

## CLASSIFICATION OF COMMUNICATION SIGNS APPEARING IN CLOTHES AND ACCESSORIES AND SUGGESTIONS FOR SAFER WORKING WEARS

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Clothes and accessories function as communication signs. The functions of relevant phenomena appearing in our daily life are classified according to their meanings as communication signs. The makeup, body painting, artificial deformation, modification (for example, tattoo or cut) and such kinds of decoration on the bodies are included in accessories. While the clothes and accessories have other functions such as body temperature regulation, protection of the body, being the fortune value by themselves and so on, the functions as communication signs are focused on in this paper. The resemblance of the communication functions of clothes and accessories to those appearing in animals are examined, through which the origin of clothes and accessories is discussed. Among many kinds of communication signs, including vocal or behavioral ones, the communication signs of clothes and accessories are characterized by their appearance, and may be named 'morphological signs' more precisely. The classification is thought to be useful for investigating the social or communicational functions of clothes and accessories from the viewpoint of socio-behavioral science and ergology, because the communication in the work situation is very important. The requirements for safer working wears are suggested.

**Key words:** clothes; accessory; communication sign; morphological sign; working wear

### INTRODUCTION

There are many functions in clothes and accessories. The protection of the body against cold, infrared or ultraviolet intensive radiation, injury and so on is an important function of clothes and accessories. The value as the fortune also represents another important function of clothes and accessories. The functions as communication signs must be noted as their important functions adding to them. These functions may be considered to relate to their origins. Such functions of relevant phenomena appearing in our daily life are of particular interest and can be classified according to the meanings as communication signs. By discussing these functions, the present author may examine their origins and suggest safer working wears.

Therefore the general aspect of the functions is mentioned at first, followed by the basic classification (section 1), minute classification (section 2), the examination of modifying factors (section 3) and actual examples in case studies with suggestions for safer working wears (section 4). The requirements of safer working wears are suggested through the discussions. The origin of clothes and accessories is also investigated based on the results. The makeup, body painting, body deformation or modifications (such as tattoo or artificial cut) and others are included in accessories in this study.

Ogawa (1991) said "folk costumes or furnishings in the world were naturally originated and established under acclimatization to the climate in which people lived." in his book, and pointed out that the clothes or furnishings functioned as the tools to adapt (or acclimatize) to their environments.

He also said, in the same book, “the other motive force to establish folk costumes or furnishings is artificial one that made them obey to their life style or culture.”, and pointed out their functions as tools to show occupation, ability for work, status, religion and so on. He recognized the functions of clothes or furnishings from the viewpoint of “what and how they dress and put on”, which should mean the general and adequate recognition of the functions of clothes and furnishings.

Morris (1977), from a different standpoint of animal behavior science, said that clothes could function as the signs expressing modesty and display, beyond protection of the body. He also said that the decoration of the body had the function to display the individual’s rank in the society, sexual condition, aggressiveness, loyalty to the group and fashionableness.

These two aspects of understanding clothes and accessories show that the clothes and accessories are used as the signs for mutual recognition. This may be accepted as natural, because the clothes and accessories have the function to be seen by others. Terms such as ‘social sign’, ‘cultural devise’, ‘tools of body language’ and so on can be used to express the same function of clothes and accessories.

Animals also use their biological signs as communication signs for mutual recognition. The olfaction, audition and sight (visual sign) are important biological signs for animals. There are facial expressions, postures and behaviors as visual communication signs. But the most effective visual signs are thought to be morphic (body size, body shape, body color and accessories; horn, fang, mane, tail, etc.), which can be named morphological signs. The morphological signs can be recognized instantly and clearly, so it is easily imagined that the humankind has adopted them in clothes and accessories from the early evolutionary stage.

It is also naturally accepted that the clothes and accessories have become important for human beings as morphological signs, because they are a species of primates that has degenerated the olfaction and evolved the sight developmentally. Clothes and accessories are effective tools to express or modify the morphs of the humankind.

