

Soft Communication by Haiku-like Fragmental Sentences

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Abstract— Poetic fragmental sentence such as Haiku often behaves freely from grammatical constraint while maintaining almost full linguistic message transmitting power. It is somewhat mysterious language phenomenon that Haiku-like fragmental sentence can dexterously give full play to their persuasive power on reader's soul. In this paper we take HAIKU, classical Japanese short poetic sentence, as a soft communication language on highly rigid and efficient DSP world. Here DSP stands for Digital Signal Processing.

By using the concept of functional grammar and season-word ontology, we try to approach the secret of taciturn efficiency in poetic sentences. The efficiency of HAIKU is often said to exist in ellipses, abbreviations and suggestions; eloquent mutism. Various events and situations that suggest tacitly the deep emotion and feelings of writer are described in a very short and simple sentence which is composed of 5-7-5 letters words or phrases.

In this paper we will introduce a Functional Grammar as a device for analyzing the meaning and construction of HAIKU. The Functional Grammar claims that every sentence is composed of two categories: kernel sentence and meta-sentence. We show typical examples of meta-sentences and kernel sentences obtained from HAIKU, and try to reveal the secrets of aesthetic efficiency of ultimately simple sentence, HAIKU.

One more important thing, in this paper we will treat English version of HAIKU, as an efficient soft communication language. In the highly digitized and rigidly designed world, we may need Haiku-like soft and simple fragmental communication language.

Keywords— Poetic Sentence, Haiku, Aesthetics, Secret of Beauty, Eloquent Mutism, Functional Grammar, Kernel Sentence, Meta-Sentence, Seasonal Word Ontology, Saijiki, Haiku-Ontology, Haiku-Upper-Ontology, Meta-Ontology, Narrativity

I . Introduction

Poetic sentences often behave freely from grammatical constraints. Especially the poetic sentences, such as Haiku are often far beyond the grammatical completeness while bringing an incredibly attractive power on human's linguistic sensitivity.

Thus we can expect the techniques for composing impressive sentences or making persuasive talks through the study on poetic sentence constructions. Though there are many genres or styles in poetic sentences, in this paper we take HAIKU, classical Japanese short poetic sentence as a typical

example of beautiful persuasive sentence. By using a functional grammar concept we try to elucidate the secret of simple sentential beauty. The essence of beauty of HAIKU is often said to exist in ellipses, abbreviations and suggestions: eloquent mutism. Various events and situations that suggest tacitly the deep emotions and feelings of writer are described in a very short and simple sentence which is composed of 5-7-5 letters words or phrases.

Usually HAIKU never talks directly about the emotion or declaration of writer's mind; it only suggests them by using other simple words that describe weather, plants, animal, climate or scenic beauty. Haiku is always expecting and inviting readers' conjecture or imagination.

HAIKU is now going out from the classical region of Japanese culture or literary arts, and becoming an international model of sentential beauty. On this ground we have taken HAIKU and its English translation as a poetic sentence corpus, which is to be analyzed through Functional Grammar in order to investigate the secret of its beautiful and simple sentence construction.

The main point of Functional Grammar is that it regards every sentence as being composed of two types of sentences: kernel sentence and meta-sentence. Meta-sentence can be understood as a sentence structuring operator, while kernel sentence is a simple structured, mono-predicate sentence. Kernel sentence has an obvious translation of canonical form, while meta-sentence represents logical-semantic structure of sentence which takes kernel sentence (s) as its dominating variable (s). From meta-sentences we can draw a lot of useful semantic information.

We show typical examples of meta-sentences obtained from HAIKU corpus. We expect that through meta-sentences, the essence of the simple beauty in HAIKU can be clearly extracted. This extracted essence will give some hints to compose beautiful sentences together with fundamental language teaching methods.

Let us show a simple and easily understandable example of HAIKU and its associated meta-sentence together with an English translation.

春泥やかような道のある嬉し 新田透舟 (Hj)

Hj = Shundei-ya Kayouna Michi-no Aru Ureshi Nitta Toushu

He = Spring muddy path ---- makes me feel glad.

