

# Manga as an Educational Medium

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*Abstract: Manga is representative of current Japanese culture and has myriad genres and varied readership. Although several genres of manga have become the object of research, these only represent a fraction of the range of genres available in Japan. This paper will analyse one of the unexplored genres of manga, educational manga. That is, manga which either overtly or covertly informs readers with valuable real-world information while entertaining them with engaging stories and characters. By combining visual and verbal texts with stories, manga is able to make difficult topics easy to understand. There are a number of publications which strategically use this merit, such as Manga Nihon Keizaigaku Nyūmon (Introductory Japanese Economics through Manga). At the same time, a significant number of more entertaining manga are also published as manuals of sorts, which are able to guide and trigger the readers' important lifetime decisions, such as choice of professions. It is safely said that such manga are essentially more educational media than mere entertainment. These manga works are often based on accurate information derived from careful research, providing high literary value and intellectual stimuli to readers. This study will discuss the genre of "educational" manga by focusing Moyashimon: Tales of Agriculture, which appeared in an adult (sēnen) manga magazine and quickly became popular, leading to a marked increase in enrolment in tertiary agriculture studies.*

Keywords: Educational Manga, Sēnen Manga, Moyashimon

## Introduction

**M**ANGA IS REPRESENTATIVE of current Japanese culture, and as such, is studied in ever greater detail by scholars at various universities around the world. Manga has myriad genres which vary with readership, especially manga in Japan.

Even though several genres of manga have become the object of research, these genres only represent a fraction of the full range of genres available in Japan. This study will aim to introduce and analyze one unexplored area, the subset of educational manga; i.e. manga which inform the reader with valuable real-world information while entertaining the reader with engaging stories and characters.

Manga conveys stories or information by using pictures and words. Schodt writes that "Japanese manga are a visualized narrative with a few words tossed in for effect" (1996). Tezuka asserts that manga expresses meaning through hyperbole, abbreviation and deformation (Tezuka cited in Takeuchi, 2005). Through these techniques of expression, manga entertains readers while simultaneously communicating accurate information and making difficult topics easy to understand.

The genre of educational manga has maintained strong popularity for many decades: however, it has not been examined in detail. This study will therefore discuss the importance of research on such educational manga, focusing on the currently popular manga, Ishikawa

Masayuki's *Moyashimon: Tales of Agriculture*. This work first appeared in a sēnen manga magazine, *Evening*, in 2004.

### Significance of Educational Merit for sēnen Manga

Manga is one of the most popular and important forms of modern Japanese publications. Manga, especially in Japan, has many different genres which vary with readership. In 2004, there were 281 weekly and monthly manga anthologies in circulation (The Research Institute for Publications cited in Nakano, 2004). Of these, 21 were shōnen-shi, a genre for boys of high school age and younger; 43 were sēnen-shi, a genre for men of high school age and older; 43 were shōjo-shi, a genre for girls of high school age and younger; 59 were ladies' comics for women of high school age and older; 17 were four-frame manga, 22 were about Japanese pinball, pachinko and pachisuro; 11 were m/m slash, shōnen-ai and yaoi genre in which writers, who are mainly women, create love stories between beautiful young men for their female readers; and 54 magazines were in other genres. Clearly, there is a wide variety of genres on the market.

Further analysis reveals, however, that the bulk of manga readership is concentrated into just a few genres. Nakano (2004) offers a breakdown of the number of manga books sold annually by gender and group (Figure 1): more than 480 million magazines sold per year are boys' manga and more than 470 million magazines per year are for men, meaning that about 76% of manga are sold to male readers. Meanwhile, about 110 million magazines sold are girls' manga and about 84 million are for women; in other words, about 15.5% of manga are sold to female readers. The remaining 8.4% fall into other categories. This clearly shows the commercial dominance of manga for males, the subject of this paper.

