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The Semantics of "Black" in Chinese, English, and German: A Colexfication Analysis

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Abstract

Color term is an abstract concept in human language, which has rich semantic meanings. And people's understanding of color terms also reflects their ways of thinking. This paper takes the color term "black" as the research object trying to explore the linguistic and cognitive commonality hidden behind the color terms from the perspective of typology. Through the corpora collected from English, German, and Chinese, and combining the colexfication network from CLICS3, the different semantic meanings of the color term "black" are summarized to draw a semantic map. It is found that the semantic meanings of the color term "black" are organized around the two main nodes of "black color" and "darkness", and then such abstract meanings as "unawareness" and "concealed" are derived. The result shows that the evolution of the semantic meanings of color terms is closely related to human cognition.

Keywords: typology, semantic map, semantic evolution, color words, black

1. Introduction

The color terms in the symbol system of human language are abstract concepts themselves. When abstract concepts are used to represent colors, color terms are endowed with rich extended, associative, and symbolic meanings. Though Human division and perception of the spectrum is progressive and continuous, there are also genetic mutations caused by historical events and foreign cultures.

Previous studies of color terms not only deepen people's general understanding of color terms but also provide a rich theoretical basis and research basis for the field of color terms. However, most of the relevant studies focus on the comparison between two languages or even within one language and fail to reveal the universal cognition of human languages. Besides, each language of the world has its value and thus there is cognitive commonality within languages as well as differences that are caused by regional, cultural, historical, communication, and some other factors. It is necessary to conduct systematic and comprehensive research on it, by comparing the semantics of color terms in different languages from the perspective of typology to discuss the commonality of human beings in color cognition.

This paper is unfolded as follows. Section Two discusses the previous studies of color terms. And section Three employs the CLICS[3] corpora to find a cross-linguistic colexification network of the color term "BLACK", and refers to its semantic nodes. Section Four attempts to build the semantic map of the color term "black" in Chinese, English, and German, according to their language examples in corpora. Section Five concludes the comparison of the semantic maps and unveils their commonalities.

2. Literature Review

Previous studies paid attention to color perception, color category, and their relationship with human society, which can be traced back to ancient Greece. Plato believed that human perception of color needs three preconditions: light source, reflective object, and eyes. And Aristotle held the viewpoint that color can be divided into two categories, simple color and compound color (Xue, 2013).

In the middle decades of the 19th century, western scholars began to notice that there were obvious differences in the color terms among ancient and modern languages, modern European languages, European languages, and

some indigenous languages. Since the 20th century, many of them have begun to conduct extensive investigations on the differences and particularity of color term naming in different languages in the world, and then conduct comparative studies on color terms in different languages (Yao, 1988). At the same time, European Structural Semantics flourished, and many linguists began to describe the lexical system of color terms.

From the perspective of perception, some scholars studied human color perception by analyzing the description of color fragments in some works, obtaining the results that ancient Greek was relatively deficient in abstract color terms. Subsequently, German scholar Magnus conducted a large-scale cross-cultural survey on color perception. Through the investigation of the color perception of more than 60 indigenous tribes around the world, he concluded that the naming of color words has no internal relationship with the ability to perceive color. He believed that the lack of abstract color names in the original language did not mean that the users of this language do not have the ability to distinguish some colors. Perhaps this distinction is irrelevant and unnecessary for them; In other words, if such a distinction is necessary, their ability to distinguish certain colors with color words is no less than that of modern people (Berlin & Kay, 1991). Besides, the famous American anthropologist Sapir and Whorf (1921, 1940) put forward the hypothesis about the relationship between language and thought—Sapir-Whorf hypothesis. This hypothesis includes two main parts: linguistic determinism and linguistic relativity. This hypothesis emphasizes the relativity of semantic structure and tries to reduce the universality of semantics, that is, each meaning of a kind of language has its own arbitrariness relative to other languages. Inspired by the Sapir-Whorf hypothesis, Berlin and Kay (1991) put forward the concept of basic color terms and their evolutionary order, which established a new viewpoint in the field of linguistics. At the end of the 20th century, the research on color terms showed a multi-disciplinary trend. Wierzbicka made a new explanation for the seven stages of the evolution of Berlin and Kay's basic color terms from the perspective of cognitive linguistics. But it did not clarify the cognitive commonality of the color terms from different languages, so there is a need to conduct research on color terms to unveil the cognitive commonality among languages.

While in Chinese, the studies of color terms also had a long history. In ancient times, Chinese people paid some attention to Chinese color terms such as Erya, Shiming, and Shuowenjiezi. Hu (1941) made a detailed analysis of the emergence and development of the five color terms of ancient Chinese—black, white, red, yellow, and green. Since the 1980s, there have been more and more works on the study of Chinese color terms including Yao (1988), Fu (1989), Liu (1990), Zhang (1991), and so on. Fu (1989) made a detailed analysis of the color term "red" about its composition, development, meaning, and relationship in Chinese through the comparison between ancient and modern times. Li (2007) analyzed the semantics of modern Chinese color terms from the aspects of cognition, psychology, and some other aspects, and made paradigmatic analysis and syntagmatic analysis of the meanings of color terms. But the previous studies of the color term also did not clearly identify the cognitive commonality between different languages and did not unveil their systematicity, which is what this paper trying to get.