Mj (Kj1, Kj2, Kj3) = Kj1, Kj2, Kj3

Kj1 = Shundei-ya

Kj2 = Kayou-na-Michi-no-Aru

Kj3 = Ureshi

Haru-no Nukarumi-Michi-wo Aruite-iruto Nanikashira Ureshii Kimochi-ni naru.

(When spring comes, there appear many muddy places. I am walking on such a muddy path, which makes me feel glad.)

He (Ke1, Ke3, Ke2) = Ke3 makes Ke2 feel Ke3

Ke1 = “Spring muddy path”

Ke2= “me”

Ke3= “glad”

Reference and association are important to feel sympathy for admiring the spring muddy path that makes people easy in mind.

R (K1, K2, K3) = {Time=Spring, Cold winter was over, Place=maybe a park or an open square where people are gathering and talking.}

II. Soft Communicative Power in Haiku

Straightaway let us take a look at the communicative effect of Haiku reflected in only one word change. That is, in the previous Haiku, let us make a change from “Aru Ureshi (ある嬉し)” to “Imada Aru (未だある)” :

春泥やかような道の未だある 透舟 (H’j)

H’j = Shundei-ya Kayouna Michi-no Imada Aru Transparent Boat

In the above we made only one phrase change from “aru-ureshi” to “imada-aru” . But this very small change causes a very big change meaning of meaning.

(H’j) ある嬉し—— Aru Ureshi: feel glad for existence

The Haiku writer feels glad when walking on a spring muddy path. This represents his affirmative attitude toward underdeveloped country-side muddy road. Maybe he is on the side of naïve nature love.

(H’j) 未だある—— Imada Aru: still remains

In this case the concerning muddy path is taken as an unwelcome object. Haiku writer is on the side of a modern well-paved road.

The evaluation—which is more feasible or efficient in our daily life circumstances— is depending on a reviewer’s sense of natural environment.

The point of this section is that in poetic sentences like Haiku, very small portion of words or phrases may affect drastically the standpoint or opinion of itself. This is why Haiku is efficient and of soft-atmosphere in communication made in an unsociable and unaffable atmosphere.

III. Meta-sentence and Fragmental Syntax

Note: The description of this chapter is quoted from [Y. Nitta (2012-10)] which gives the precise definition of meta-sentence together with its illustrative usage examples.

First of all, we claim that every sentence is composed of two categories: kernel sentence K and

meta-sentence. $M()$ Let us denote K as a kernel sentence and $M()$ as a meta-sentence. Meta-sentence behaves like a function over kernel sentence, thus we can write:

$$S = M(K)$$

Here S denotes a sentence. If we would like to emphasize that sentence S is written by language j or language e , then we would write:

$$S_j = M_j(K_j) \quad \text{or} \quad S_e = M_e(K_e)$$

where, M_j means a meta-sentence in language j , and K_e means a kernel sentence in language e .

If we denote the translation between language j and language e as Tran , $\text{Tran}: S_j \rightarrow S_e$

Then at the same time, $\text{Tran}: M_j() \rightarrow M_e()$ represents the bilingual alignment between language j and e , whose concrete example will be shown later.

(1) Explanation about kernel sentence K :

The “kernel” designates the kernel of sentential meaning and the kernel of translation. Roughly speaking the kernel sentence has a simple predicate-and-argument structure, that is one verb and dominating noun (s). Kernel sentence can be a form of no verb (-phrase), that is of noun (-phrase) only.

The kernel sentence has usually an obvious translation of canonical form and has high possibility of pseudo symmetrical translation property.

If sentence K has a symmetrical translation property, then

$$\text{Tran}(K) = K' \text{ and } \text{Tran}^{-1}(K') = K$$

In case of pseudo- symmetrical translation property,

$$\text{Tran}^{-1}(K') = K$$

The antonym of “symmetrical translation property” is “directional translation property”, that is $\text{Tran}^{-1}(\text{Tran}(S)) \neq S$.

If sentence S has a symmetrical translation property, then this sentence is easily translatable and has an obvious translation. Thus these kinds of sentences are expected to form some baselines for overall translations.

(2) Explanation about meta-sentence $M()$:

The meta-sentence is a kind of hyper-sentence that operates over kernel sentence (s). This operation is viewed as a sentence constructing operation that makes actual surface sentence using kernel sentence (s) as its component. The essential part of meta-sentence depends on the function word in Japanese and the preposition and connection word in English.