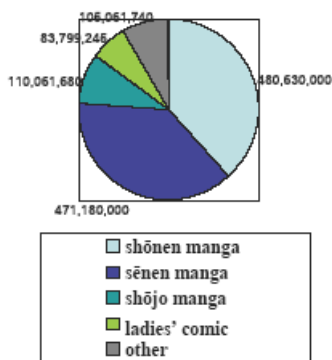


Figure 1

Manga portrays a wide range of topics, just as with novels and dramas. Examples include love stories, sports stories, thrillers, science fiction, so-called gag manga and pornographic manga. Manga is a medium which draws on people's natural curiosity. In fact, manga is often created based on careful research and correct information, which underpins the quality of the works. For instance, realistic, accurate information is contained in 11 out of 22 titles in the June 9, 2009 issue of *Evening*, a sēnen manga; and 12 out of 28 titles in the June 10, 2009 issue of *Weekly Shōnen Magazine*, a shōnen manga.

In contrast, such information is found in only four out of the total 15 titles in the June 3, 2009 issue of *Kiss*, a ladies comic, and none of 14 titles in the July 10, 2009 issue of *Nakayoshi*, a shōjo manga for younger girls.

This demonstrates the importance of realistic and accurate information in male manga. In other words, male manga is less fictional and more educational, like a sort of manual, attaching importance to the detailed, realistic depiction of facts in real life.

The subject matter is wide ranging, from the scientific to the socio-economical and political, as well as hobbies. The yellow section of the pie chart below shows that approximately half of male manga are based on careful research and correct information (Figure 2). This shows that approximately half of entertaining manga for males, and about a quarter of manga for females, are written as manuals of sorts. This confirms the significant value of this medium, being simultaneously entertaining material and rich educational resources, satisfying the readers' curiosity and appetite for lifelong learning.

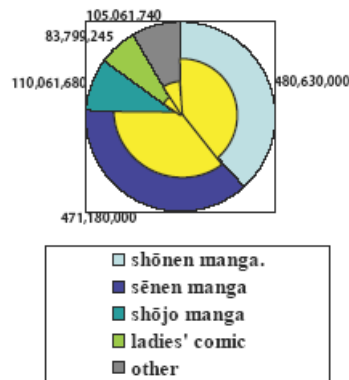


Figure 2

There are roughly two types of publications in the educational or informative manga genre. The first type is those which overtly utilise the educational merit of manga to enable readers to understand difficult topics easily. They were derived from the genre of *gakushū* manga (lit. learning manga) from the 1950s, which aimed to educate children by presenting difficult topics, such as history, geography, science, mathematics, and technology in manga form (Kure 1997). Ishinomori Shōtarō<sup>1</sup>'s "*Manga" Nihon keizai nyumon* ('*Introductory Japanese Economics through Manga*') in 1986 represents the genre in adult manga. It is a seminal work, explaining the function of the economy, the legal system, and the distribution system (Kinsella, 2000). This book was one of the highest selling business books of 1987 (Japan Technical Information Services Corporation 2006) and its success is attributable to how it depicts the economy in simple terms using manga. This publication was a trigger for the growth of educational manga for adult readers. Since then, manga have been successfully employed to arouse readers' interest in topics normally considered to be difficult or uninteresting.

The main aim of the genre is to educate readers with specific knowledge; hence the storylines and characters serve this purpose, potentially lessening the literary value. The

<sup>1</sup> For Japanese names, the surname is followed by the given name.

works in this genre include manga concerning hobbies and pastimes, e.g. golf, fishing, cooking and gambling (e.g., pachinko, pachisuro and mahjong). These manga generally aim at specific age groups or special interests, for example, manga about pregnancy or child-rearing.

The second type of publication in the educational manga genre is those manga published essentially as entertainment; however, they play an educational role in effectively delivering accurate information on the specific areas they deal with. These manga were gradually developed as the hybrid of educational manga and entertaining manga and have flourished since the 1970s. Unlike the former, the storylines and characters in the genre are more entertaining and independent from the knowledge the manga convey. This genre is our focus of this paper and as mentioned above, largely found in *shōnen* and *sēnen* manga.

