Lund University
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Japanese

Kanji – The Structural Variations of Radicals

A Japanese linguistics bachelor's thesis regarding the structural variations of radicals and their origins.

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Abstract

The main purpose of this thesis is to investigate and analyse some of the radicals utilized

in the *kanji* of the Japanese language. These are radicals that have more than one variation

of their shape and may be positioned in different locations within the character, at times

depending on the structural variation of the radical. The radicals will therefore be

analysed in order to try and discover if there are any specific practical linguistic reasons

behind these variations or if it coincidentally emerged during history. This analysis will

be made by first offering a historical perspective and facts and then a linguistic part with

linguistic theory and analysis.

Keywords: Japanese, *Kanji*, Radicals, Chinese, Writing, History, Linguistics, Character

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Conventions

This thesis will be making use of the system recommended by Komaba Organization for Educational Development at The University of Tokyo for the romanisation of Japanese and *pinyin* will be used for Chinese. The recommended system for transcribing Japanese is the standard Hepburn system which uses a macron to denote long vowels for the Romanization of all Japanese words, e.g. 'Tōkyō' instead of 'Tookyoo', which would be the result of transcription by other systems like the standard Hepburn method. However, for words such as 場合 (*baai* 'case, situation') where the vowel 'a' is the ending syllable of the first *kanji* as well as the starting syllable for the second *kanji*, it will be written as shown above in order to avoid confusion about the *kanji* readings. All Japanese words will also be written in italics along with their translation within simple quotation marks. An example of a complete version of any used Japanese will look as the following example: 漢字 (*kanji* 'Chinese character'[1]). To express emphasis or denote titles, italics will also be applied. In this thesis you will read both Chinese character and *kanji*, as the term of Chinese character will be used for the historical description of the character while *kanji* will be used for the word when the focus is on its use in the Japanese language. Lastly, all abbreviations are also written in italics.

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[1]漢字*(Kanji 'lit.* Character from the Han-dynasty') the translation of 'Chinese character' is offered as Chinese characters came to Japan in waves and then fell into the same common name of *kanji*.

Abbreviations

Following is a short list of different abbreviations that will be used.

BIC - Bronze inscription character

bn. - Book name

ch. - Chinese

jp. - Japanese

lit. - Literally

LST - *Liu Shu Tang*[2]

MC - Modern character

misc. - Miscellaneous

OBC - Oracle bone character

ø - Non-existent

pron. - Pronunciation

rn. - Radical name

SC - *Shuowen* character

funct. - Function

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[2] LST is a Ming dynasty collection of the non-standard seal-type characters.

1. Introduction

Kanji have a highly advanced structure that can give clues to some of the phonology as well as the semantics of the character, however the indicated pronunciations are the *on-yomi* (*on-yomi* 'sound reading)[3] while *kun-yomi* (*kun-yomi* 'Japanese reading')[4] have no indicating element. The indicated pronunciations are the Chinese pronunciations that came along with the Chinese characters in the different waves to Japan, where they were labelled as *kanji*. However, as these different *on-yomi* pronunciations have different associations as mentioned in 2.3, those are rarely known by the common native Japanese speaker and thus should be regarded as a historical fact and not as something commonly known. Some of the elements of the characters, radicals, may give hints as to the semantics of the character while other elements, phonetic compounds, may give a hint to the phonology, creating a system that can be used by someone well versed in the written language to understand and be able to read a character they have not come across previously. A clear distinction between Chinese characters and *kanji* can be made, especially, due to the structural differences of the character phonology, as in the Chinese writing system used in China where characters are mono-phonological and thus only able to have one reading[5] while a *kanji* often may have several Chinese readings as well as Japanese readings as they are poly-phonological. There are many other differences as well, however for an overview

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[3] *On-yomi* is the umbrella term for all Chinese pronunciations. The *on-yomi* also tends to be indicated by phonological element in most cases. For more information about the different categories within *on-yomi*, see chapter 2.3.

[4] *Kun-yomi* is the name of the Japanese pronunciations of *kanji* and is only indicated by *okurigana*, the syllables that follow the *kanji* in question.

[5] There are a few exceptions with Chinese characters that have more than one pronunciation

of more information about these differences it would be recommended for one to start by reading chapter 6.2. in [Shibatani, 1990]. Regarding the structure of elements such as radicals in Chinese characters, the same structure is also used in *kanji*, it may also be noted that there are several radicals that have either a few variations or may be positioned in several different locations within the characters.

1.1.   Purpose and Method

The main purpose of this thesis is to analyse different variations of the same radical and why it is that some radicals have variations of shape and positioning within the character. In order to be able to analyse these variations, it is of the utmost importance to start the analysis from the characters' origin, and thus the history of the characters before they were introduced to Japan will be stressed. However, there are a few events in the course of Japanese history that are of special interest. An example of this would be the simplification process during the earlier part of the post war era as it has had a great impact on *kanji* and writing in modern time. However, the most interesting events happened centuries before the Chinese characters were introduced to Japan by Koreans. The focus will as mentioned above be on the early history of the characters and how they have evolved from the *OBC*, one of the ancient character forms, to how the characters are shaped today. This will be done by using a comparative method of analysis in which the *kanji* radicals of special interest for this thesis will be in focus in order to determine the cause of the structural variations that exists, and any possible difference between the variations. This thesis will discuss the following radicals: 氵 (*jp. rn. sanzui*), 水 (*jp. rn. mizu*), 氺 (*jp. rn. shitamizu*), 犬 (*jp. rn. inu*), 犭 (*jp. rn. kemonohen*), 心 (*jp. rn. kokoro*), 忄 (*jp. rn. risshinben*) and 小 (*jp. rn. shitagokoro*).

2. Background

There are many examples of radicals with different forms and positioning. One common example is how the radical for water written as 氵 (*jp. rn. Sanzui*), a plain smaller version of 水 (*jp. rn. mizu*), or as 氺 (*jp. rn. shitamizu*). Additionally, when the radical is written as 氵 it will always be positioned to the left of the character while 水 as a radical can be located in more than one place in the character. 氺 tends to be located furthest down in characters. A good example of the variable positioning of 水 would be the *kanji* 氷 (*jp. kōri* 'ice'), 沓 (*jp. kutsu* 'boots'), and 泉 (*jp. izumi* 'fountain, spring'), where the radical takes the roles of respectively main element, top element, and lower element. 淼 (*jp. hiro.i* 'wide expanse of water') is also of interest since it shows that the 水 may be positioned to both the left and to the right. There are also variations of the positioning of 氵 like in 準 (*jp. hito.shii* 'conform, imitate') where the radical is on the top left, confirming that the *sanzui* radical is always located to the left, even in multicomponent *kanji* that may be considered to consist of two halves, in this case one upper and one lower half. However, one *kanji* that is of utmost interest for this thesis is 漾 (*jp. tadayo.u* 'drift') as it utilize both 氵 and 水, which might indicate that there is a difference between the radicals.

2.1. The Structure of *Kanji*

A *kanji* is composed by one or more basic elements, commonly called radicals or in some case graphemes or compounds. [6] There are some differences between the Chinese

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[6] It should be noted that *kanji* such as 王 (*jp. ō* 'king'), while having a radical is not actually using the complete part of its radical, 玉 (*jp. tama* 'jewel'), which uses more strokes than 王. This has led to discussions as to whether 王 has a designated radical or not.

characters and *kanji*, e.g. the Chinese and Japanese readings, as mentioned in the introduction and later mentioned in chapter 2.3., as well as the radicals semantics. Focusing on the positioning of the radicals, a majority of the 常用漢字 (*jp. jōyō kanji* 'daily use *kanji*'), see 2.3., are so-called *phonetic compounds* made of radicals which can take different positions which give indications of the *on-yomi*. These positions are: to the left accompanying, right accompanying, crown, foot, top-and-bottom, centre, dangle (left shoulder), surround (left and bottom), posture (enclosure), box (bottom open), box (top open), box (right open), dangle (right shoulder), left-and-right sided, see appendix, Figure 1. The remaining *kanji* are non-phonetic compounds and are typically depicting objects.