It is of interest to know whether clothes and accessories were originated from the morphological signs at first in certain cases; for example, at the early stage of human evolution in East Africa, where it was hot enough without clothes and the communication signs might be more important than temperature regulation or body protection; this is a working hypothesis to be examined in this paper.

## 1. BASIC CLASSIFICATION OF COMMUNICATION SIGNS IN ANIMALS

The present author classified, at first, biological communication signs appearing in animals and functioning for mutual recognition. The biological signs are mainly divided into three subgroups; olfactory signs, auditory signs and visual signs, excepting other minor signs, for example, the vibration of the ground used among rabbits or elephants. The visual signs are mainly divided into three subgroups; facial expression signs, behavior signs and morphological signs. The morphological signs are mainly divided into four subgroups; body size, body shape, body color and accessories such as horns, fangs, manes, tails and so on. The strategy of using these signs as communication signs may be presented as follows:

[ Strategy of animal communication signs ]

biological sign ----- olfactory sign • auditory sign • visual sign

visual sign ----- facial expression sign • behavior sign • morphological sign

morphological sign ----- body size • body shape • body color • accessories

It is important to survey the prehistoric records when considering the origin or the original functions of clothes and accessories, because they were established in the early stage of human evolution and thought to be uniformed artificially or perturbed after civilization. Prehistoric records are mainly preserved as pictures on the stones. The pictures and the examples of primitive (uncivilized) groups

are the most proper samples in examining the origin of clothes and accessories, although there are very few samples preserved. It is also important to compare human clothes and accessories with the morphological signs of animals especially those which have lived with human beings in the evolutionary process. Typical examples among uncivilized people are discussed.

The function of charms against evilness (i.e. the amulet) is also pointed out by some researchers as the original function of accessories, makeup, body deformation and others. Minakata, in his revised edition in 1971, summarized the function as charms to the last detail. The classified functions might be related with the function as charms more or less, but it must be noted that the function as charms are not the imitation directly transferred from animals.

It is true that the functions are not completely independent; they act totally, so they must be recognized as a whole, but each function of the signs should be independently analyzed to clarify their roles.

## 2. CLASSIFICATION OF MORPHOLOGICAL SIGNS

The morphological signs functioning as mutual recognition need to be perceived instantly by the recognizing individual. Body size, shape, color and accessories meet this condition. Clothes and accessories can easily modify (emphasize or hide) these biological signs artificially (that is the modification function). The morphological signs may be classified as follows.

### [ Sexuality sign : male or female sign ]

The sexuality sign functions to express male or female features, which are important especially around propagation. Therefore the sexuality sign is less important for juvenile or senile individuals. The degree of any sexuality sign depends on the sexual-bi-morphs and the propagation period. The sexual-bi-morphs means the sexual difference between males and females appearing in size, shape, color and other physical traits (horn, mane, fang etc) or sometimes including physiological functions. It is generally said that the gorilla has a big sexual bi-morphs and the gibbon has a small one; it is very difficult to detect the sex of gibbons from their appearance. The humankind is said to have a small one.

The sexuality signs are divided into a male sign and a female sign. They are modified by some social conditions in the humankind, as discussed later.

### [ Periodical sign : infant / baby / child / juvenile / adult / senile sign ]

The periodical sign shows the phase of a cycle or a process; morning or night in a daily cycle, spring or autumn in four seasons, a phase in the menstrual cycle or pregnancy, a stage in an aging life and so on.

The sign showing each stage in a life can be called infant sign, baby sign, child sign, juvenile sign, adult sign, senile sign and so on. The adult sign is generally thought to include the sexuality sign especially in animals with the large sexual-bi-morphs; there are many typical examples in fish and birds. The periodical signs are sometimes modified in the humankind; children imitate or pretend adults or the aged rejuvenate for encouragement to join a youth group.