This paper applies Croft's concepts of conceptual space and semantic map to analyze the cognitive meanings of the representative color term "black". Conceptual space serves as the underlying structure and the basis of semantic maps and it controls the distribution of grammatical forms in specific languages. Martin claims that language diversities are indefinite and far from predicting. However, conceptual space demonstrates that language variations are universal and limited, and the requirement of any specific language to form a connected region makes language change more traceable and predictable. Croft and Poole (2008) claim that semantic maps boast the characteristics of self-detecting and self-repairing. Put differently, if a particular language occupies an unconnected region in the conceptual space, it either demonstrates that the conceptual space is wrongly established and needs to modify or the specific language is inadequately investigated. Although there may be an exception, it requires to be justified by other reasons or motivations. Conceptual space can yield a series of implicational universals which can be used to explain the commonality behind human languages or the cognitive commonality of human minds (Zwarts, 2010). Besides, this paper also applies the semantic field theory, analyzing the words or phrases in the same black semantic field to get the whole picture of the color term. Linguistics borrows the concept of field to study semantics, and the theory of semantic field appears, which refers to the complete and changing system composed of words that are related in meaning (Lu, 2015). Semantic field theory uses the theory of structuralist linguistics and emphasizes the relationship and influence of language factors. It breaks through the isolated research methods and narrow research scope of traditional semantics, which means that the theory is no longer limited to studying a word or a class of words, but tries to describe the whole vocabulary system and analyze the structural relationship between words.

3. The Colexificational Network of "Black"

To clarify the semantic classifications of the color term "black" in different languages, this paper resorts to the

Database of Cross-linguistic Colexifications 3 (CLICS[3]) which covers more than 3100 language varieties of the world, showing the concepts that share the same lexical form with the target concept. CLICS[3] has been proven to be scientific in psychological and cognitive studies (Jackson et al., 2019).

When BLACK is selected as the target concept, the result can be presented as follows:

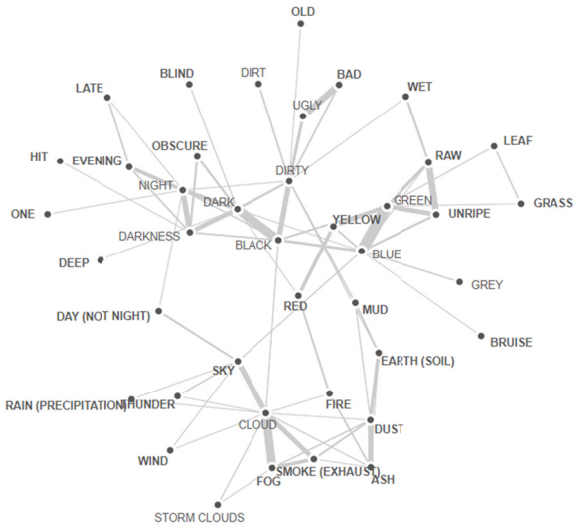

Figure 1. The colexification network for BLACK across languages

From the above Figure 1, the central concepts of BLACK and DARKNESS are the pivot notions that can effectively avoid shifting boundaries of the colexification network. The nodes stand for the concepts that can share the same lexical form as the target concept. The edges between the two concepts signify that they share the same linguistic form. The width of the edges represents how frequently two concepts colexify with each other. When the mouse is put on the edge between two concepts, the graphs will show the languages and language families of the two concepts colexified and the lexical form they share. Through the different nodes from the network, this paper found that the basic meanings of "BLACK" are derived from the color term "black" and the light term "darkness", extending the meaning further into other semantic fields, such as the meaning of "night" "evening" "blind" and so on. Besides, these nodes which express meanings of "black" will give reference to the semantic meanings of "black" in different languages.

4. Semantic Meanings of "Black" and Their Semantic Maps

This session discusses the semantic meanings of the color term "black" according to the examples in Chinese, English, and German corpora, and then draws their semantic maps to find out their commonalities by comparing the semantic maps. At last, it analyzes the mechanisms of their semantic revolution.

4.1 Semantic Meanings and Semantic Map of "Black" in English

4.1.1 Semantic Meanings of "Black" in English

According to the principle of physicals, the color of objects that do not reflect any light is defined as black, and the perception of less or almost no light entering the eyes is called darkness. Therefore, the black semantic field revolves around the two core semantics of "black" and "darkness", which are the two semantic concepts in the black semantic field of all languages. The two core semantics in the English Black semantic field can be divided into nine categories (Ye, 2018), and combining the basic nodes from the colexificational map of "black" from CLICS3, the semantic meanings of "Black" in English can be illustrated as follows:

The semantic meanings of black:

(i) the color:

1) The color black, such as *black as coal*;

(ii) deep color, which gradually evolves into a stain, and further metaphorically into a reputation stain. From this,

the following related semantics are evolved through causality:

2) Deep color, such as *black tea*;

3) Stain, such as *black hands with grime*;

4) Poisonous, harmful;

5) Notorious, such as *one of man's blackest records*;

6) Slander, defaming somebody or something, such as *blackening one's betters*;

7) Blackmail, such as *put the black on somebody*;

(iii) Blackening refers to the appearance of skin, face, or plants, which leads to the following related semantic meanings:

8) A kind of disease in plants, such as *black rust*.