The Chinese characters are commonly divided into two great classes: the simple figures, 文 (*jp. bun ch. wén* 'simple figures') and 字 (*jp. ji ch. zì* '(compound) letter') with subdivisions with further subdivisions for both figures and compound characters are of interest. These subdivisions are of interest as they show imitative drafts, these are 像 (*jp. kata ch. xiàng* 'figure'), 像形 (*jp.* (象形) *shōkei* ch. xiàng xíng or 指事 (*jp. shiji ch. zhǐ shì* 'indicative symbols'). While the subdivisions for compound letters are the following: 會意 (*jp.* (会意) *kaii* ch. *huì yì* 'jp. Compound ideograph formation ch. logical aggregates') in which all parts carry a meaning, additionally we have the 形聲 (jp. (形声) *keisei* ch. *xíng shēng* 'jp. semasio-phonetic *kanji* ch. pictophonetic character), and the 赭聲 (*jp. Ø ch. zhě shēng*) which are phonetic complexes in which the meaning and pronunciation is divided up between the different radicals. An example of a logical aggregate is the character 占 (*jp. urana.u* 'fortune-telling') composed by the two radicals 口 (*jp. rn. kuchi* 'mouth') and 卜 (*jp. rn. bokunoto* 'divination').

Furthermore, an example of a phonetic complex would be 沾 (*jp. uruo.u* 'moisten') which gets its semantics from 氵 (*jp. rn. sanzui*), and its pronunciation from 占, comparing their *on-yomi*, 沾 (*jp. sen, chō, ten*) and 占 (*jp. sen*) showing that the first *on-yomi* is shared through the phonetic compound 占. Even though there is such a system to create characters from radicals, if you reduce the radicals to simple strokes you would get 9 theoretical strokes and 17 practical strokes from a calligraphic standpoint, as some writing rules are ignored for aesthetics properties, which can be seen in the appendix, Figure 2. It may also be added that while this would be irrelevant for an etymological study of the characters, and thus of slight interest as the radicals are more simple characters in the logic etymological perspective, it is of importance to know them when studying the transformational process of the characters.

2.2.   The Early History of Chinese Characters

The Chinese writing has discoveries dating as far back as to the oracle bone inscriptions[7] from the 14th to the 11th century B.C. from the Shang dynasties[8], however older characters (not yet proved being a written language or related to the Chinese writing system) has been found at Damaida, the Ningxia region, China. However, finds of sign usage along the Yellow River from 6000-5000 B.C., as reported by (BBC News, 2007), when a complex writing system appeared during the Shang dynasties. During the end of the Shang dynasty the oracle bone inscriptions came into being. The oracle bone scripts, though derived from symbols and drawings, were neither pictographs nor ideographs, but logographs, or less commonly known as lexigraphs as mentioned in

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[7] The *OBC* are up to this date the first characters that are proven to be Chinese characters.

[8] The Shang dynasties lasted between 1766 *B.C.* and *B.C.*

(Porter Wilkinson, 1998) and (Boltz, 1994) as well as expressed in the book 易經 (ch. *Yì jīng* 'Classic of Changes') in the manner of 書不盡言言不盡意 (ch. *shū bùjìn yán, yán bùjìn yì* 'writing cannot express all words, words cannot encompass all ideas)[9]. This can simply be proved by letting a person whom does not know any language utilizing Chinese characters see some of the earliest forms of the characters, as the person then would be able to understand the purely pictographic character. These early forms represent words and pronunciations that later on evolve into what would become the characters they are today. One can see that the Chinese characters have undergone more or less the same evolutionary stages as Egyptian writing and the writing in Mesopotamia. These steps in order being; '(a) true writing emerges with logographic signs; (b) the first step towards "phoneticism," that is, phonetic flexibility in the use of graphs, is "rebus" writing, or what we may call "punning"; (c) phonetic complements, i.e, determinatives, arise; and (d) logographs come to be used for their sound value alone, i.e., they are "desemanticized." As quoted from (Boltz, 1994). While this is how the majority of all known writing systems have evolved, Chinese writing is special in the case that the fourth stage only occurred partially. This have led to that there is still no agreement at this point of time on how Chinese characters should be defined, although a majority of scholars are defining the characters as logographs. As it is today, the definition of the Chinese characters is divided due to the stress on the different areas of functionality, as meaning and sound etc. An excellent example of a character that is pictographic would be 犬 (*jp. inu* 'dog') that together with the radical 犭 (*jp.* rn. *kemonohen* 'dog'), both being radicals for dog, have their heritage in the same character. This resulting in Confucius saying *'The ancients must have had very strange looking*

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[9] Quote taken from (Porter Wilkinson, 1998, p. 45)

dogs.' around 500 B.C.[10], as the character Confucius used hardly resembled a dog at the time. Using etymology to trace back to the origin of today's characters it is possible to understand the abstract meaning of the characters. This abstraction have during the passing time become more or less easy to understand, as 孫 (*jp. mago* 'grandchild') composed by radicals 子 (*jp. ko* 'child') and 糸 (*jp. ito* 'thread'), creating the fairly simple idea of grandchildren being a string of children, or your children's children and so on. A lot of the changes to the characters spring from the technological advancement and the complexity of the characters, for example before the brush, something that could be defined or compared to that of a fountain-pen, making that all strokes had an equal thickness was in use. Later, the brush would have an enormous impact on the Chinese characters. One of these changes were the materials used, the form of the characters that became more square with thicker corners due to the characteristics of a brush as well as that it was faster to write with a brush than the pen. The complexity of characters contributed to that scholars forget how to write some characters, and in time new characters came along in order to fill the blanks in scripts, leading to that a lot of characters today are variations of other characters. This led to that the number of characters increased from 4,500 甲骨文 (*jp. kōkotsubun ch. jiǎgǔwén* 'oracle bone script') characters around 1000 B.C. to the massive amount of 85,568 characters in 中华字海 (*ch. Zhōnghuá zìhǎi* '*ch. na. Zhōnghuá zìhǎi*'[11]) in 1994. As there were quite few characters from the beginning, a lot of characters have more than one meaning, especially noted for the Oracle-bone script. Something else that points to this is the use of a character based new character, as an example in (Porter Wilkinson, 1998) 史 (*jp.*

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10 As quoted from (Wieger, 1965)

11 *Zhōnghuá zìhǎi* is the largest dictionary of Chinese characters available in print.

shi ch. shǐ 'jp. chronicle, history *ch.* scribe') is used as a base for a variant of the character, even though it's not a radical. Characters built upon this characters are among 吏 (*jp. ri ch. ri 'jp.* an official *ch.* an official') and 使 (*jp. tsuka.u, shi ch. shǐ 'jp.* use, envoy *ch.* envoy'). And as time passed by the number of characters grew and the fact that some characters had more than a single meaning and variants even among the new characters did not change. Relevant to this is also the fact that during the time of the Oracle-bone script, most of the characters were nouns while as few as roughly 300 characters were verbs, a category that grew immensely during the *Han* period, (Porter Wilkinson, 1998).