### [ Emotional sign : pleasant or unpleasant sign / aggressive or pacific sign / escape sign / winner or loser sign / health or sick sign ]

The emotional sign shows the individual's emotional state; happiness, anger, pity, etc., but the fundamental and physiological state of emotion is either pleasant or unpleasant. Animals have the way to show these two states naturally. The pleasant-unpleasant sign can be named as relief-anxiety sign or relax-nervous sign. And the other expression will be used to express the emotion, because the emotion in humankind has many aspects. The emotional signs are sometimes modified to be hidden or emphasized in many cases in the humankind, because human beings want to show our own emotional state arranged in many degrees. The emotional sign also has the function to express whether the individual is aggressive or pacific. It could also be expressed as the escape sign. The signs are very important and effective for avoiding struggles. So the emotional sign is also relating to the win-

ner or loser sign as a result of struggle. It is also relating to the individual's health condition, so it could function as the health or sick sign.

**[ Marking sign / membership sign ]**

The marking sign is one of the most important sign among terrestrial mammals. They use the marking signs with secretor substances and their acute olfaction, for the declaration of territory, partner and food acquired. The marking sign appearing in clothes and accessories of the humankind are almost the membership sign (meaning belonging to a certain group) of a specific group (tribe, religious group, occupation, role, partnership, family, ceremony group and other any artificial or natural group). These signs, in many cases, are not independent from each other, but overlapped with each other. The membership sign is very important in human beings for mutual recognition.

**[ Identification sign ]**

The identification sign is used mainly by olfaction in terrestrial animals.

The identification sign makes the individual be recognized by the other individual, which is sometimes shown by a name card, a medal or decoration acquired in battles or games in the humankind. This has been developed notably much more than in other animals.

**[ Attention sign / caution sign ]**

The attention sign or caution sign has the function to make the individual be noticed by other individuals. The attention sign sometimes show that the individual is dangerous or special. The attention sign is sometimes accompanied with the baby/child sign, which has the function to make adults notice and help to protect them. The attention sign sometimes contains moving or brilliant things, relating to 'moving vision'; the animals tend to look at the moving thing in the form of a reflex. The accessories have this function strongly.

### 3. FACTORS MODIFYING MORPHOLOGICAL SIGNS; COMBINATION, TRANSFORMATION, EMPHASIS, CONCEALMENT

The signs are not always independent and can overlap among them, because these are the biological phenomena and the sign contains some plural functions innately. The functions of these signs can also be transformed by time, period, situation and external stimulus. The signs can change to be emphasized or, on the contrary, to be hidden or concealed; for example, the female sign is emphasized by the makeup, and the senile sign is concealed by hair dying, and attention sign is transferred to the sick/injury sign; for example the bandage.

### 4. CASE STUDIES OF MORPHOLOGICAL SIGNS.

The actual examples of the signs in animals and in clothes and accessories appearing in present daily lives, prehistoric records and un-civilized groups will be investigated as follows, and suggestions about safer working wears will be presented (briefly summarized in Table 1);

*Sexuality sign*

There have been existing many animals with great sexual-bi-morphs around the humankind from their early evolutionary stages. The ancestors of predatory animals (for example, present lions: *Panthera leo* or some hyenas: *Hyaenidae*) since circa 6 to 7 million years ago existed with our ancestors in Africa at first, and in Europe and Asia, after they spread out from Africa in circa 200-170 million years ago, which is called 'the out of Africa'. The ancestors of present lions, so called, saber-toothed tigers (*Meganthereon* and *Machairodus* in Euro-Asian continent or *Smilodon* in North-American continent) and some ancient hyenas (for example, *Hyaena borissiaci* or *Crocota spelaea*) are thought to have had a big sexual-bi-morphs, excepting the ancient lion *Panthera spelaea* which had no mane in males (Colbert, 1969; Shikama, 1979).

