

# Language Sense

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## Abstract

*In this paper, we first define language sense, and examine Kansei (affective feeling) wherein language has as language sense. We review a history of writing characters and analyze the usage of them from the viewpoint of language sense. From the analysis, we obtain features of language sense. From daily usage of language, we can observe artistic or entertainment aspects of language and find a hidden feature of language: language sense. Then, we discuss possibilities for achieving computational processing of language sense.*

**Keywords:** language sense, affective computing, Kansei, wordplay

## 1. Introduction

Humans communicate with each other by means of language. In addition, since we have received old letters and papers from our ancestors, we can read records written in an ancient age. For example, though it is not easy to read old characters such as Linear B and Mayan script etc., if we collect many examples (in a corpus) and analyze them, we can identify some rules for reading the characters and learn the history of those days. These characters have revealed significant information such as laws and histories of kings and countries etc..

If we observe current society, we can find a (fragment of) language in every place, publicly visible examples including advertisements and signs. Sometimes they include significant information, but often they are mere garbages. Advertisements, apart from their significance, are created to be attractive in order to obtain as much attention as possible. For this, professional copy writers elaborate their words and produce phrases as attractive or impressive as possible.

We have been researching Language Sense processing Engineering, where we focus on expressing *Kansei* (affective feeling) of language (*kotoba* in Japanese) on computers. In fact, our research results involve the B-class Ma-

chine [17], wordplays on computers [12],[16], and computational support for creating affective phrases such as catch copy [2]. We especially focused on an aspect of wit and *esprit* of language that is, we considered, both intellectual and emotional aspects of language. Thus, we have been researching the feature of language that Takiura pointed out in [24]; that is, we seek a feature of language where language communicates something in a non-communicative way and that language does not really communicate anything, even if it seems to communicate something.

In this paper, we first define language sense, and, with various examples, examine the Kansei that language has as language sense. We then discuss possibilities of achieving language sense processing on computers.

## 2. Language with language sense

### 2.1 Language sense

In previous papers, we roughly defined “language sense” to show affective or psychological aspects of language [2]. Accordingly, “language sense” would inspire such attributes of language including emotion, what enchants us, what is artistic, and what is slightly difficult to explain... etc. Thus, by “language sense,” we would like to express types of non-logical feelings in language. According to the definition of “language sense,” we proposed the B-class Machine [17], wordplays on computers [12],[16], and support for a computational generation of affective phrases [2] to show possibilities of implementation of language sense on computers. The supporting concepts of the applications were wit and *esprit*. We tried to generate slightly different feelings by applying a mechanism of the Concept Base [14] that can calculate similarity between words with regarding context. Since we focused on applications that can be thought of as achievable by computers, we might be able to deal with only a small part of language sense. In this section, we will point out affective and emotional aspects in language by using various examples.

## 2.2 Impersonal language

In this section, as a counterexample, we show features of computer-generated languages that we naturally do not think have affective and emotional aspects. In particular, we analyze a computationally translated language. From our experience, computationally translated language is quite formal; accordingly, it would not be suitable to simply use automatic translation systems on multi-lingual chat systems. For example, Fig. 1 shows a multi-lingual chat system developed in NTT MSC, Malaysia. Actually, the browsers show only greetings and these would be acceptable. However, when the users use informal language such as “C U (see you) later,” normal translation systems cannot translate the phrase unless we implement a dictionary including special expressions beforehand. When the users use only formal expressions, the system can translate it well, but the chat may not become fascinating, since a translated sentence seems impersonal and sometimes awkward from the viewpoint of chat.

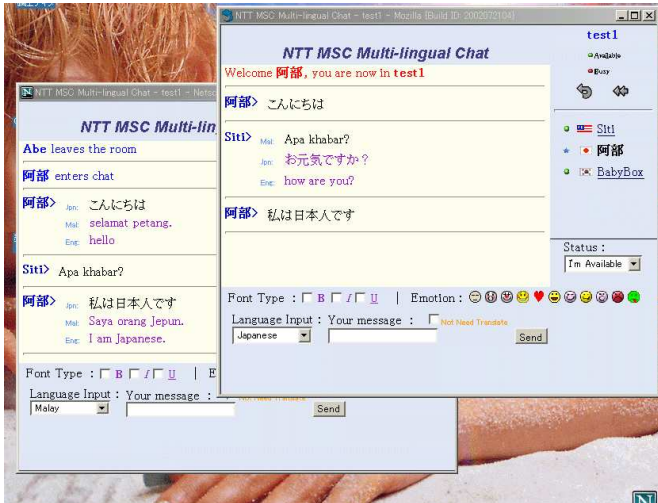


Figure 1. Multi-lingual chat system

As for multi-lingual BBS, Nomura et al. pointed out that since machine translation can translate only well written sentences, the users need to rewrite their sentences by referring to the translated sentence [20]. If the interface were complicated, it would be quite difficult to generate affective feeling or emotion, but if we change our viewpoint, language obtained by such a fitting or filtering method might display a sort of affective feeling or emotion. This is because the language is generated by our intellectual or mental behaviour.