Now let us see a concrete example of fragmental syntax in HAIKU, which still maintains strong message passing ability. Haiku is composed of only 17 phonetic characters, which nevertheless has strong message appealing power to readers. In compensation for this stylish conciseness, Haiku is often obliged to transcend the ordinary sentential syntax. It may lack its main verb, subject and/or

object, but still it maintains strong message passing ability. Let us see a typical example.

***Furuike-ya kawazu tobi-komu mizu-no oto Bashou

Furuike=old pond=Noun

ya=Function Word

kawazu=frog=Noun

tobi-komu=jump into=Verb Phrase

mizu=water=Noun

no=Postpositional Particle (designating "belonging")

oto=sound=Noun

*Translation (Interpretation):

***Kanjaku-nari Furuike-no katawara / Aogaeru Tobi-komu Mizu-no-naka / Mizu-utu

Oto Hitotsu-Ari (Literal reading of Kanpei (Chinese Haiku))

***An old pond----/A frog dives into / with a quiet splash Translated by Nitta Touseu

***An old quiet pond--- / A frog jumps into the pond / plash! Silence again. Harry Behn

The syntactic structure of the original Haiku is:

Subj (N) + F + Subj (N) + Vi + Subj (NP)

which is fragmental. Nevertheless, the sequence of Noun or Noun Phrase plus Function Word brings about a deep poetic meaning.

In order to clarify the deep poetic meaning, it is useful to apply the notion of kernel sentence and meta-sentence. Let H be the original Haiku, then meta-sentence M () and kernel sentences K1 and K2 of H make a formula:

$H = M (K1, R, K2)$

K1=Furuike-ga aru=There is an old pond.

K2=kaeru-ga Mizu-ni tobi-kon-de oto-wo tate-ta=A frog jumped into water with a splash.

R=Scene-event relation

In this Haiku H, the first noun old pond (Furuike) has no verb and stands alone. Some imaginary association with the noun, old pond, derives the kernel sentence K1 and relation R.

This example suggests us even one isolated noun could convey lots of information, if the noun were chosen carefully.

From Chinese sentences to English or Japanese sentences, we can relatively easily obtain direct word-by-word translations. These word-by-word translations are usually of fragmental syntax, but still can transfer substantial messages. Let us see another example.

C= (Literal reading of Chinese)=Kotoshi okonau-wo ezu-tomo mata myounen ari / furui-okoseya yaruki-wo!

A direct translation of C into English may be:

Tran (C) =this year not done, again exists next year, encourage sprints!

If we denote S_j as a source language sentence, S_e as a target (=translated) sentence and Tran as

a translator between S_j and S_e , then we will write:

$$\text{Tran} (S_j) = S_e$$

for the translation between language j and language e .

We propose that each sentence S is composed of two categories: kernel sentence (s) K and meta-sentence $M (\)$. Meta-sentence is a sentence structuring operator.

$$S = M (K),$$

$$\text{Tran} (S) = \text{Tran} (M (K)) = \text{Tran} (M) (\text{Tran} (K)).$$

Roughly speaking, kernel sentence K represents simple structured, mono-predicate sentence which has an obvious translation of canonical form, while meta-sentence $M (\)$ represents a logical-semantic structure of sentence which takes K as its dominating variable, and shows a relationship among kernel sentences.

IV. Interpretation of HAIKU by meta-sentence

HAIKU has reached the limit of simplification in its sentential form, while preserving the potentials of its rich message passing ability to the readers. It depends on the imaginary association potentials of the component words and phrases, especially the season words that we will treat later. This situation can be formalized in somewhat naive intuitive style as follows:

$$H = K + R$$

H: HAIKU sentence (a very short simple concise (pseudo-)sentence)

K: Kernel Sentence (that has a canonical meaning)

R: References to the outer world (Association, Conjecture); especially the reference to Haiku
Ontology

R naturally depends on H.

$$R = f (H) \quad \text{or} \quad R = f (H, K)$$

f is a function which has H and K as its objective variables. F is a meta-sentence that exists at the base of HAIKU H . The successfulness of a semantic interpretation by meta-sentences will be confirmed through the translation of Japanese HAIKU into English HAIKU.