Table 1. Examples of sign appeared in animals and human beings, and suggestions for safer working wears. (details in the text)

Sign	Animal around human beings			Human clothes and accessories			Working wear
	body size	body shape, accessory	body color	body size	body shape, accessory	body color	
Sexuality sign	male sign	bigger size	big fang, horn, mane decorating feather	bright in birds	bigger clothes	dark color	different color of clothes (for separation)
	female sign	smaller size		inconspicuous in birds	ear lobe pieces, make-up filtering accessories	light color	
Periodical sign	infant	smaller size	shorter limbs	spots of fawns	filtering accessories	pink	different color of clothes (for distinguishment)
	adult	bigger size	big fang, horn, mane in males				
	senile			silver/white hairs			
seasonal sign				summer / winter fur	summer / winter clothes		outside wear according to actual climate conditions
estorous sign			bumps in fish				some sign for pregnant women
Emotional sign		pretend bigger		color change			shape and color to make people happy
Marking sign	group						easily recognizable uniform and accessories for each group or role
	belonging sign	bigger size and muscular shape for a leader		silver back in gorilla	uniform, tie, epaulet, accessories		
Identification sign					medal, decoration, uniform number		named working gears
Attention sign			mimicry, mimesis		make up, accessories		some sign for demand

The male ancestors of the humankind as hunters (before them, they were thought to be scavengers, who had steered preys from predators) had seen the strength of such animals, especially male ones with big sizes, fangs and manes. It is very naturally imagined that our male ancestors wished to be strong and to be seen strong by decorating their bodies with a fang or mane-like accessories after the animals. It is also naturally suggested that they wanted to be seen bigger.

The humankind who spread out from Africa to Europe and Asia are also naturally thought to have seen the strength of other animals including cave bears (*Ursus aplaeus*) and early domestic animals, which were also bigger in males and with big horns in many species of cattle and deer.

It is naturally suggested that the father as the hunter in a family, naturally wanted to show him bigger and stronger to his own families and others and also to their preys, expressing the male signs using clothes and accessories.

There are some examples expressing male signs in some uncivilized tribes. The males of Dani and Jare tribes in the New Guinea highland are the typical examples, using nose pierces (piercing their nasal septum with a long fang of wild boa) representing male signs and aggressive signs simultaneously. The Jare tribe is famous for their cannibalism conserved until around the 1980s, ignoring government's instruction. Their tradition of these accessories expressing male signs is thought to have such a specific background.

The male signs expressing the strength have been much more important especially in the struggle between males. The 'kabuto', which is the Japanese helmet used by 'samurai' (soldiers) in the fight from the 12th to 18th centuries, are typical signs representing the male's strength by their horn-like decoration (Sasama, 1999; Sasama and Munakata, 2004). The signs also have the function of aggression signs.

On the contrary, the female sign is important especially among the group with small sexual-bimorphs such as the children of African Negros. The present author had the experiences to find difficulties in differentiating each sex among children of Banbara tribe, and at last distinguished the girls only by their ear lobes pierced with the pieces of rubber band or twigs, while staying in the Republic of Mali in the 1980s. The ear lobe pierced functions as the female sign, and it is well known that the ear lobes pierced or with accessories are used among females in the world. But there is no similarity among animals; therefore the signs at the ear lobe are thought to be the original in human beings. The ear lobe pierced also means the amulet to prevent the evil thing from entering into the ear.

The white-hair-mark behind the auricles of some felidae (especially *Panthera tigris*) functions as an aggressive sign. They show the mark when preparing for the fight intending to avoid the fight. But it is not meant to be a sexuality sign. Human beings have made many artificial sexual signs independent from those of animals. The make up is also an example of these signs.

The unique-shaped thorax of human beings; flattened in ventral-dorsal direction, is known to make a counter-balance for the lighter upper limbs giving a long lever from the rotating center against the heavier lower limbs during walking. Therefore the broad shoulder is the unique character of human beings, and the ratio of the shoulder width against the hip width in males is larger than that in females. For example, the mean ratios of the shoulder width (between both acromiales) against hip width (between both iliocristales) at age 20 of modern Japanese in males and females are 1.47 and 1.36, respectively, calculated by using the data in the database; Standard Fitness Research Group, Tokyo Metropolitan University, 2000. The broad shoulders from the front view have been the male sign. It is well known, felt unconsciously, in the world, so the triangular shape with a round head on its sharp corner is used as a female sign and the upside-down triangular shape with a round shape on its top side is used as a male sign in toilets in the world, with the triangular shape being imaged as skirts.