Of course, we tend to feel that computer-generated sentences are awkward and in fact, computers usually generate poorly written sentences. Indurkha showed a computer-

generated poem in [8]. In his example, we misunderstood the computer generated poem as one written by human beings and a human-written poem that was intentionally poorly written as a computer-generated poem. Thus, we might develop the prejudice that “computer-made = awkward and poor.”

Android Yuming [9],[10] is an example implemented on computer that generates poems as if they were written by Yuming<sup>†1</sup>. In fact, after generating poems, human beings correct particles etc. to make them sophisticated. From the concept of intertextuality [15], it would be plausible to build Yuming-like poems by a construction of a mosaic of quotations from Yuming’s poems. As pointed out in [1], automatic generation of poems under the concept of intertextuality is logically possible. Generation of novels and poems based on intertextuality on computers is quite a promising approach. If the original has some language sense, this sense will be transferred after construction of a mosaic of quotations, and enabling is to feel another language sense from the reconstruction.

Let us return to computational translation problems. The funny picture shown in Fig. 2 is an image inspired by a funny sentence that was translated from Japanese to English and from English and Japanese (translated twice). As shown in the following paragraphs, the quality of translation is not good. One problem is caused by proper nouns that English does not have, while another is that it is difficult to find the right context, which seems to be lost during translation.

- Original Japanese

ある日、桃太郎は言いました。「おじいさん、おばあさん。鬼が島へ行って鬼をやっつけてきます。」そのころ都では、鬼が島の鬼が、暴れるので困っていたのです。「気をつけて行くのだよ。」お爺さんは刀を渡してくれました。「では、私はお弁当を作しましょう。」お婆さんは、日本一のきび団子を、作ってくれました。

- Translated English

A certain day and peach Taro said. “A grandfather, a grandmother. A demon goes to an island and defeats a demon.” At the time, since the demon whose demon is an island rioted, he was troubled by the capital. The grandfather “which it takes care and goes” handed the sword. “I need to make lunch.” The old woman made the No.1 millet dumpling of Japan.

- Translated Japanese from English

ある日および桃タロイモは言いました。「祖父(祖母)。悪魔が島へ行き、悪魔を破ります。」その時に、その悪魔が島である悪魔が暴動を起こしたの

<sup>†1</sup>Yumi Matsutoya: Japanese singer songwriter.

で、彼は大文字で苦しみました。祖父「それはそれを注意にとります、また行く」剣を渡しました。「私はランチを作る必要があります。」老女は、日本のNo.1 ミレーのゆで団子を作りました。



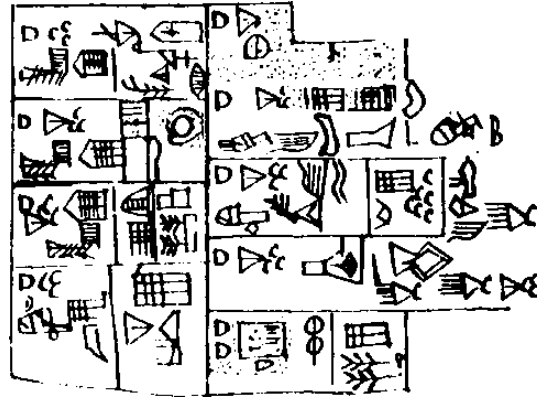
**Figure 2.** Picture by Rintaro Hara and Yu Hara based on above translation.