## **Making Difficult Topics Easy to Understand**

Why does manga have the effect of making difficult topics easy to understand? The reason lies in the hybridity of the manga text, which consists of both visual and linguistic texts.

Many scholars have shown that hybrid texts of the verbal and the visual help readers' efficient understanding and learning. For example, using Dual Coding Theory, Paivio (1986) explains that our cognitive system consists of two parts, the verbal system and the non-verbal systems, which are processed through different channels. When images or figures match the verbal input, they are encoded by both the verbal and non-verbal systems, thus promoting memory more strongly than in the case of verbal or visual input alone. Anderson and Bower (1973) likewise state that memory of verbal information is enhanced when relevant visual images are provided. Larkin and Simon (1987) also emphasize that the ability to process information is enhanced when text is augmented with pictures. McCrudden, Schraw, Lehman & Poliquin (2007) further showed that the underlying cause-and-effect in sentences are understood more easily when there are visual clues of the cause-and-effect. Moreno and Mayer (1999) also demonstrate that multimedia is effective for learning.

Using the abovementioned approaches, Tamada (2008) asserted the effectiveness of manga as an educational tool. Likewise, Murata (2008) found that manga promotes readers' effective understanding by spelling out the thematic focuses in the illustrations. Additionally, Hasegawa (2002) demonstrated that manga can be read in a shorter time and give a stronger impression than conventional text books.

There are a number of analyses of the function of such hybrid texts. For example, in his study of structure of manga, Natsume (2002) argues that multiple layers of visual apparatus augment the manga text making it rich and informative: the primary level of symbolism is in the basic manga illustrations; the secondary level of symbolism is in the speech balloons, various type of lines, onomatopoeia, and mimetic words; the third level of symbolism is in the lines which describe movement; and the fourth level of symbolism consists of graphics such as drops, smoke, stars, and lines which indicate "surprise".

In short, manga's textual hybridity is utilised to promote the readers' effective learning, as verbal and iconographic texts place multiple layers of information in context and project a focused content.

### Case Study : *Moyashimon-Tales of Agriculture*

In this section, we will look at a sēnen manga, *Moyashimon*, focusing on an episode of miso making, and examine how manga efficiently convey detailed and accurate information on a specific area of agriculture, brewing technology, while maintaining the entertaining aspects.

*Moyashimon: Tales of Agriculture* by Ishikawa Masayuki is a currently popular manga, first appearing in 2004 in a sēnen manga magazine *Evening* by Kodansha. It is considered that its popularity has even caused an increase in the population of prospective agriculture students. *Moyashimon* brings to life the microscopic world of fungi and food cultures with cute illustrations of fungi characters and human characters and their interaction. The lead human character is Sawaki Sōemon Tadayasu who can see the inhabitants of the microscopic world and communicates with these fungi characters. Using Tadayasu as a mediator, the worlds of human and the microcosm are intertwined. Through Tadayasu's perspective, the mystery of brewing and fermentation is comically portrayed. Key concepts are repeatedly presented in the entertaining format, making *Moyashimon* representative of manga that successfully promotes readers' interest in, and effective understanding of, difficult subjects such as brewing technology.

The layout of this manga is typical of sēnen manga, with the story arranged in a simple sequece of square frames (Takemiya, 2001). Natsume (1992) describes such frames to be typical in shōnen manga: they create a highly regular world consisting of a flat surface evenly divided by twin sets of vertical and horizontal lines; this is a neat, orderly and thoroughly left-brain world. In other words, the spatial distribution of the frames is ideal for a logical story sequence to underpin the comical yet informative ambience.

According to the author, Ishikawa Masayuki, the main theme of this manga is 'to brew', which is repeatedly presented throughout the story with the cartoonishly portrayed *Aspergillus oryzae* yeast cells' gleeful chorus, "*Kamosuzō!*" (we will brew!), when they cause fermentation during the brewing process. The expression "*Kamosuzō!*" comse from the verb *kamosu* (to brew). By repeating this catchy expression, these cute fungi characters use exaggeration to appeal, as Plato would say, not to the reader's consciousness, but to their emotions – and with optimal effect (Plato cited in Satō, 1978).