In order to find more facts and samples of ancient Chinese character and writing, modern archaeologists often have to search in places such as tombs and sacred mountains. For it is in these places that the majority of the finds have been made, even when it comes to finds on other inscriptional sources on material such as wood, bamboo and paper, (Porter Wilkinson, 1998). This gives us a lot of information about the so called 'pre-*Qin*' eras where we have three main sources for information including textual, logical and epigraphic sources. However, these are quite limited. These often centred in the vicinity of the Yellow River region which importance for the ancient cultures is undisputed. Around the late *Heinan* era the picture becomes clearer with the first corpus of written evidence much due to the oracle bone script. Though it is not before the *Zhou* that historical and literary text has been transmitted, where of some can be checked and supplemented with earlier excavated finds. Evidence have also turned up that during the *Zhou* dynasties, a standardization of characters came to and thus geographic differences were to a large part eliminated from the writing in this period.

As often the case when it comes to archaeology, most inscriptions are introduced by the medium upon which they were recorded, such as oracle-bones, bronze, stone, and rock art, which carries a resemblance to the oracle bone script. It should be noted that some of the Oracle-bone and bronze characters, namely numbers, have a common heritage in the possibly earliest method of keeping records according to the 易經 (ch. *Yijing* 'Classic of changes'), tying knots in strings as noted in (Porter Wilkinson, 1998). This does however not intervene with the fact that the first known users of the Chinese script were the court officials during the Shang dynasties.

Lastly, the Chinese writing system was carried along with Buddhism to Korea and then to Japan during the period were 中古漢語 (ch. *zhōng gǔ hàn yǔ* 'Middle Chinese') was in use, which concludes this part of the Chinese characters early history in this thesis.

2.3. After The Chinese Characters Become *Kanji*

The Chinese characters came to Japan in three different waves, each carrying the pronunciation of the character from the time it was imported, and what region in China that was the current metropolis in contact with Japan at the time. The first of the three waves, representing the 呉音 (*jp. go-on* '*go* pronunciations), came around 538 A.D. along with the Buddhist beliefs and is thus often associated with Buddhist learning. It is also in general believed that the *go* is referring to the Wu area in China. The second wave carrying the 漢音 (*jp. kan-on* '*Han* pronunciation) to Japan came during the *Nara* period (710-784A.D.) from the Tang dynasty, which ruled China at the time. The reason behind this wave was the exchange of information that came into being is that Japan sent court officials and students to study at the metropolises of the time, Luòyáng and

Chán'ān. This in itself has led to the association with Confucian and secular learning. Lastly the third wave is the 唐宋音 (*jp. tō-sō'on* '*tō-sō* pronunciation) wave that came to Japan during the 14th century along with monks of the Zen Buddhist sect. This wave, although having a smaller impact than the earlier waves have come to be associated with Zen Buddhism.

Another great occurrence during the period were *kanji* have been used in Japan is that the 当用漢字表 (*jp. Tōyō Kanjihyō* 'Daily-use *Kanji* List') was approved by the Deliberative Council on the 5th of November 1946 to be announced and promulgated on the 16th of November 1946. But even though it changed and simplified the shape of the characters, it did not eliminate or change the appearance of the radicals of special interest to this thesis, and thus the part with Japanese history is of little relevance even though some radicals were simplified, those radicals are not analysed in this thesis.

2.4. Prior Research

More or less everything that is known about old Chinese and its character is coming from various scattered data such as archaeological finds, comparative linguistics as well as early texts. As the longest text found is no longer than 200 characters (oracle bone script) from the Shang and Western Zhou, as well as the longest bronze character inscription amounts to 500 characters. Some documents have also been found such as the 尚書 (*ch. Shàng shū* 'venerated documents')[12] as well as 詩經 (*ch. Shī jīng* 'Classic Poetry'). These are all documents of quite different nature; divination, accounts, and literature, and therefore the usage is quite different. Making that this is an

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[12] From the Qin dynasties

area still in dire need of research and concrete evidence supporting the research linguists are conducting. However Prof. Boltz William of University of Washington has written a relevant description about the development of the Chinese writing between the 13th and 3rd century B.C., (Boltz, 1994), where one may read about the various linguistic differences and happenings to the Chinese writing system, though little concerning the same area as this thesis. Apart from the research made by Prof. Bolt William, I should also mention Prof. Shirakawa Shizuka, whom is the leading name in the area of Chinese characters in Japan and most likely in South East Asia. However, the work of Prof. Shirakawa Shizuka is only available in Japanese and thus he has gained little, if no recognition in Europe and the United States of America or any other location where the majority of researchers only use sources written in English. To make up for this problem, this thesis is using one of his works, (Shirakawa, 1996), one of the most accurate and detailed reference works on *kanji*. An honourable mention should also be made to Dr. Qi Xigui whom has conducted research on the internal structure and evolution of Chinese characters; however, a direct source of his work is not available for someone that is not proficient in Chinese. A lot of research on Japanese writing has been made during the years, though not much has been done on the development of *kanji*, mostly due to that with the exception of *shinjitai* characters and *kanji* made in Japan, there's been little change in the characters form. This is due to that most of the changes of greater significance apart from the *shinjitai* characters; they all took place in China.

3.   Issues

Some of the issues that arose with this thesis are that there is no detailed prior research on this subject's particular area, causing problems with finding suitable references. One of the reasons is that this particular area is not part of the presently emphasized area of study as of this date. This however was solved by using Chinese and Japanese history books about the written language as well as a lot of various indexes for ancient characters such as the *Liu Shu Tang* characters, using both (Sears, 2011) and (Shirakawa, 1996), of the seal-type as scrutinizing the character forms would bring forth the origin behind the different radical forms which contains the same meaning. This is also hinted by the following quote.

夫欲讀書必先識字欲識字必先察形

ch. fū yù dúshū bì xiān shízì yù shízì bì xiān chá

'If you wish to read books, you must first be able to recognize characters, and to recognize characters, you must first scrutinize their forms.'

-顧藹吉 (Gu Aiji), 隸辨 (Libian (Preface))[13]

To scrutinize the modern characters knowledge of the ancient characters is needed, as well as a comparison between them and thus the seal characters (*Liu Shu Tang* seal characters), bronze inscription characters and oracle bone characters were chosen, in the case of any known existent version of the character in these ancient forms. A problem with examining the form of the characters is that it is often hard to determine why the change of the shape occurred, though it can often be assumed that it is either a

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[13] As taken from (Porter Wilkinson, 1998)

simplification[14] or due to a change of medium. Another problem is the limitations of this thesis, which does not allow for a complete in-depth analysis of the character evolution, as the focus is on the early stages of character formation, which would have been of outmost importance and highly desirable in order to achieve a better conclusion.

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[14] Simplification does not only refer to simplification as in the context of reducing the number of strokes of the characters, but also sometimes simplifying the character by adding elements.

4.   Analysis

This part of the thesis will start by analysing the selected *kanji* with the same shape as the radicals. By doing this, an insight to how the character once looked as an ancient character compared to how it looks today will ensure that the analysis will be as correct as possible. The analysis will be done in a four steps. The first step will show the character forms and their evolution, these characters, taken from (Sears, 2011), (Shirakawa, 1996) and (Wieger, 1965) are used will be used for the primary analysis. Even though (Sears, 2011) hold more variations of the ancient characters than (Shirakawa, 1996) there is no plausible reason to show an excess of characters and therefore the more representative character versions were chosen for the analysis. The second step will as in step one, except that it will be focusing on the radical forms. The third step focus on radical properties, using modern and ancient characters. The characters will often be of a somewhat later form of the ancient characters due to the somewhat more modern tendency of multi-graph characters, i.e. characters containing more than one radical. Lastly the fourth part is an analytic discussion where the discussion will be utilizing previously mentioned historic facts as well as it will utilize the observation from the graphic observation and analysis. All steps will also have a minor discussion part where facts will be collocated before going to the next step for analysis.