As a Japanese reader will notice, part of the twice-translated passage is nonsense; however, it is not complete nonsense, because it is based on original literature. In [3], we showed that a slightly different or unexpected Internet search result can act as a catalyst to stimulate our hidden creativity or desire. Thus, sometimes these types of errors stimulate our creativity. In addition, these types of creativity might be influenced by language sense that would fascinate us; that is, unintentional affective feeling or emotion seems to emerge in the picture. Since the computer misunderstood the context, the translated passage was awkward, though the awkwardness becomes comfortable for us. Is it possible to measure the comfort level of computational awkwardness? If we apply some special background knowledge or experience, even computer-generated language that is usually regarded as impersonal can be regarded as human-like language, meaning that there could be language sense even in computationally generated matters. In addition, since the language sense is unintentional and unpredictable, it might be actually more fascinating than intentional language sense.

### 2.3 Human language

Since ancient days, we have developed characters to publicize messages, and the characters still survive. Thanks to these characters (sometimes, of course, we cannot read ancient characters), we can refer to old records such as those of kings, war and law. These types of characters were media

that precisely communicated somebody's intentions. Therefore, they should have been constructed by strict rules to prevent misunderstanding. Since the objective of a character is to express what is in the writer's mind, the first character would be formed by referring to a real thing (representation) as shown in Fig. 3 (series of real things).



**Figure 3.** Sumerian hieroglyphic characters

It is quite uneconomical to use one picture for one concept or object. Instead, we would like to use the same symbol to express the letter 'b' in both 'bird' and 'tomb.' This can be done with an alphabet, the oldest surviving record of which is Linear B; from a Greek dialect known as Mycenaean (Fig. 4). Usage of this alphabet is thought to have spanned the time period between approximately 1500 BCE and 1200 BCE. This system was apparently designed for a non-Greek language, as it did not fit the sounds of Greek very well. In fact, it is likely that Linear A was used to write the pre-Greek language of Crete, and the incoming Greeks adopted this writing system for their own use.

Thus, characters that were invented to communicate were, at first, representations that could express each event and object, but they have gradually changed to symbols that can express general matters.

Language in an ancient time would have been a medium for real communication between people. Following Johannes Gutenberg's invention of the printing press in c.1450, we have been able to easily deliver sets of printed matter. In addition, the aim of document delivery would have been changed. That is, before the invention, the aim of document delivery would have been an official delivery of rules to communities and orders from kings etc. Moreover, it was not easy to produce many documents. After the printing press' invention, however, the aim of document delivery would become easier and sometimes include artistic activities. For example, Fig. 5 shows the Gutenberg Bible which has many decorative characters. Since it is a book for delivering the word of God, it should not need any decora-

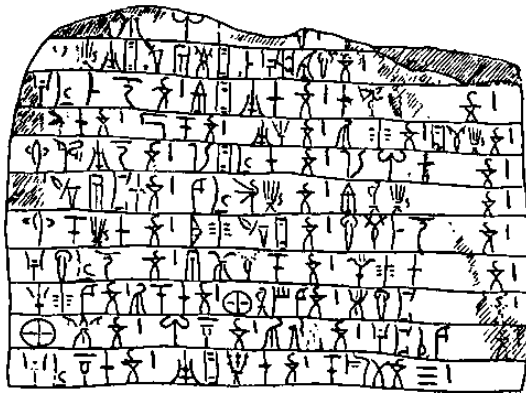


Figure 4. Linear B

Douces figures poignardées  
 MIA Chères lèvres fleuries  
 YETTE MAREYE  
 ANNIE et toi MARIE  
 où êtes-  
 vous ô  
 jeunes filles  
 MAIS  
 près d'un  
 jet d'eau qui  
 pleure et qui prie  
 cette colombe s'extasie

Figure 6. Poem with a visual effect (shape)

tions — however, as you can see, it does. These decorations can be regarded as evidence of the birth of language sense, and this sense would come from a sense of play as well as faith in God.

In the next section, we discuss a feature of language from the viewpoint of visual effects.



Figure 5. From Gutenberg's Bible



Figure 7. Advertisement with a visual effect (Laforet, Japan)

### 2.3.1 Language requiring visual effects

With progress in the function of language, language would require visual effects. For instance, there are the poem in the figure of a bird (Fig. 6) and the pop character in an advertisement (Fig. 7).

Figure 6 shows the famous poem “Le colombe poignardée (The stabbed dove)” by Guillaume Apollinaire. After formatting a poem in the figure of a bird (pigeon), the poem not only takes a graphical image of a bird but also becomes a piece of art. This is an artistic example and it is quite difficult to create such an artistic work, in that there needs to be excellent language sense to create such an excellent work. On the other hand, Fig. 7 may not be regarded

as art. The main purpose of the effect here is to be attractive to the public. Apollinaire also wrote “Le jet d’eau (The water jet),” but the former example is not frequently observed even in contemporary poems. On the contrary, the latter example can be frequently observed in advertisements and comics. This is a frequently used techniques to generate some effects on images.