Paying attention to the form:

$$H - K = R$$

We would like to extract R (from H) as the reference to the outer world (or circumstance) knowledge that is often stored accumulatively in Haiku Ontology. R depends on H . We can write:

$$R = f (H) \quad \text{or} \quad R = f (H, K)$$

Thus later we will identify $R (\cdot)$ with Haiku-Ontology.

The function $f (\)$ can be interpreted as a meta-sentence that exists at the base of HAIKU H . Note that for the notational simplicity we put $M = f^{-1}$. From now on we treat $M (\)$ as a meta-sentence instead of $F (\)$.

In the followings we will show the concrete examples of Haiku-interpretation by meta-sentence

formation and reference to Haiku-Ontology. (For details See the next chapter).

*** 梅咲くや何が降っても春は春 加賀千代女

Hj: Ume saku-ya nani-ga futte-mo haru wa haru Kaga Chiyojo

He: blooming plum---/ even if rain or snow falls / spring is spring

translated by P. Donegan [14]

Hj = K1 dearu-kara+tatoeK2 demo + zettai-ni K3

K1 = Ume-ga saku = plum is blooming

K2 = Nanika-ga furu = something falls

K3 = Haru de-aru = it is spring now

Hj= M (K1,K2,K3)

Tran (Hj) = As plum is blooming, even if rain or snow falls, it is already and definitely spring.

The reference to the Haiku Ontology may give us the circumstance information as follows:

Ume-saku (梅咲く) plum is blooming ∈ Time (early spring)

∈ Event (taking a stroll)

∈ Location (a garden)

∈ Weather (spring drizzle)

∈ Participant (maybe an aged writer)

∈ Situation (Relaxing and welcoming the arrival of spring)

*** 陽炎 (かぎろい)や人も立木もゆらゆらと新田透舟

Hj=Kagiroi ya Hito mo Tachiki mo Yura-yura to

Nitta Toushu

He = Heat haze shakes gently ---- both people and a clump of trees.

Mj (Kj1,Kj2, Kj3) = Kj1 ya Kj2, Kj3

Kj1=Kageroi

Kj2=Hito mo Tachiki mo

Kj3=Yura Yura Yureru

Haru-no nodokas-tp nukumori-wa, hitobito-no kinchou-wo toite hotto-shita kibun-ni saseru. nagaku samui fuyu-ga owari atatakai kisetu-ga tourai-shita-koto-wo, sasayaka-ni yorokobu kimocho-ga sunao-ni yomi-komare-te-iru.

(A calm and quiet atmosphere of the spring season is described in a frank and strait fashion together with the delightful relieved feeling of welcoming warm spring arrival.)

He (Ke1,Ke3, Ke2) =Ke1 Ke3 (=Vt Adv) Ke2

Ke1 = "Heat haze"

Ke3 (=Vt Adv) = "shakes gently"

Ke2= “both people and a clump of trees”

Reference and association are important to get the both heart-and-body-warming atmosphere.

R (K1, K2, K3) = {Time=Spring, Cold winter was over, Place=maybe park or grassland where people are gathering against the background of a grove.}

Referring to Haiku-Ontology we may get:

Kagiroy (陽炎) Heat haze ∈ Time (midst of spring)
 ∈ Event (taking a stroll)
 ∈ Location (maybe a natural park or garden)
 ∈ Weather (Heat Haze, Mist)
 ∈ Participant (writer)
 ∈ Situation (Enjoying a short time recess)

*** 梅が香や鳥は寝させて夜もすがら 千代女

Hj: Ume-ga ka-ya tori-wa ne-sasete yo-mo sugara . Chiyojo

He: the plum's fragrance / makes the birds sleep----

/ the night falls translated by Patricia. Donegan

Hj = K1 wa K2-saseru Adv

K1 = Ume-no kaori = plum's fragrance

K2 = Tori-wo ne-saseru = makes the birds sleep

Adv = hito-ban-jyuu = all night long

Hj= M (K1,K2,Adv)

Tran (Hj) = The plum's fragrance makes the birds sleep all night long.