4.1.   The Character Form Analysis

This section will primarily use characters from five different groups. These groups are the following, oracle bone characters, bronze inscription characters, *Shuowen* characters,

modern character, and miscellaneous characters of interest[15]. All characters will have a label above them in order to make it easier to distinguish the different character types from each other. These labels can be found in abbreviations på sidan 4.[16] The chosen characters were chosen as they are representative for how the character shapes developed. Following are the radicals that will be analysed are: 氵 (*jp. rn. sanzui*), 水 (*jp. rn. mizu*), 氺 (*jp. rn. shitamizu*), 犬 (*jp. rn. inu*), 犭 (*jp. rn. kemonohen*), 心 (*jp. rn. kokoro*), 忄 (*jp. rn. risshinben*) and 灬 (*jp. rn. shitagokoro*).

4.1.1. The First *Kanji* of Interest: 水 (*jp.* mizu 'water')

MC

To the left is the modern character of 水 (*jp. mizu* 'water'), and below, you may see the different common stages of the character.

SC	OBC	OBC	OBC	BIC	BIC	Misc.
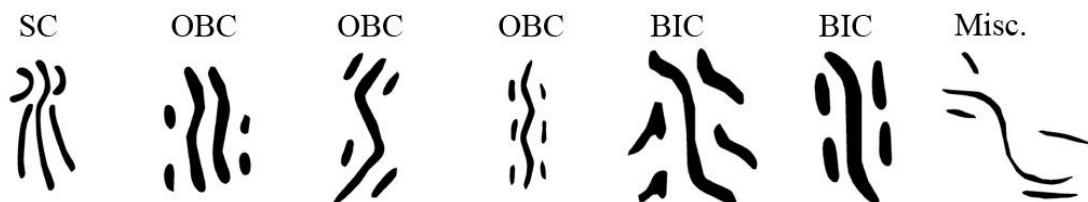
We can here see clearly that there has been a great transformation in the characters shape, even though it is not great enough not to be able to conclude that it is the same character. The most logical transformation here would be that from the misc. character and then going in order to the left, ending with the modern character, as the historic order. This can be noticed by that the *OBC* resemble the older *misc.* character a lot, although the change

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[15] The *misc.* characters have been selected due to their entry in (Shirakawa, 1996).

[16] SC or *Shuowen* (also known as *Zhouwen*) characters refers to the large seal characters as that is how they are referred to in (Shirakawa, 1996).

in disposition and the rotation is most likely due to the change of medium that the character was written upon. Furthermore the change between the *OBC* and the bronze inscription characters seems be simplifications as well as a mean to adapt to the new medium. The biggest change comes to the *Shuowen* character where we can see a clear difference and simplification. From the *Shuowen* character it's also not that hard to see the resemblance to the modern character. These changes seem to be a result of simplification that is the result of a change in writing medium. To simplify the writing process of the character with a brush, it should be safe to assume that the first stroke was made straight with a slight twist at the bottom to the left as the second stroke is located there. The third and fourth strokes disposition is also, mostly due to the stroke order, a completely logical transformation.

4.1.2. The Second *Kanji* of Interest: 犬 (*jp. inu* 'dog').
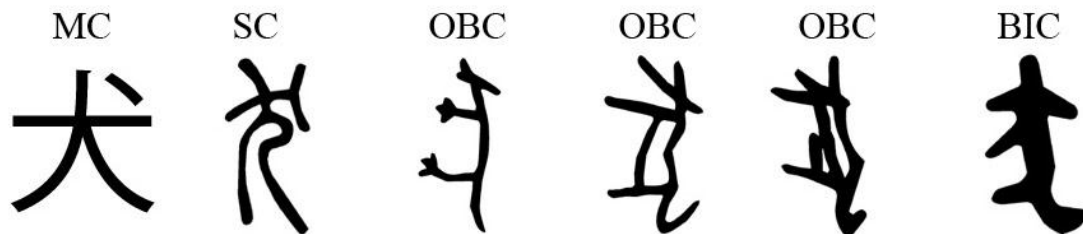
As with the previous *kanji* there's a difference between the characters, mostly due to the medium upon the character was written. Though in this case we can see a bigger difference between the *BIC* and the *OBC*, this is especially characterized by the thicker shape of the *BIC*. This however doesn't remove that it's also relatively simple to see that the characters are becoming more and more similar to the modern character in their historical order. However there is also added detail to the characters in the late *OBC* which disappears in the *BIC* by being bold. In the area of character transformation, one

can clearly see that it is especially big from the *BIC* to the *SC*. The few changes in appearance are all of the characteristics that they are likely to be due to change of medium for writing, and once again this is easiest seen between the *SC* and the *MC*. The change for the step from *SC* to the *MC* shape is quite simple, with only the fourth stroke altered in a way that could be regarded a bit puzzling for one who is not versed in writing using Chinese characters. The change of the fourth stroke makes sense while considering the different strokes that are used while writing with a brush. We can also in this *kanji* see that it has become far more abstract than 水 (*jp. mizu* 'water').

4.1.3. The third *kanji* of interest: 火 (*jp. hi* 'fire').
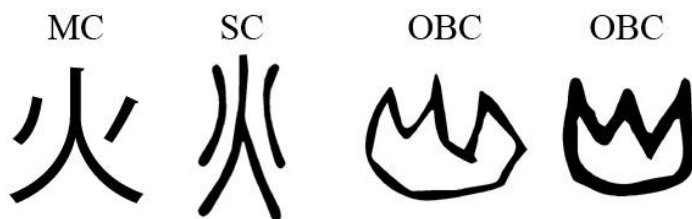
Something that is interesting with this character is that there are known variations of it in the *OBC*, but none in the *BIC* are known. We can on these few example characters see the same changes as in the above characters, with the thinner lines on the *OBC* that becomes thicker at later time to then have become quite simplified to write during the time of *SC*. A noticeable thing is that the change from the *SC* to the *MC* used today is remarkably small, being the minimal change for making it more efficient to write with the brush. The alteration in shape is quite simplifying in the sense of making writing less complicated.

4.1.4. Collocation Analysis

From the three analysed characters it is possible to make a few theories. First, characters that have a wide first known character becomes more stretched upwards while long characters tends to get more stretched to the sides, both becoming more quadratic. Secondly, there is a trend to add detail to the character after the oracle-bone script. Thirdly, even though there is a trend to add detail to the character, there's also a trend that makes the character simpler to write upon the newer medium, this especially shows by the *Shuowen* character transformation into the modern character. Lastly, all characters have been simplified in a logical manner after the writing rules and the different kinds of strokes that are used while writing.

4.2. The Radical Form Analysis

This part of the analysis will be about the different form and origins of the radicals. In order to determine this, three different characters containing the desired radicals will be used to determine their origin, and in the case of existence, characters with both variations will be used as well. A problem for this is however that during the early stages of the Chinese writing, there were few characters that contained radicals. However characters with as old and as many variations as possible have been selected in order to give a greater accuracy to the analysis.

The first, the radicals for water are to be analyzed, 氵 (rn. *sanzui*), 水 (rn. *mizu*) and 氺 (rn. s*hitamizu*).

沖 (*oki* 'open sea'), 沈 (*shizu.mu* 'sink') and 河 (*kawa* 'river') were chosen due to that they originate as far back as the oracle-bone

characters, and thus the advancement of *sanzui* as a radical can be followed from the beginning. These *kanji* are therefore close to ideal for this analysis.