Even if the above examples use phonograms, when characters are placed on soundless paper, the visual effect is important. For example, Fig. 7 seems to generate a sound such as “Ah” or “Ooops.” The graphical (pop) character’s effect tends to strike the sense of hearing (sound experience) rather than vision. In addition, we can feel a moving atmosphere from it. This is an explicit expression of language sense.

### 2.3.2 Language not requiring visual effects

If we do not use visual effect such as that shown in the previous section, we cannot expect any effect such as a sound effect. Instead, we can experience the effect of the inherent sound of language. Advertisements in Europe and USA, whose language systems use only phonograms, are explana-

tory advertisements. We consider the phenomenon is due to their simple systems of language, but it might also be due to the Product Liability Law. Accordingly, it is difficult to observe advertisements that make full use of rhetorical techniques of language. We show one rare example in Fig. 8. In the advertisement, “berry” is used to represent “very.” This is quite a simple example.



Figure 8. Advertisement in USA

Another example can be observed, such as “The Best Things in Life are Basic<sup>12</sup>” (Fig. 9). This type of technique often seems to be used when producing advertisements. As long as advertisers use alphabets, to which they cannot add meaning, it is quite difficult to add more effects than those shown above. That is, since Western logical languages depend upon alphabets which are phonograms, it is a natural phenomenon that form and sound are separate in those language systems. As pointed out by McLuhan [18], a Western typographic-culture-biased person tends to avoid an emotional, sentimental and imaginative life. Accordingly, in contrast to Japanese ones, there are relatively few examples of advertisements that contain affective or emotional feelings.

The Japanese language is quite rare in featuring both phonograms and ideographic characters. In Japanese, we can use Chinese characters that contain both meaning and two types of sound (On (phonetic reading) and Kun (native Japanese reading)). As a result, we can express various types of effects by using such characters. For example, the advertisement for Ohtemae University shown in Fig. 10 includes the phrase “男女驚愕 [danjo-kyogaku].” The university used to be a women’s college, but since the advertisement, they have changed to a university for both genders (danjo=men and women). The word “共学 [kyogaku]” means a school for both genders. The correct usage is “男女共学.” However, they seem to try to express a certain surprise in the phrase. For this purpose, they used the word “驚愕 (surprise),” which has the same sound as “共学.”

In addition, in the Japanese case, Hiragana are quite special characters: they are phonograms with a function sim-

<sup>12</sup>The phrase in the advertisement is based on the proverb “The best things in life are free.”



Figure 9. Example of quotation from a proverb

ilar to the alphabet, but they have the history of being invented by “emotional” females. In addition, Hiragana characters were influenced by Chinese, because they were invented based on the writing patterns of Chinese characters. Similarly, Katakana was invented by taking simple components of Chinese characters that have the same sound. Accordingly, there is enough room for affective or emotional feeling in the characters. For example, if we distinguish “kotoba” in writing as “ことば (Hiragana),” “コトバ (Katakana),” and “言葉 (Chinese character),” each of them would have a different feeling. Details on effects and feelings in writing of letters can be referred to Hatta and Iwahara’s reports [7],[11]. We think the selection of character type is determined by language sense. Sometimes, the selection is influenced by a sense of play.



Figure 10. Advertisement for Ohtemae University

Previously, we proposed a computational support system to generate rhetorical phrases such as wordplay [2]. The system can only generate quite simple phrases but we could show that computers can perform human-like language activity. The system cannot always generate good phrases,

and judgment on a phrase's aesthetic qualities should be done by humans, though it may be a stimulus for human creativity.

## 2.4 Super-human language

In this section, we show examples of special (not ordinary) usage of characters that may be inspired by language sense.