The sexuality sign representing the male with a broad shoulder width is used in many cases in clothes. The Japanese old traditional upper wear named 'kataginu' (the upper part of 'kamishimo', which is the ensemble of 'kataginu' and 'hakama'; the lower part), has very broad and straight shoulders, emphasizing the male sign. The broad shoulders of the suit for females used from the late 1960s to 1970s accompanying 'Women's Lib (liberation)' is thought to be a kind of transformation.

The hair style is more convenient and useful to show the sexuality in the humankind that has relatively smaller sexual differences in body sizes and shapes than among animals. The variation of body sizes and shapes between sexes is smaller than that among geographical distribution in the humankind. European-Caucasoid and Asian-Mongoloid acquired the longer hair than African-Negroid, functioning as the protection device against cold, while the hairs of African-Negroid are short and curled/coiled functioning as the sweating device (Maie, 2007). It is true that the hair style is the most commonly used convenient body part expressing the sexuality in the world.

The beard (including mustache and whiskers) is the male sign based on the biological background; the androgen hormone facilitates its growth. The artificial beard used in Pharaoh (the old kings in Egypt) is the male sign, emphasizing males and it also functioned as the role sign as the king. On the contrary, shaving beard is the concealment of the male sign, which may also have the function of showing less aggressiveness, and it is suggested to function to imitate the youth. The shaving beard is also suggested to have the function to hide or weaken the sexual-bi-morphs. The functions of beard and also shaving it are important from the viewpoint of how the gender system is maintained in the society.

The colors of clothes are thought to function to express the sexuality in human beings. The social common idea about the color combined with each sex (red is for females and blue is for males) is thought to have the social and cultural background, but the idea is seen in the world and the colors function to express the sexuality signs in many societies. The sunburned brown/black skin color is, in many cases, accepted as the strength or health of the body especially in males, on the contrary, white/pink skin color is, in many cases, accepted as the female's or baby's color. The present author suggests that the idea might come from the life styles after the era of 'out of Africa', because the males had spent long time outside being sunburned much more than females spending longer time inside of the house, under the condition of weaker radiation from the sun comparing with the stronger one in Africa.

Accessories are suggested to be originated as the charms, as mentioned before, but they generally function to express female signs, including an attention sign for the purpose of getting protection from males and society.

The working wears taking the sexuality sign into account, in other words the clothes with clear sexuality (male/female) signs, are needed in the work environment where each sex must be separated because the tension otherwise breaks out; for example the work concerning obstetrics and gynecology. On the contrary, the concealment of a sexuality sign would be needed in the work environment where the sexual discrimination must be removed.

The differentiating colors in working wears is recommended to express the sexuality, as the most clear and effective ways. It may be suggested that the different color of working wear is convenient, effective and adequate to separate sexes.

### *Periodical sign*

The periodical sign contains the period itself; daily cycle, seasonal cycle, annual cycle, reproductive cycle, estrous cycle, menstrual cycle, life cycle (infant, juvenile, adult and senile) and so on.

The night wear in contrast with a daytime wear is an example of the daily cycle, also representing the relief in contrast with the tension.

Human beings have seen the mammals' seasonal sign in their summer and winter fur, and have been applying it as the clothes that have changed to show the seasonal change beyond their body temperature regulation, especially in the monsoon area with clear four seasons, because changing clothes uniformly in a group should function to make them have the common consciousness and make them united closely. Each person could change the clothes at any time independently, if the body temperature regulation was the main function. Japanese clothes-change, called 'koromogae', is one of the typical examples; Japanese change their clothes (and also accessories in older times) in the beginning of June and October. It is true that the beginning of June or October is not necessarily a proper date from the viewpoint of body temperature regulation, so it proves that changing clothes at the same

time functions to have the same consciousness as to the changing season and also the same awareness of belonging to the same group; namely it is the membership sign as well as the seasonality sign.