As Tezuka asserts that manga expresses meaning through hyperbole, abbreviation and deformation (Tezuka cited in Takeuchi, 2005), these simple, codified bacteria help readers to be engaged and participate in the narrative to a greater degree, by sharing multiple view points, of both humans and bacteria such as *Aspergillus oryzae*. This enables more effective understanding of the technical details depicted in the manga compared to just written text without images. This process is important as McCloud (1993) emphasizes that codes make meanings only through the participation of the reader. Comical onomatopoetic expressions such as "*Kamosuzō!*" encourage readers to imagine the movements of the bacteria, facilitating the easy digestion of the material. The bacteria often deliver speeches to convey technical information, however, they are given in a comical and entertaining way so that the information is easily accepted by readers.

Comicalness is an important element in entertainment and such comicalness is most effective when placed in an appropriate structure. *Moyashimon* comprises a number of episodes with essentially the same story framework, which is in fact similar to traditional performance arts, such as *rakugo* and *kabuki*, in which entertainment is the primary focus. In the narrative art of *rakugo*, storytellers work from a repertoire of tales that deal with everyday topics and

condensed versions of old, traditional stories (Nomura, 1994). Employing every manner of rhetoric, the storyteller entertains the listeners and draws them into a fictional world, only to bring them back to reality with the final punch line. *Moyashimon*, using the same techniques as *rakugo*, draws the reader into the story, entertaining them while simultaneously providing them with information about the miso production process, equivalent to about a page and a half from an encyclopedia (Kawano, 1995).

The traditional structure of *rakugo* is as follows. It begins with the storyteller taking the stage and giving a brief greeting e.g., remarks about the season or weather, gives thanks to the audience for coming, remarks about performing *rakugo*, makes a request for audience cooperation. This is followed by introductory remarks called *makura* (lit. pillow), which involves one or more of the following: gauging audience reaction; telling humorous anecdotes related to the main topic; hinting at the final *ochi*; explaining manners and customs related to the story; and providing extra information, such as the specific background of the topic or story, if it is necessary for the listeners to follow the subject matter (Sawada cited in Nomura, 1994). After that, the storyteller enters the main narrative, which is concluded with the *ochi* (a kind of punch-line or denouement) and the final remarks to wrap up his performance. At the closure, he also makes a few remarks to introduce the next storyteller (Nomura, 1994).

Both *Moyashimon* comics and episodes are likewise structured. Let us compare the structure of the seventh volume of the bound comic edition of *Moyashimon* with that of *rakugo*. Pages 1-2 are comparable to the opening of the storyteller in *rakugo*. The front and back covers (without the dust jacket) are equivalent to the introductory remarks. The writer expresses thanks to the reader, gives a summary of the story so far, and urges the reader to read on.

Now, we move to an episode in the seventh volume of the manga. This episode depicts miso-making. It begins with the section corresponding to the introductory remarks, *makura*. This section includes the introductory information about miso-making, beginning with the historical background of miso production. The steaming of the beans is conducted by the human characters of this story, Oikawa Hazuki, Sawaki Sōemon Tadayasu, Mutō Aoi and Hasegawa Haruka. In this section, the reader observes the story from an external, third-person viewpoint. The cartoonized *Aspergillus Oryzae* and *Aspergillus Sojyae* briefly explain to the reader, with the help of graphic illustrations, the first part of the miso-making process from the selection of the soy beans to the point of steaming. By introducing the cute A. *Oryzae* and A. *Sojyae* at this juncture, Ishikawa, the author, highlights the vital importance of these bacteria to the production of miso and soy sauce, and at the same time engages the reader despite the rather technical and possibly difficult subject matter. Ishikawa also provides a simple explanation of these micro-organisms in the margins, thus reminding the reader again of their indispensability in the production of miso and soy sauce. This section is followed by a lecture to the reader by a character named Professor Itsuki about the origins and different types of miso. Playing on the common equation of ‘professor’ with ‘man of knowledge,’ this section employs a smaller font and a more precise description, signalling to the reader that they are receiving a more detailed explanation. This technique is typical in *rakugo* as well, where the introduction may be delivered by a tenant, while a character with greater knowledge (such as the landlord) is used to give more detailed explanation leading into the main part of the narrative.