### 2.4.1 Pictorial symbols

Figure 11 shows Tompa hieroglyphic characters that are currently experiencing a boom. It is surprising that, even now, these characters, which were thought to have been out of use, are still used in Yunnan, China. Therefore, Tompa

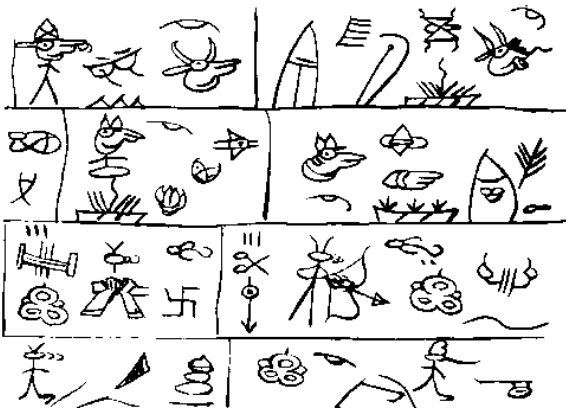



Figure 11. Tompa hieroglyphic characters

hieroglyphic characters still reflect the Naxi people's current lives, religion and culture, and are used as a living language. However, for outsiders, it is not necessary to use Tompa characters as they are used in Yunnan. Since they are constructed of hieroglyphics, we can guess the meanings of the characters, even if we cannot pronounce them. Accordingly, they can be regarded as pictographs such as

. Moreover, if we use them in wordplay, they can be regarded like pictorial symbols on mobile phones<sup>13</sup>. In fact, since they are not officially used in Japan nor in computational or mechanical matters, they look quite fresh or novel. Moreover, since they are still in use to express daily ideas, they have a more powerful expressive ability than do pictorial symbols such as smilies (😄 or :-p). Furthermore, some users add other interpretations to characters by which they were inspired. For example, in typography, Asaba

<sup>13</sup>For example, "Tompa de Mail" <http://www.heno2.com/tompa/pc/> on the Japanese site.



Figure 12. Typography based on Tompa hieroglyphic characters

produced artistic works (typography) by using Tompa hieroglyphic characters (Fig. 12; <http://www.asaba-tompa.com/>). These sorts of unexpected usages and ideas are inspired by language sense within the characters.

### 2.4.2 (Pictorial) symbols on mobile phones

In Japan, we have seen rapid progress in the functions of mobile phones. Because in trains we cannot talk on mobile phones, we usually use them for sending and receiving e-mail (Another reason is that e-mail service costs less than the voice phone service.). Usually, we use Japanese characters (computer-installed fonts) to write an e-mail, but if we have a sense of play, we also use pictorial symbols (Fig. 13). This is an extended version of the smiley. Regarding the fact that they express thoughts, concepts and objects by using pictures, it might be said that writing system go back to ancient times. Nevertheless, when we receive this type of e-mail, the mail can be regarded as hand-written, and might be more suitable than mail written only in expressionless computer-installed fonts.



Figure 13. Pictorial symbols on a mobile phone

It seems, however, that not even pictorial symbols are enough to express our feelings. Recently, high school (girl) students have been using so-called "gal-characters"<sup>14</sup> (Fig. 14).

<sup>14</sup>Gal characters are said to be borrowed from Kusachu characters that

Examples of gal-characters are as follows:

オ (よ ㇿ ㇿ ㇿ = おはよう (good morning))  
シ木目南 = 湘南 (Sho-nan)



Figure 14. Pictorial symbols on a mobile phone

As you can see, these character types are generated by decomposing one character into more than two characters or by substituting another character that has a similar shape. The most obvious feature is that all the characters can be written in ASCII characters that are commonly used in all Japanese mobile phones. The feeling of using these types of characters might be caused by the fact that some of the above pictorial symbols cannot be displayed on another maker's mobile phone. However, language sense plays a significant role in the feeling. In fact, it is said that "The computer-installed characters are quite artificial (mechanical), but these characters are something like hand-written letters and are warm". We also have another feeling: that the characters are written slightly poorly or awkwardly, and a little awkwardness is sometimes comfortable for us. Of course, it is also true that a little awkwardness has the same effect as hand-written letters. Another reason is that they use the characters to express their secret matters as if it were a sort of a cypher. For a person outside the community, it would be difficult to read the characters. Even if it is used as a cypher, there must exist a sort of language sense in a relaxed situation. A relaxed situation is usually caused by a sense of play.

was used in 2ch (Japanese online-community). This is not completely true, because they invent new characters according to their feelings.

### 3. Affective and emotional aspects of language

#### 3.1 Features of language sense

In this paper, we showed examples to explain language sense, and analyzed language from the viewpoint of relaxed situation (sense of play). If there is the belief that we should always correctly communicate everything, there will be no sense for play. Accordingly, there would be no attractive usage of language. If our minds are free from the restriction that we must communicate as correctly as possible, we feel inclined to conduct more attractive communication. Artistic language, such as decorated books and formatted poems, appears when we attain a certain level of relaxation in our lives.