The problem whether the working wears relating to the seasonal change are adaptive or not is now depending on the air condition of the work environment. But the working wears for outside should be determined according to the occasional climate, therefore periodical signs (or membership signs) should be represented not with wears but with accessories independent from the temperature regulation.

The estrous sign accompanying the reproductive cycle is commonly seen in many animals; bumps or knots induced by the androgen hormones are observed in the salamanders or fish, which resemble human pimples. The estrous sign can have the function as the releaser of sexual behavior. The swelling 'sexual skin' of chimpanzee is one of typical estrous signs (Nishida, T., 1994). The steadily swelling breasts of the humankind's females are thought to be the mimicry of themselves' swelling buttock as the estrous sign (Wickler, 1960), so they have the releaser function of sexual behavior toward human males. The appeal or exposure of swelling breast as the estrous sign often appears in clothes (Morris, 1967). It must not be used in working wears. But the sign of pregnancy might be needed on a working wear for safety purposes.

Concerning the reproduction, the sign representing whether the individual is married or not is used often in clothes in many tribes of the world. For example, the Japanese wear 'furisode' for females, (which is the long sleeved Japanese traditional wear named 'kimono') represents that she is not yet married. So the sign also function as the marking sign. A wedding ring has the function, as is well known. In other words, the sign represents the spouse-relation. Human beings have developed these signs of clothes and accessories, in contrast with the most terrestrial mammals that have developed or used odor substances based on their keen olfaction.

The periodical signs during a life cycle can be divided into some stages; infant/baby sign, child/juvenile sign, adult sign and senile sign, although the borders are not clear.

The baby sign is expressed by body colors (or patterns) as well as body sizes in some cases of animals; longitudinal stripe pattern of the wild boar child, spots of fawns, specific color of baby bird's beak and so on. Morris (1990) pointed out that the round head functions as a child sign and suggested that it functions to avoid the attack from adults and to emphasize the protection through mother animals. Many other examples of child signs are reported (Timbergen, 1997; Wickler 1960; Lorenz, 1960; Edmunds, 1980). The specific color and accessories of baby's/child's clothes is the baby/child sign. The color of pink is especially used as a baby/child sign. It might derive from the baby's pink skin, emphasizing the childhood. The human females often put on pink/red lipsticks on their lips (the red margin of the lip anatomically), which is a kind of infant/child sign emphasizing her childish character requiring protection. The pink/red lipsticks also function as the healthy sign. The child sign is sometimes accompanied with attention signs, which makes it more effective.

The adult sign, in contrast with the child sign, sometimes function also as the sexuality sign; the hair on the male's chest, beard and so on. The clothes and accessories, which cover such somatic signs, have the concealment function of the adult sign. The hair style has the same function. Shaving beard is the concealment of an adult sign, too.

The white/silver hairs are the typical senile sign in mammals including the humankind, the silver-back (white-hair on the back of the leader gorilla of a group) functions as the rank sign as well as the senile sign. The dying of white hairs is the translation or concealment of the senile sign. The beginning of dying the white hairs is also important to investigate the roles of aged people in a society and the mechanism of the senile sign in the society viewed from socio-psychology.

The senile sign of the working wear, if it is put on, shows a clear sign to the surrounding people, which will lead to the help for the person. The senile signs should be thought and adopted in a proper way.

### *Emotional sign*

The emotional sign (pleasant or unpleasant sign) sometimes function as the relief or nervous



sign. The body color of lower animals as fish or reptiles changes according to their emotions. It is very natural for the humankind to imitate the emotional signs using clothes and accessories. The daytime wear versus night wear, or formal wear versus informal wear, relates to the relief versus nervous sign. The deformation of formal wear means the transformation of nervous sign to relief sign. The usual makeup is one of the emotional sign representing or to appeal one's health to others and intending to enforce the binding to the society. On the contrary, the makeup can be used for the completely opposite purposes; the eccentric makeup means the rebellion to the social regulation.

