. Additionally, lower angles appeared more prevalent than high angles. However, this study sampled only two books per genre, making hard to generalize the results. No such coding studies are apparent in the literature for Japanese manga.

Results

A 5 (Angle) x 2 (Country) Mixed Model ANOVA set Angle as the within-subjects effect and Country as the between-subjects effect. A significant main effect was found by Angle, $F(4,88)=741.20$, $p<.001$, and a significant interaction between Angle and Country, $F(4,88)=4.74$, $p<.005$. Mean rates of angles are described in Table 1.

Angles in panels from American comics were shown to be significantly different from each other in a 5-way ANOVA, $F(4,44)=370.66$, $p<.001$. Lateral angles far dominated in American comic panels. High and low angles were used only in marginal amounts, while Aerial and Ground-up views were rarely used at all. Comparisons between angles found significant differences between pair-wise relationships for almost all types (all $t > 3.9$ or < -3.4 , all $p < .01$). However, High angle and Low angle viewpoints were not significant, $t(11)=1.35$, $p=.203$, and the relationship between Aerial and Ground-up angles were only trending in significance, $t(11)=2.07$, $p=.063$.

Japanese manga also showed significant differences between angles, $F(4,44)=376.04$, $p<.001$. Lateral angles were used far more in Japanese panels as well, again with marginal use of High angles, and some Low angles. Aerial and Ground-up

viewpoints again were used at fairly low proportions. Pair-wise relationships between all angles were significant (all $t < 3.7$ or > -7.3 , all $p < .005$), except for the relationship between Aerial and Ground-up angles, $t(11) = -.528$, $p = .608$.

As the background research suggested, besides the LRM categories, this field produced the most variation between the cultures. Neither group featured many high vertical angles, both at around 1%. Americans used 9.9% high-angles while Japanese used 14.9%. For both, a lateral viewpoint dominated, though Americans had far more with 82.1% over the 73.4% in Japanese panels. Americans used only 6.1% low-angle to the Japanese 8.9%. Finally, neither used many low vertical views, Americans at only 0.25% and Japanese at only 1.3%.

Table 1: *Mean and standard deviation for angle of view in American and Japanese panels, * = Significant difference, ^ = trending difference*

	Aerial	High Angle [^]	Lateral*	Low Angle [^]	Ground-up*
American	0.010 (.08)	0.10 (.08)	0.82 (.04)	0.06 (.00)	0.003 (.01)
Japanese	0.011 (.05)	0.15 (.09)	0.73 (.04)	0.09 (.02)	0.013 (.01)

Comparison between individual angles for Japanese and American panels showed some significant differences. Lateral viewpoints were shown to be significantly more prevalent in American over Japanese comics, $t(11) = -2.49$, $p < .05$. Ground-up viewpoints were also significantly higher in Japanese over American panels, $t(11) = 2.36$, $p < .05$. Significances were found to be trending in both high angles, $t(11) = 1.76$, $p = .092$, and low angles, $t(11) = 1.79$, $p = .087$. Aerial viewpoints were not significantly different between countries, $t(11) = .247$, $p = .807$.

Discussion

While both American and Japanese panels used Lateral angles far more than any other type, American panels relied on this viewpoint more. High and then low angles were used next most in both populations, though Japanese panels used both types in higher proportions. Ground-up and Aerial viewpoints were used rarely at all in both types of comics. On the whole, the fewer number of lateral viewpoints in Japanese comics have yielded higher proportions of other types of other angles.