Of course, catch copy produced by professional writers has a certain level of professional language sense. However, even non-professional writers can create artistic products. As shown in the previous section, in Japan, we have various sorts of e-mail systems that can be regarded as word-play. One example is an e-mail system that utilizes Tompa hieroglyphic characters to express contents with graphical objects. This is not in regular use and is not an original invention, but use of characters from another culture has a new or novel impact on Japanese users.

There may not be any room for inventing new characters, but there is plenty of space for possible interpretations and additional meanings of the characters. They send mail with Tompa hieroglyphic characters as a part of word-play. Another example is gal-characters that show a typical teenage sense of humour. Characters are decomposed and, at a glance, difficult to be read by people outside the writers' community. To tell the truth, this can be regarded as a good example of language sense. From computer-installed fonts that are quite restricted, they try to generate new possibilities for communication with language; the language is deconstructed but does not lose its meaning. In addition, it might stimulate new sense and imagination. Since they do not need to use the apparatus correctly, there are many possibilities for unexpected but fascinating usage of language that includes language sense.

More formal analyses were performed by Osaka [21] and Seto [22],[23]. From their analyses, words that express emotion can be qualitatively explained by onomatopoeia, metaphor and metonymy. These features of language can be regarded as language sense.

#### 3.2 Measures for languages sense

In the previous sections, we illustrated features of language sense. One question remains: Is it possible to objectively measure language sense? Murakami used a statistical method (Quantification Method III or Correspondence

Analysis) to analyze Genji-monogatari and novels by Yasunari Kawabata [19]. He especially observed the peculiarity of the place of the punctuation. Similarly, we think that features of affective or emotional aspects of language can be observed. In such a case, factors other than punctuation use should be attempted.

Although it is not language, we have also analyzed music composition data (extended MIDI data) [5]. In that paper, we proposed the self-education method, which statistically compares a professional composer's composition pattern with that of a non-expert and shows a marked difference between the patterns. In fact, the professional composer's composition pattern is clearly distinguishable from the non-expert's composition pattern. Actually, the difference comes from talent or composition techniques. However, we think that if we use a proper method, we can find difference between affective or emotional factors. Similarly, the analysis can be applied to affective or emotional aspects of language. In addition, as shown in this paper, this type of differential display can stimulate our creativity, that is, language sense.

#### 4. Conclusions

When we encountered the poster shown in Fig. 15<sup>15</sup>, we thought that it would be significant for developing a support system that can support creativity to generate catch copy. We then planned to develop the system shown in [2].



Figure 15. Advertisement of JR East

<sup>15</sup>The phrase “愛に雪、恋を白 [ai ni yuki, koi wo shiro]” should be written as “会いに行き、恋をしろ。 (Go to meet somebody and fall in love with him/her!)”. Both phrases have the same sound, but the former one implies another meaning by using other Chinese characters, which have another meaning. In fact, 雪 means snow and 白 means white. The advertisement is for a ski-trip. Ski implies snow and snow implies white, therefore they seemed to use the characters. In addition, 愛 and 恋 mean love. By these characters, the phrase also implies a trip for lovers. Thus, the effect of the phrase is quite impressive.

In addition, we thought that some of the generation procedures of catch copy can be modeled; therefore, we could implement a part of the mechanism to generate such catch copy on computer if we could obtain a generation protocol for an affective or emotional aspect of language.

In Japan, wordplays have been done by those who have not only a lot of time and money, but also those with relaxed minds, such as aristocrats and Furuji. They have a certain room in their minds, so they possess outstanding affective feelings and emotions. From the viewpoint of creativity, such rooms are quite important for generate impressive language. Aside from wordplay and creativity, this research can be applied to more practical applications. A keyword “Kansei” in language is also quite significant for supporting communication between mentally handicapped people and for chance discovery by analyzing language activities in nursing activities etc. The main problem, as pointed out above, is how to determine and retrieve “Kansei” from language. As shown before, we believe that if we apply the statistical method or its extension, the problem can be solved to a certain level.

To realize a system dealing with language sense, we think tools such as the Concept Base [14] that can calculate the relationship between concepts is necessary, while studies such as that by Ando [6], which proposed to quantify the role of affective or emotional words, are quite important.

In this paper, we have analyzed language sense almost solely in Japanese. We think other languages, such as those with characters other than alphabets, would have language sense. Thus, it is necessary to analyze other language sense in languages other than Japanese.

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