One may see here that with the exception of the *OBC*, all characters have the symbol for water, as from the character form analysis, to the left. It would be logic to assume that the misc. character is a stage between the *OBC* and *BIC* due to the relative positioning between the two elements. This would also explain the fine border between the elements which have led to a clarification of the radical's origin.
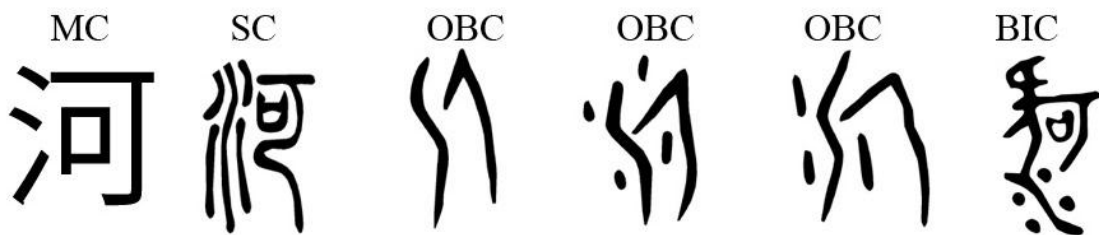
For this *kanji*, one is able to recognize a clear transformation process, even though the transformation in the beginning of the *OBC* might seem quite complicated, one may notice that the ones to the right and then to *BIC* and SC. One may also notice the constant presence of *sanzui* during the whole duration of development till this point of time. One is also able to see the added detail and rotation as well as the transformation to a more quadratic shape that was noticed in character analysis above.

MC　　SC　　OBC　　OBC　　OBC　　BIC
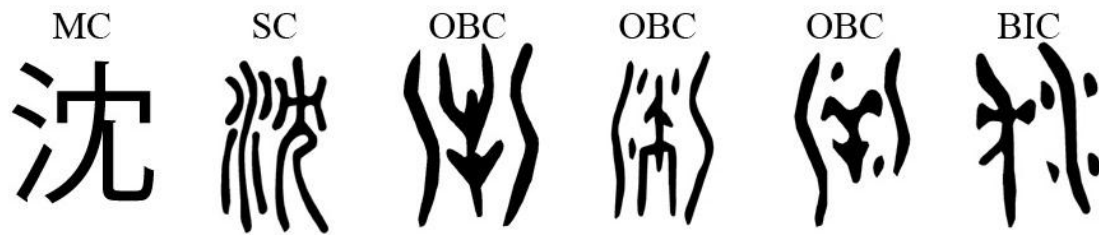
As in the cases of 沖 and 河, this characters earlier stages also show that the part that is not *sanzui* was integrated into *sanzui*, a phenomena that to a big degree or not completely had disappeared by the time of *BIC*. One is also able to notice that it is not until the stage from *BIC* to *SC* that *sanzui* claimed the definite position to the left.

永 (*naga.i* 'long'), 氷 (*kōri* 'ice'), and 泉 (*izumi* 'spring'), being representative for the character transformation process, with *OBC*, *BIC*, and *SC*, and thus it is possible to follow the transformational process of 水 as a radical and not just as a *kanji*.

MC　　SC　　OBC　　OBC　　BIC　　BIC
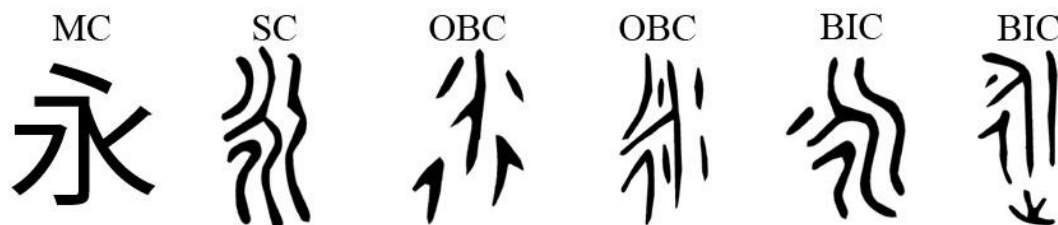
For this character, one may notice the similarity with *sanzui* of which the ancient characters contributing to the radical are similar with, even though not identical. Regardless of that, it is possible to state that the origin of *mizu* as radical and *sanzui* is the same, this clearly indicated by the shape of the *OBC*, and vaguely hinted by the *BIC*. The analysis of this radical is however harder than that of the other characters utilizing *mizu* as an radical due to the first stroke may be considered as integrated to the radical.
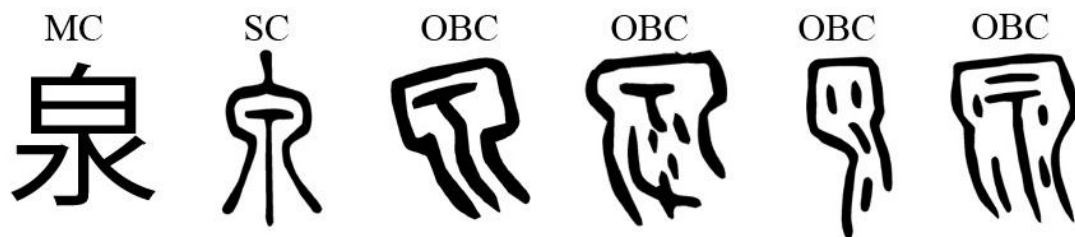
The *mizu* radical can be seen present through the entire spawn of this characters shape, even though it may be considered a bit more prominent during the *OBC* than the *SC*. One may also notice one of the biggest differences between the *SC* and the *MC*, which is that the strokes are a lot straighter, in order to follow the properties of the writing medium better when it changed to that of the brush.
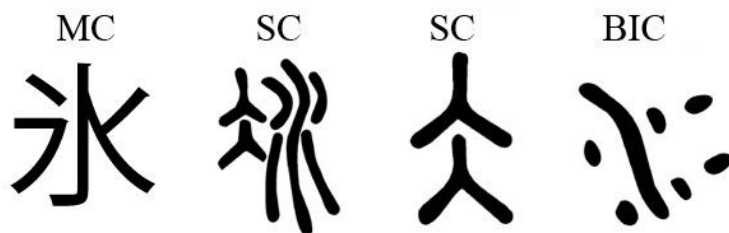

The most interesting thing about this characters evolution is that it from the *BIC* to the *SC* got developed a secondary variation, now discarded in favour of the bi-radical character which later evolved into what became the *MC*. The interesting part of the secondary version is that it lacks the water radical that existed in its earlier *BIC* form. The radical shape for this character is also the same as the one for *sanzui* and *mizu* as a *kanji*.

 求 (*moto.mu* 'seek') and 泰 (*yutaka* 'calm') were chosen in spite of the absence of characters earlier than the *SC*. This is due to the few characters utilizing this radical, which might have emerged a bit later than the *mizu* and *sanzui* radicals.

MC   SC   SC

求   禾   靑
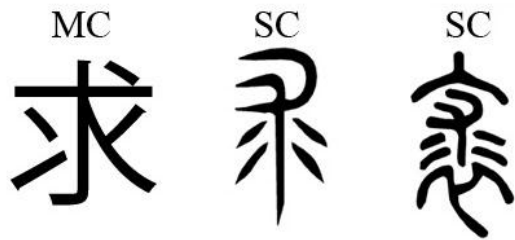
The lack of *OBC* and *BIC* creates a problem for the character analysis, though that will be compensated by a stronger focus on the etymology. For this character, in the *SC* one can see that a difference from other characters with earlier variations is that the radicals are still integrated with each other and elements have been added to ensure the understanding of the two radicals. Thus one can see the water radical, even though its shape is not identic to the other water radicals.