The emotional sign is expressed mainly by the facial expression. The nasolabial sulcus as pleasant signs and the labiomental sulcus as well as the vertical groove at the glabellas (between eyebrows) as unpleasant signs are naturally expressed, and the makeup resembling these natural signs is the artificial emotional sign of self mimicry. The makeup in a play (in a theater) is an emotional sign sometimes emphasized, by which the actor/actress can express their emotions clearly.

The favorite clothes and colors of clothes function as the pleasant or relief sign to the individual. The clothes and colors of clothes, in the same way, can sometimes function as the unpleasant/nervous sign to himself/herself. Beyond the pleasant and unpleasant signs, they can function as any other emotional sign, because human beings are always full of emotion and intend to express it to others and to oneself simultaneously. There are many kinds and grades of the deformation or transformation of the emotional sign, because of the same reason. The shape and color of a working wear should be determined by the opinions of workers as wearers.

The origin or function of makeup can be understood more clearly when one considers that the makeup functions as the health or sick sign. The cheek-rouge is a kind of health sign, functioning to pretend to be much healthier and make the human relation much smoother. On the contrary, the bandages or scar as makeup, especially used among rebellious youth, function to represent an unpleasant sign as well as an unhealthy sign to others. It also functions as the attention sign or sometimes functions to avoid struggles.

The clothes and accessories functioning to make them (the person and the surrounding people around the person) happy are one of the best working wears. It is, as is well known, very important to care about the impression to others (to make them happy), besides the mobility or protection, when designing uniforms or choosing clothes and accessories for members of a working group.

The aggressive or pacific sign can function to avoid struggles. And the winner or the loser sign as a result of struggles function to avoid further struggles. The tails highly raised in dogs are the winner sign, which are the terminal sign in the actual and ceremonial struggles. The pretending bigger size is also the winner sign. It is thought that human beings have developed such signs in shoulder straps, epaulet, medals and other accessories. The white flag is a kind of loser sign, which actually function to avoid further attacks.

The bandage and a mask for cold function as the sick sign naturally beyond their hygienic functions, and have the function to avoid the struggle as a kind of loser signs.

The clear sign showing pacific is very important in a working environment to make their relation smoother.

### *Marking sign*

The marking signs used among mammals are for the declaration of the territory, spouse and sometimes preys acquired, and their functions are mainly expressed by the olfaction in animals, as mentioned above. However, the sight is used for the marking sign in human beings; for examples, walls of the houses are for the territory and the bridal ring is for the spouse declaration. The declaration of being a spouse is also thought to be a belonging sign or membership sign.

The clothes and accessories as the belonging sign are used in any cases, representing that to a tribe, religious group, occupation and any artificial group. This might be from the mimicry of animals, but may relate to the highly developed human sub-group system. The system, which is thought to have developed after civilization, can function to keep the system of a highly complicated society. It is important to show one's rank or role in a society using the belonging sign, for keeping the socie-

ty system as well as showing the individual's loyalty to the society. Not to show the belonging sign, on the contrary, is accepted as the rebellion to the society. Human beings have developed highly systematized societies, therefore showing whether to obey to a society (system/subsystem) or not is very important and it becomes the criteria for individuals. Human beings are very interested in these signs, so the clothes and accessories showing this aspect have developed widely with broad variations.

The easily recognizable clear sign on working wears (for example armllets) or uniforms showing the individual's role in a working group is very important to make the work smoother. The numbers on working wears representing the order of a process might be an effective marking sign.

#### *Identification sign*

The identification sign has the function to make the individual identified from others. The identification sign sometimes duplicates with the belonging sign or rank sign. (The rank sign means the individual sign, when one person is in the rank.)