The main narrative of miso-making begins when the human characters leave the fermentation area for a meal and the micro-organisms, *A. Oryzae* and *A. Sojae*, have an opportunity to directly communicate with the reader. They begin saying “We shall now present the miso-making process from our point of view!” Their explanation is comprehensive, covering the health benefits of miso, the production areas, and the varieties (e.g., the variations in saltiness and color of miso). A map and table are also used to present information to explain the production regions, the regional differences in terminology, the differences between the miso and soy sauce productions, using the same material (soy beans and malted rice) and similar processes.

Having comically characterised micro-organisms as speakers, the section entertainingly begins to demonstrate rice-malt miso production. The definitions of related terminology (*haze*) is also included here. In the margin of the page, there is additional information, which explains why ‘miso balls’ are needed and how they are made, and how the bacteria act on them. The section is followed by a scene in which students are making miso balls. One of student’s comments is placed outside regular speech bubbles: “It’s a lot of work.” This utterance is directed to the readers and helps them to understand the intensity of work involved. At this point, the preliminary work of miso making has been completed and the actual brewing process begins. It is noted here that the required labour and fermentation time vary between miso and soy sauce productions. One of the bacteria points out in a speech bubble that miso-making requires about a year. Simultaneously, on the page, a human character, Oikawa Hazuki, who at this point is a first year student in agricultural school, comments outside the speech bubble: “So I’ll be a second-year student” (by the time the miso has been produced), highlighting the considerable length of the time required for brewing miso. This section concludes with the student miso-making competition and shows how distilled alcohol is added before the miso can be sent to the shops.

The next section corresponds to the *ochi*, or punchline, in *rakugo*. Similar to *rakugo*, it includes a comical punchline, with the bacteria putting up a signboard reading, “Leave the miso-making to us”, which, thanks to a play on words in Japanese also means, “Leave the self-applause to us.” The bacteria are humorously reminding us how essential they are to the miso-making process. In *rakugo*, the *ochi* is followed by the *musubi*, remarks for introducing the next storyteller. In the same way, the bacteria, before taking their exit, remark, “That, in a nutshell, is how miso is made”, thus giving closure to their story and providing the transition to the following scene to return the readers to the human world.

The above demonstrates how the narrative structure of *Moyashimon* closely resembles that of the comical story-telling performance, *rakugo*. Employing every manner of rhetoric, the *rakugo* storyteller entertains the listeners and draws them into a fictional world, and brings them back to the real world with the final punchline. Similarly, the manga *Moyashimon* artfully draws the reader into the microscopic world and delivers, in an enjoyable and easily digestible format, accurate, technical information (Kawano, 1995).

## Conclusion

Manga are strongly hybrid narratives, which interdependently integrate verbal and visual texts to depict and interrogate diverse topics in our everyday lives. Manga have developed in Japan based on both Japanese visual and narrative arts and western comic arts and have now gained global popularity. Research on manga has been growing rapidly, however, there

are still many unexplored areas. This paper examined such area: educational manga for adult readers. These manga are entertaining and yet simultaneously educational, as they distribute accurate information on focused, specific fields, acting like manuals, thereby playing a significant role as popular resources for life-long education. In the discussion of *Moyashimon*, we have argued that this manga has a similar structure to the traditional narrative performance, *rakugo*, which effectively encapsulates the rich information and comicalness of the series, which are important ingredients for helping the reader to easily digest the unfamiliar information presented.

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