Corresponding Local Haiku-Ontology maybe:

Ume-ga-Ka (梅が香) Plum's fragrance

∈ Time (midst of spring, night)
 ∈ Event (taking a night rest)
 ∈ Location (her garden)
 ∈ Weather (Heat Haze, Mist)
 ∈ Participant (writer)
 ∈ Situation (Enjoying an atmosphere of a spring night)

V. Season-Word Ontology for Haiku

In order to make and enjoy Haiku, it is inevitable to use SAIJIKI, a glossary of seasonal words. Usually Saijiki is a structure-less plain lists of seasonal words which often are accompanied with illustrative verses and some concise explanation. Saijiki often is read as a life-course guide treating daily life style, events, foods, customs, manners and so on.

These seasonal words or phrases are mutually related and deeply bound with everyone's daily life. In this sense, Saijiki has an ontological property. In the followings we will illustrate an typical example of Saijiki as an poetic ontology and show how Saijiki is useful to understand and discern the beauty of Haiku.

In this section we will treat Haiku-Saijiki as an Ontology of Human's daily Life. First of all we must explain and/or define the ontology.

Originally ontology is a philosophical concept of old German to investigate the essential nature of existence of all the things in this world. In the midst of the highly computerized modern world, Tom Gruber used and expanded the concept of ontology to construct a universal knowledge describing system [Gruber, T. R. (1993)] .

Following his idea we can view an ontology as a kind of meta-program specification language to describe new knowledge. Remark that: from our standpoint "knowledge" means "new machine or device manipulation knowledge" . In his ontology, fundamental knowledge specification categories include: entity (individual item, object, class, set), property, relation, condition, constraint, rule (if-then formulae), event.

We also have to explain and introduce the concept of "upper ontology" . The upper ontology is defined to be a sub-ontology that locates at the top position among all other ontologies and thus can command the entire domain of involved ontologies. The upper ontology is sometimes called otherwise such as upper-level ontology, top-level ontology, general ontology, general purpose ontology [Takeda, H. (2004)] [Bateman, J., Henschel, R., and Rinaldi, F. (1995)] [Jurisica, I., Mylopoulos, J. and Yu. E. (1999)] .

We claim that upper ontology for human's daily life should reflect directly the intuitive understanding, natural association, commonsense of ordinary people. If this Haiku-Upper-Ontology could have a natural linkage to the common Saijiki, it would provide a good guide for understanding the aesthetics of Poetic Sentences, especially Haiku.

Next we would like to construct an Upper Ontology of Haiku Saijiki by referring the classical Saijiki such as [R. Ohno (1994)] and [S. Mizuhara (ed.) (2005)] .

Fig. 1 Upper Ontology of Haiku Saijiki

<ul style="list-style-type: none"> • Upper Ontology of Haiku Saijiki (The Glossary of Seasonal Words) \ni Time x Space x Event x Weather x Participant x Situation • Time \ni Month, Season, esp. the end of the year, New Year, January, the Bon, the Festival of the Dead, Summer Vacation, the Tanabata, the Festival of the Weaver Star and the Cowherd Star, the Dry Season, Space \ni Location, Places of scenic beauty and historical interest, Remains and ruins, Historical building, Temple, Shrine, School, etc. Houses, Seashore, Mountain, Lake, Valley, • Event \ni Festival, Ceremony, Various activities of the school year, • Weather \ni Rain, Shower, light rain, drizzle, pouring rain, the typhoon brought torrential rain,

drenching rain, misty rain, drizzle, fine rain, summer afternoon shower, spring rain, spring drizzle, freezing rain, cloudy weather, haze, mist,

Participant \ni Human, Animal, Abstract Thing, Machine, Vehicle,

Situation \ni Mood, Atmosphere, Happy Occasion, Congratulation, Appreciation, Solemn Atmosphere, Serious Situation, Mysterious Situation, Funny Situation, Heart-warming Situation, Smile-provoking Situation, Sad Situation, Gloom-, Depression-, Despondency-, Miserable-, Melancholy-, Puzzling-, Fascinating-, Irritating-, Angry-, Situation,

Beneath the items given in the above Upper-Ontology of Haiku, lots of keywords are assigned to be located.