MC   SC   SC

泰   靑   靑
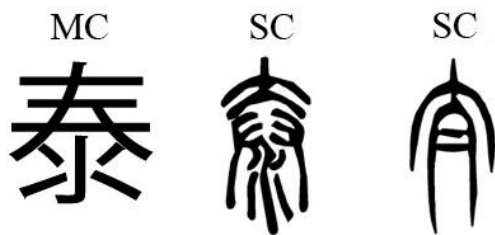
While having a clear resemblance to the other water radicals, it can be said that the radicals in these characters, while having the general shape of *SC*, the radicals, especially the *SC* to the right resembles a *BIC* and a *OBC* character due to the highly simplistic shape and integrated radicals.

泳 (*oyo.gu* 'swim'), 漆 (*urushi* 'lacquer'), and 漾 (*tadayo.u* 'drift') are among the very few characters utilizing both *mizu* and *sanzui* as radicals while still having either of *OBC*, *BIC*, or *SC* versions.

MC   SC   BIC

泳

This character, containing two water radicals in the *MC*, *sanzui* and *mizu*, also contains them from its earliest stage, the *BIC*. A difference between the radicals can be seen as the radical that becomes *sanzui* is the same, while as often the case for all three water radicals, the part that will become the *mizu* radical is integrated with the element above.

MC   SC   BIC

漆

As with the above character with two water radicals, there are a few tendencies that follow the same example. While the second water radical is *shitamizu* and not *mizu* for this character, one may see that they are both integrated to the element above while still retaining its own shape.

MC   SC   SC

漾

This character, being similar to 泳 with the exception of an additional element with a slight difference on the right side as it is smaller due to the additional element. This element is in one of the *SC* integrated while it is not integrated in the other *SC*, and thus the *SC* to the right might be somewhat newer than the one to the left.

The second, the radicals for dog are to be analysed, 犬 (rn. *inu*) and 犭 (rn. *kemonohen*).

伏 (*fu.su* 'bend down'), 献 (*tatematsu.ru* '*func.* counter for drinks'), and 獣 (*kemono* 'beast') were chosen upon the same standards as all previous characters that have been analysed.

What is clear with this character is that even from the beginning (the *OBC*), one may see a clear separation between the radical and the element to the left. The radical also have the same shape as in the *kanji* as well as the radical for this character.

As with the previous character one can clearly see that the radical is separated from the rest of the character even in the *OBC*. Furthermore there's relatively common rotation, added detail and standardization of the character that is prominent.

Although the *BIC* may not be the easiest character to recognize, it is clear that it is the same character, containing the same two radicals as the *MC*. These two radicals have also evolved to their standard for in the *SC*, and thus there is little to analyse due to that the character evolved according to the common patterns.

狂 (*kuru.u* 'confuse'), 狩 (*ka.ri* 'gather'), and 猟 (*kari* 'bag') are all prominent *kanji* when it comes to the number of ancient forms that they hold, with the exception of 猟.
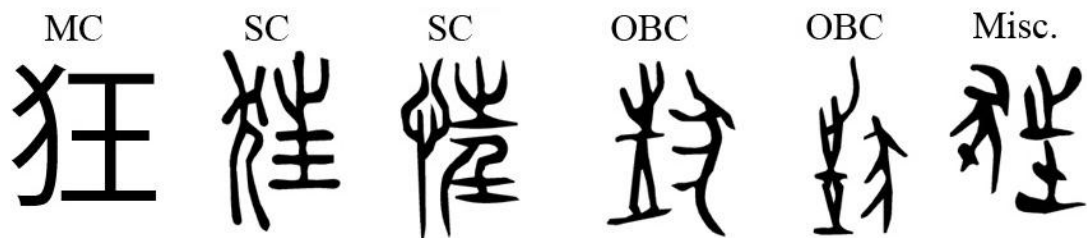
The most interesting here is the radical difference (to the left) between the two *SC*, as the one to the left contains the radical for dog, while the one to the right contains the radical for heart, both being logic due to the use of the radical for heart. However it is the radical for dog that survived to this day. Otherwise, one can clearly see that the radical for this character uses the same ancient form as the other radical for dog. Also note the shift of positioning of the radical from the *OBC* to the *misc.* and *SC*.
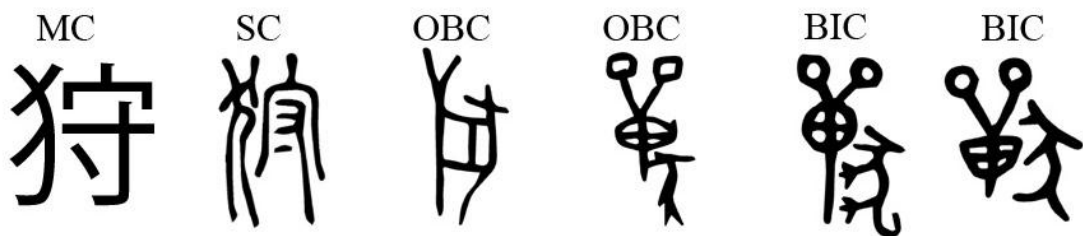

This character has the same dispositional traits as the character above, with an additional repositioning and standardization of the *OBC* and the *BIC*, but apart from that, there are no real differences of special interest for this thesis.
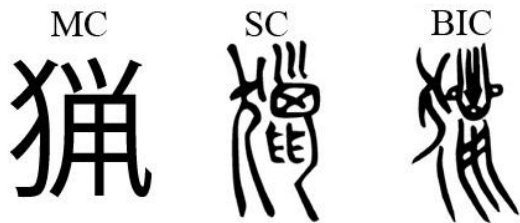
As with the above character, the development of this radical in this character is relatively small and thus little remains to analyse. It is however clear from these three characters using the *kemonohen* as a radical that it is of the origin as the *inu* radical.

獄 (*goku* 'prison') might be the only *kanji* with both radicals for dog that also have *SC* and *BIC* versions.

It is clear upon looking at the ancient characters, especially the *SC* that the *kemonohen* and *inu* have the origin, it can also be seen in the *BIC*, even though they have minor variations between them, both are still radicals for dogs even at that time. Additionally, it is also clear that the radicals follow the common simplification and standardization that is common for these radicals.

The third, the radicals for fire are to be analysed, 火 (rn. *hihen*) and 灬 (rn. *yotsuten, rekka*).

The first characters to be analysed contains *hihen* and are the following; 災 (*waza.wai 'calamity'*), 炎 (*honō 'flame'*), and 狄 (*ebisu 'barbarian'*)
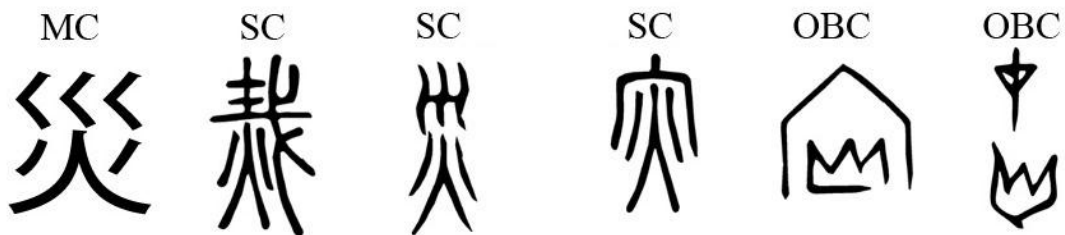
One may in this character witness an increase of added detail, even though the added detail got discarded and another *SC* variation was used for the *MC*. To this it may be added that shape of the radical follows the development of the character as a *kanji* perfectly.