Morris (1990) pointed out that the stripe of zebra functions as an identification sign for each other as well as a membership sign. This means that the membership sign can be (or permitted to be) transformed to be an identification sign under the condition that the sign does not destroy the fundamental function of the membership sign. The tattoo or scar (some other artificial hurt on the skin), that is the modification of the body, is to act as an identification sign as well as a membership sign, distributed in many tribes in the world, especially in uncivilized groups and the groups in the tropical area, where the clothes are not necessary for body temperature regulation. The range of variation in the common character of the membership sign depends on the individuals intending to show the person's uniqueness in the group or to show stronger coincidence with the group. The variations observed in the uniform of the students at a school are thought to be wide, because they prefer to show the individual uniqueness, and the coincidence of accessories between good friends is from the preference of coincidence among them.

Identification signs on the working wear and accessories are very important among them to identify each other. The name card on the clothes or ID card is used in many working environments, functioning to make the members who are not yet intimate more intimate. The identification signs are also useful for the security purposes in a working environment. And named gears should be helpful for the work.

#### *Attention sign*

The attention sign or caution sign is the sign to make the individual attract the others' attention. The venomous animal emits the attention sign with florid color (for example, coral snakes; *Micrurus fulvius* and *Micruroides euryxanthus*), and as in the case of harmless animals emits almost the same attention sign imitating the venomous one (eg. harmless coral snake; *Simophis rhinostom*). The mimicry and mimesis in animals are thought to be originated from the belonging sign. The nonpoisonous animals mimic the poisonous animals pretending to be dangerous, and the weak animals do mimesis to hide themselves fading into the background from the enemy's sight, which is also the belonging sign in relation to the background. Pretending to be dangerous is named mimicry, and concealing itself or pretending to be much weaker is named mimesis. The case of a weak animal pretending to be a dangerous one is, more exactly, Bate-type mimicry. The case of the predator pretending to be a weaker animal, which attacks the careless preys suddenly, is Pecam-type mimicry (Wickler, 1960).

The disguising with the king's dress or queen's dress (or sometimes pretending a police-officer) pretending much more powerful one is a Bate-type mimicry. On the contrary, disguising a gentleman or a nurse (or sometimes pretending the police-officer of the gentle guard-officer for town's peace) pretending to be much more kind and gentle to the careless people, who is the real dangerous and attack suddenly, is a Pecam-type mimicry.

The attention sign is sometimes accompanied with the infant/baby/child sign, because it is more effective in drawing others' attention. The swinging accessories are more effective to collect attention, so they are used on many child wears. This is based on the animals' 'movement vision'; the

movement of eyeballs toward the moving objects. The female sign sometimes contain the attention sign as well as the infant/baby/child sign. The swinging accessories on the clothes (ribbons and buttons) are often used as a female sign. It is generally said that the human beings, regardless of sex and age, prefer to use the attention sign in clothes and accessories, because they are very social animals who want to have close relationships among individuals.

The following/tracing sign, for example, the white hair of reverse side of the tail of hind or doe, is also the example of attention sign, toward which the fawns may follow in the dark of woods. The flags of the tour-guide or the leader of a group are the following/tracing sign, having the meaning as an attention sign.

The attention signs on working wears are very important in a dangerous working environment, because the worker must be easily found to avoid accidents. Some other attention signs should be added in a working environment depending on the demands.

## CONCLUSIONS

Morphological signs for the recognition of the individual need to be recognized easily from appearance. The size, shape and color of clothes and accessories are very important as the morphological sign in the humankind. There is no doubt that the clothes and accessories have had the function through human evolution. Human beings, who are not the solitary animals but highly socialized animals, have refined clothes and accessories as the morphological signs. The clothes and accessories are the tools for these functions. The functions are very important in investigating the beginning (origins) of clothes and accessories. It is concluded that the origins of clothes and accessories are very closely related with the morphological signs that have appeared among animals. Human beings have developed the clothes and accessories as tools for sending the messages to others who recognize the individual as the sign transmitter. It is suggested that the working wear should act as clear signs (messages) to others especially in a dangerous work environment. The evaluation system of working wears in this regard in the working environment should be developed in the future.

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