Usually the top category of keyword's location assignment is, not by the alphabetical order, but by the Time and Date, that is, Month (\ni The Begging of the Year, January, February, March, April, May, June, July, August, September, August, November, December (= Shiwasu, Teacher Running), The End of the Year.)

or fine classification of Four Seasons (\ni early spring, middle spring, late spring, early summer, midsummer, late summer, early autumn, middle autumn, the harvest season, late autumn, early winter, midwinter, severe winter, late winter) Thus each keyword is to have inevitably a lot of seasonal information and have potential to indicate some fixed time point in calendar. For this reason, each keyword is called seasonal word or phrase.

Every seasonal word carries lots of information and message about human's daily life activities and social events in corresponding time-point; thus the Haiku, in spite of its ultimately short and concise 5-7-5 style, can convey very fruitful and imaginative messages to readers.

The gist of successful understanding or interpretation of Haiku that you encounter occasionally is, thus you do have your own rich Haiku-Ontology or Saijki in your mind. Haiku-Ontology is doubtlessly an established profound knowledge base of long-range and huge- coverage human's activities.

Next let us try to expand profound knowledge about human's ordinary life activities which will give you a kind of mental consolation or feeling of nostalgia to your life so far.

VI. Background Narrativity

As well as Ontology, Narrativity is also an important device for enabling the Haiku-like ultimately short sentence to work as full-fledged communication tool. Almost all the Haiku stands in some narrative background .

Generally speaking almost all the communicative and/or cultural activities of human society are guided by some untold narrative. Typical classical examples of narratives are found clearly in the works of Shakespeare and the Tale of the Heike.

If given short phrases (such as Haiku-like sentences) could appropriately fitted in some common (shared) narrative, the said communicating members would feel easy; thus a smooth and peaceful message transfer is to be realized.

The transcendental simplicity and conciseness that successfully give a fruitful suggestiveness to the background narrative. Of Course it is quite often and natural that the Haiku-like ultimately short sentence may be inaccurate and insufficient for a practical complicated message transfer. But by repetition and accumulation of several Haiku-like short sentences, this kind of shortage can be complemented easily.

VII. Concluding Remark

We have introduced Japanese poetic sentence, Haiku as an effective communication language for the highly digitized and rigid modern world. Interpretation of Haiku -like fragmental language is treated by kinds of semantic devices. One device is Functional Grammar, and the other is Haiku-Ontology or Haiku-Upper-Ontology.

Thanks to the effective power of these devices, we have successfully revealed the secret of “concise efficiency” of Haiku to some extent. Haiku is an extremely simple Japanese poetic sentence, which is now a world-wide compositional model of soft communication.

Most vital feature that exists in Functional Grammar is the notion of meta-sentence which is a kind of operator for surface sentence formation. Meta-sentence is working over the domain of kernel sentences. The Kernel sentence behaves like a fundamental element in language translation, which has a canonical form of translation correspondence in a target language and also has bi-directional (symmetrical) translation property. Thus kernel sentence has a simple structure and is easily translatable and forms the baseline of overall translation.

Here we should note that translation can be read as a version of semantic interpretation, if we put some semantic form in translated target.

We have also introduced the notion of Haiku Ontology or haiku Upper Ontology, and then shown a trial of constructing a small version of Haiku-Upper-Ontology by using several classical Saijki as referencing corpora. Haiku Ontology gives us the profound knowledge about a keyword/key phrase that composes the kernel of Haiku. Superficial mission of this keyword/key phrase is providing the temporal or seasonal information, but actually the amount of provided information is far more than that. This is the deep reason why an ultimately concise sentence, Haiku, can represent or carry such a rich fruitful message in it.

Currently meta-sentences have been extracted and collected semi-automatically using naive pattern matching programs based on regular expression [A. Kinyon (2001)] [M. Saraki and Y. Nitta (2008)]. Our next step is to construct a more powerful program to extract and manipulate meta-sentences, and to make more extensive experiment to investigate the aesthetics of Haiku-like poetic sentences. The construction of more substantial Haiku Ontology is also our next goal to be pursued

Note: This paper is an extended and corrected version of the paper presented at 2015 DSP (=Digital Signal Processing) Symposium held in Singapore at 2015 July 21-24

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