Unlike the character above, this character does not completely follow the same evolutionary steps as the *kanji* itself. This is especially prominent for the *OBC* and the *BIC*, especially as the *kanji* had no *BIC* variation itself. It is also important to notice that while the *OBC* character to the left is marked as an *OBC* character, it may be assumed that this is a mistaken label as the appearance is that of a *BIC*.

MC · SC · BIC · BIC
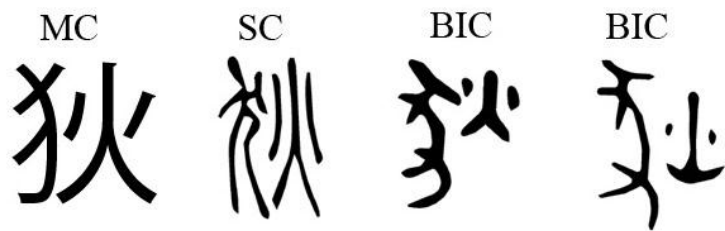
Following the example of the character above, we can see that *hihen* is both prominent and clearly separated from the other radical, leaving little to do during the analysis as the evolutionary process of the character has progressed in the most natural way.

為 (*su.ru* 'do'), 無 (*na.i* 'not'), and 烈 (*hage.shii* 'severe') all utlize the *yottsuten* or *rekka* as it also may be called. We will in these characters see a difference from earlier analysed characters.

MC · SC · OBC · OBC · BIC · BIC
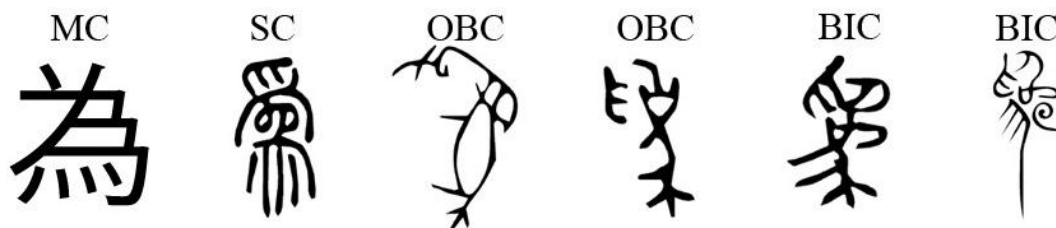
One may for this character see a great difference in the shape of the radical in question in comparison to earlier analysed radicals and characters. It would be hard to claim that *yottsuten* is a radical originating from 火 as there is no such indicating element within the ancient versions of this character except for the *SC* where an element that carries a slight resemblance to a variation of 火 can be found. The radical seems to in this character originate from different elements of three to four strokes.
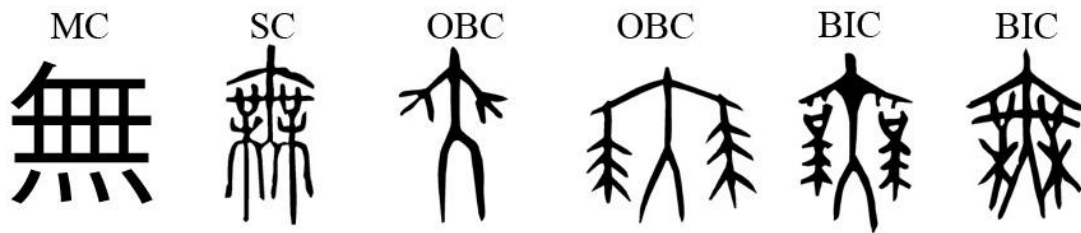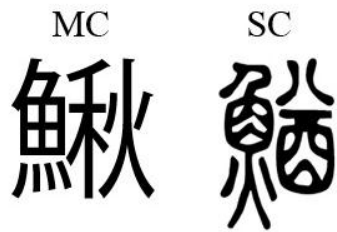
This character, unlike the character above, can be seen having proper fire radicals even in the early stages, even though the radical is immensely integrated into the test of the character, making it hard to notice. However, it cannot be denied that finding the radical for fire in these ancient characters may be an over-analysis, and thus something stuck to the character that does not belong there.
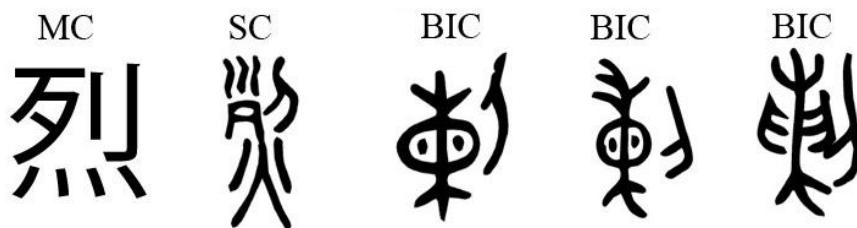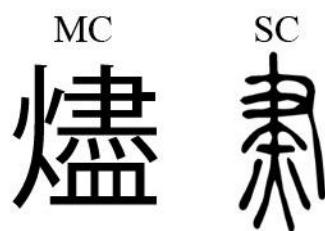

While the radical for fire exist in the *SC*, it is not apparent for any of the *BIC*, and thus an interesting problem of why the radical was only introduced to this character in time for the *SC*. Even though an over-analysis would be possible to show a complicated radical and element integration for the *BIC*, which would be a lot less plausible than it being a radical added the character at a later stage. This is also supported by the fact that ancient characters seldom have more than two different elements.
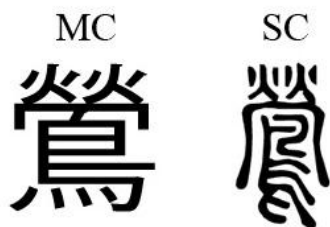
Lastly, the *kanji* 燼 (moenokori 'embers'), 鰍 (*inada* 'bullhead'), and 鶯 (*uguisu* 'nightingale') are the last characters to be analysed.

In this character, one should notice the absence of the fire radical to the right, the the one down to the left exist in the *SC*.

Similar with the character above, one may notice that one of the fire radicals are not apparent in the *SC*, but most likely an element added later on.

It is the same thing or this third character; in this case the fire radical *yottsuten* is amiss in the *SC*, even though there is another element in its place.

4.2.2. Collocation Analysis

During the analysis of the character radicals, there have been some trends that the radicals have followed during their evolutionary process. The first, being the strive for standardization in shape, e.g. shape rotation, adaption to new media etc., so that the shape is more suited for writing. The second, being a standardization of internal

structure of the characters, where the radical positioning for *sanzui* and *kemonohen* was fixed to the left. The third, for the radicals with the same shape as their original *kanji*, one may notice that they are almost always from the beginning a clear or integrated radical in the character. The fourth, being the most interesting part, is that sometimes, as especially seen with the characters with two fire radicals, have one of the radicals been stuck to the *kanji* after that of the *Shuowen* characters, which indicates that that radical serves a specific purpose.