Clearly, the domination of lateral view over all other viewpoints weights it toward consideration as a prototypical setting for spatial depictions in both American and Japanese drawings. The intuitive cause for this would be orientation of the human eye with regard to daily perception. Similar thinking inspired Toku's (2002) musing that the elevated view in Japanese children's drawings could have come from children looking at their school playgrounds from classrooms high up in buildings. However, while this might be a factor, other graphic systems clearly disregard this aspect of experiential perception. Wilkins (1997) reports that the sand narratives of the Central Australian community of the Arrernte employ a fixed aerial viewpoint at all times, with no appeal to their perceptual environment. Indeed, taking such a perspective is consistent with the *conceptual* structure of their spoken language, which adopts an absolute system of space that uses only cardinal direction (Levinson 1996). Furthermore, Wilkins (1997) and Cox (1998) both discuss the influence that Western forms of lateral representation have had on Arrernte children's drawings. Rather than fully taking on one spatial system alone, they often blend the two, integrating aerial views contextually within lateral views, or "code-switching" between them. Since these mixed-viewpoint images cannot be attributed to perception, exposure to graphic systems is the most likely source of inspiration for viewpoints in drawings. These data further support that Japanese manga may be a source of influence for Toku's (2002) findings that children's drawings from Japan use more elevated viewpoints, given the increased amounts of Aerial, and particularly High angled viewpoints in Japanese manga.

This background research implies that spatial viewpoints are part of the organized structures of the graphical and conceptual system, though no evidence thus far suggests that perception has *no* influence at all. Given the results for lateral viewpoints in this analysis, it would be surprising if perception played no role in its dominance.

Conclusion

This study has shown that American comics and Japanese manga differ in their trends of highlighting characters, depicting subjective viewpoints, and varying spatial angles. One outstanding question is related to why such differences might be found between cultures. McCloud (1993) has attributed such variance to differing "artistic

cultures” between America and Japan. However, such claims are hard to support quantitatively. Another interpretation can be provided by considering the graphic systems used in comics as types of “visual language” (Cohn 2003, 2005), motivated by cognitive patterns that are entrenched in the minds of readers and creators. In this case, American comics and Japanese manga may simply use different systems. Such a framing would regard variation as less monumental, because languages are assumed to be different between cultures. Other departures between these systems can already be seen in the graphic styles in which they are drawn. However, these data suggest that more subtle domains also vary between cultures. What remains then, is two distinct systems, each with their own characteristics: American Visual Language and Japanese Visual Language. This study thereby marks a starting point for future quantitative analysis comparing the structures of different visual languages.

Appendix 1: Works Analyzed

American

- Byrne, John. 1994. *Danger Unlimited*. Milwaukie, OR: Dark Horse Comics
- Choi, Brandon, Lee, Jim, and Campbell, J. Scott. 1994. *Gen¹³*. Anaheim, CA: Image Comics
- Dixon, Chuck and Johnson, Jeff. 2003. *Way of the Rat, Vol. 1: The Walls of Zhumar*. Florida: CrossGen Entertainment
- Larsen, Erik. 1993. *The Savage Dragon*. Anaheim, CA: Image Comics
- Lee, Jim and Choi, Brandon. 1993. *WildC.A.T.s: Covert Action Teams*. Anaheim, CA: Image Comics
- Mignola, Mike. 2002. *Hellboy: Conqueror Worm*. Milwaukie, OR: Dark Horse Comics
- Miller, Frank. 1986. *Batman: The Dark Knight Returns*. New York, NY: Warner Books
- Russell, P. Craig. 2002. *The Ring of the Nibelung: Volume One*. Milwaukie, OR: Dark Horse Comics
- Sim, Dave. 1987. *Cerebus: Book One*. Winsor, Ontario: Aardvark-Vanheim Inc.
- Shanower, Eric. 2001. *Age of Bronze: A Thousand Ships*. Orange, CA: Image Comics
- Smith, Jeff. 1991. *Bone, Vol. 1*. Columbus, Ohio: Cartoon Books
- Valentino, Jim. 1993. *Shadowhawk: Out of the Shadows*. Anaheim, CA: Image Comics

Japanese

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- Kishiro, Yukito. 2003. *Gunmu: Last Order, Vol. 4*. Tokyo, Japan: Shueisha

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