4.3.　Discussion and Conclusion

During the analysis of the character and the radicals in this thesis one may clearly see a few common factors. The most important of them is that there is a clear connection between the ancient shapes of the *kanji* and to that of the radicals with the example of the radicals for water, *mizu, sanzui*, and *shitamizu*. A possible exception from this may be the *yottsuten* radical for fire; however it is also clear that some characters containing *yottsuten* have the radical for fire in them. It is also clear that there are a lot of characters where it for the *SC* already developed a radical close to the *yottsuten* as well as there are elements in the ancient characters that could be a highly integrated version of two fire radicals in them. To this it is also important to add that all radicals and or elements of a modern *kanji* may not have been there when the *kanji* first came to be, this is due that during part of history radicals were added for either their phonology or semantics as a way to create a way to increase more characters, as well as a way to simplify the learning process. With the information of radicals with different possible positions within the inner structure of the character, along with the knowledge of that some radicals convey phonology or semantics; it may be assumed that the reason behind these variations of the

radicals is due to that there was a need to simplify the character structure. In (Wieger, 1965) it is mentioned that these differences are sprung from different place during the *Líshū*, which is after the *Shuowen*, which is considered the modern times, and thus not part of the period of interest for this thesis. However, due to the earlier character development, I think that it is less likely and a non-plausible reason that evades the properties of the radicals. Another thing that disagrees with it being the result of characters originating from different positions is that before the appearance transformation took place; all characters were standardized during the *Zhou* dynasties, which can be seen in the *Shuowen* characters that have been analysed in this thesis. A standardisation once being split up to different forms and then once again standardized, as that is what it would comply, is not only unrealistic, but also lack historical evidence. With the knowledge that a radical can harbour both phonology and semantic meaning, as well as with the knowledge of that some radicals have been stuck to characters to which already existed without changing the meaning, one may assume that the reason is that the different radicals carries different functions. For someone studying Japanese or Chinese, it may be a common occurrence to notice that a lot of characters have common factors and therefore one may by using an educated guess come across the correct pronunciation and/or the meaning of the character. When considering that radicals may have different properties and purposes in the internal character structure, one might find it interesting that this is due to rather than a simplification based upon a natural simplification process, it has been simplified according to certain principles and standard in a conscious manner. While one also may not deny the impact that changing writing mediums have had upon the Chinese characters, it is possible to trace the importance of these changes to the all more standardized character shape, and thus it became simpler to make new characters,

memorize characters and also to write the characters. That such changes have been made in a conscious manner also points to that there is a reason for the changes that were made, and thus a difference between the radicals. My conclusion from this would therefore be that the origin of the radicals with the same original form and meaning, but have different shapes can't be local differences, but are consciously made differences, and thus the differences must be due to differences in the radical properties. Therefore, I'd like to conclude this thesis with that the differences ought to be due to how they have been used for phonetics or semantics and thus as a simplification received different shapes.

Due to the limitations of this thesis, it is impossible to conclude anything, even though I've stated a hypothesis based upon facts and analysis as well as reason about how a language writing system is developed. If the opportunity arises, I'd like to continue with a more in-depth analysis were more radicals and also the modern forms of the characters will be analysed.

Appendix

Figure 1

Position	Japanese name	Meaning
	hen	Left accompanying
	tsukuri	Right accompanying
	kanmuri	Crown
	ashi	Foot
	ashi (variant)	Top-and-bottom
	ashi (variant)	Center
	tare	Dangle (left shoulder)
	nyō	Surround (left and bottom)
	kamae	Posture (enclosure)
	kamae (variant)	Box (bottom open)
	kamae (variant)	Box (top open)
	kamae (variant)	Box, (right open)
	kamae (variant)	Dangle (right shoulder)
	kamae (variant)	Left-and-right

Figure 2
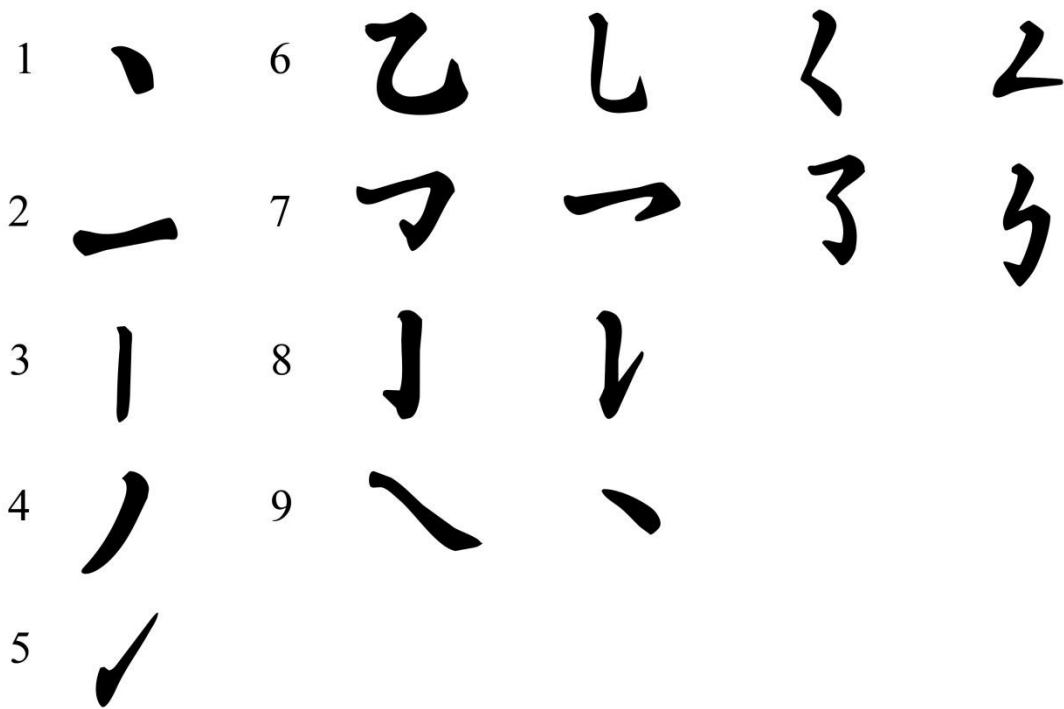
The numbered strokes are the 9 theoretical strokes while the un-numbered are the additional 8 strokes which are used in hand-writing and calligraphy together with the numbered strokes.

Bibliography

BBC News, 2007. *Chinese writing '8,000 years old'.* [Online]

Available at: http://news.bbc.co.uk/2/hi/science/nature/2956925.stm

[Accessed 14 May 2012].

Boltz, W., 1994. *The Origin and Early Development of the Chinese Writing System.* s.l.:s.n.

Ekholm, T. & Ottosson, I., 2007. *Japans historia.* u.o.:Historiska Media.

Frellesvig, B., 2010. *A History of the Japanese Language.* s.l.:Cambridge University Press.

Insup, T. & Taylor, M. M., 1995. *Writing and Literacy in Chinese, Korean and Japanese.* s.l.:John Benjamins Publishing.

Kodansha International, 2002. Introduction to the Japanese Writing System. In: *Kodansha's Essential Kanji Dictionary.* s.l.:Kodansha International Ltd., pp. xii - xxvii.

Olenik, J. K. & Morton, W. S., 2005. *Japan: Its History and Culture.* s.l.:McGraw-Hill.

Porter Wilkinson, E., 1998. *Chinese History: A Manual.* s.l.:s.n.

Sears, R., 2011. *Chinese Etymology.* [Online]

Available at: http://www.chineseetymology.org/

[Accessed 08 May 2012].

Seeley, C., 2000. *A History of Writing in Japan.* s.l.:University of Hawaii Press.

Shibatani, M., 1990. *The Languages of Japan.* s.l.:Cambridge University Press.

Shirakawa, S., 1996. 字通 *(Jitsū).* s.l.:Heibonsha Limited.

Wieger, L., 1965. *Chinese Characters: Their Origin, Etymology, History, Classification and Signification.* s.l.:Paragon Book Repring Corp..