9) A kind of disease in people, such as *black death*.

10) Blackening of the face;

11) Anger on the face, such as *black in the face*;

12) Anxiety, such as *black browed*;

13) Swelling, such as *black and blue*;

14) Frustration, such as *give pride a black eye*;

(iv) Black objects and extended meanings:

15) Black character, extended as in written form. *I want this agreement in black and white*;

16) Deficit, such as *in the black*;

17) Black man, such as *the black vote*;

18) Black dyestuff, such as *She put black on her face*;

19) Black animals, such as *black pigeon*;

20) Black chess;

21) Black smith;

22) Black clothes;

23) Seriousness, such as *black dress*;

(v) Extended meaning from depth:

24) Serious, such as *black cold*;

25) Falsity, such as *say black is white*;

(vi) Extended meanings from darkness because of the weak light:

26) Dark night, such as *a black night*;

27) Low voice, such as *a bass with a black voice*;

28) Silence;

29) Unawareness, *the meaning is still dark*;

30) Unexpected, such as *dark horse*;

31) Concealed, such as *black radio*;

32) Illegal, such as *black market*;

33) Stupid, such as *a dark period in history*;

(vii) Extended meaning because of weakening:

34) Visit, such as *darken sb's door*;

35) Pass out, such as *go black*;

36) Delete, such as *The date has been blacked out*;

37) Strike, such as *The striker blacked the cargo*;

(viii) Extended meaning from psychology:

38) Deviled, such as *a black man*;

39) Depressed, such as *in a black mood*;

40) Pessimistic, such as *black thoughts*;

4.1.2 Semantic Map of "Black" in English

According to the semantic and extended meanings of "black" in English, the semantic map is constructed, as shown in the following Figure 2:

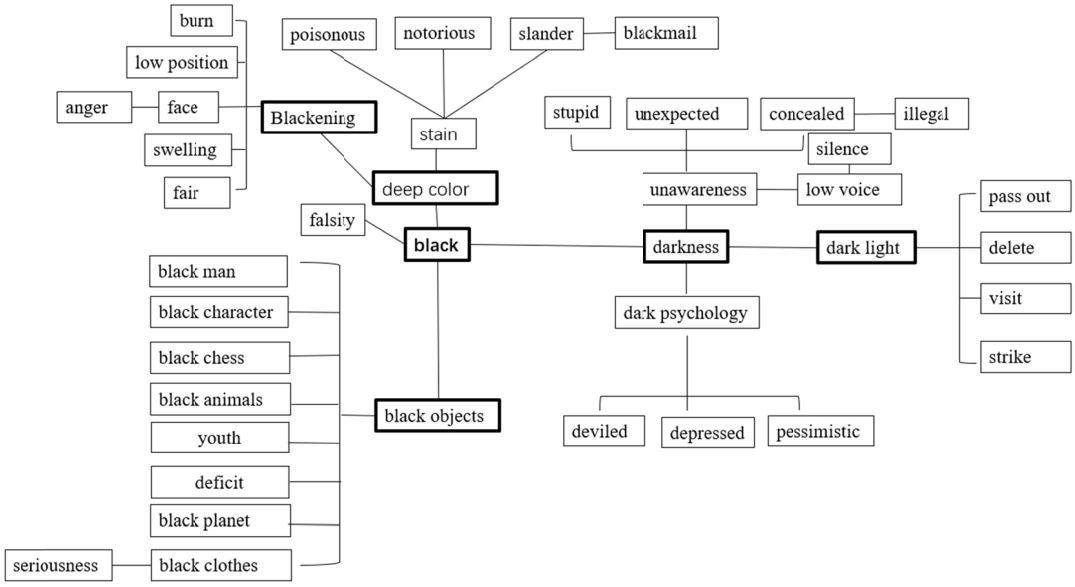

Figure 2. Semantic map of "Black" in English

From Figure 2, it is explicit that the semantic map of black is expanded around the two primary semantic nodes of "black" and "darkness", which is similar to the basic nodes of the colexificational network of "black". The left is the semantic meaning from the color domain and the right is the semantic meaning from the light domain.

Four second-level semantic nodes are derived from the primary "black" node, which is "blackening" by the expansion of grammatical function; "deep color" guided by color perception; "black objects" developed through metonymy; The abstract concept "falsity" extracted through the significant contrast between "black" and "white". Besides, the branch of "blackening" has derived the third level semantic nodes which are related to the color changes of characters and plants, such as black rust and black death, and further extended the fourth level semantics, such as anger and anxiety. "deep color" is associated with the third level semantic meanings of dirt and stain, and further extended to the fields of morality and health, deriving fourth level semantic nodes such as slander. The semantic meanings derived from "black objects" mostly come from using color to describe things through metonymy. From the previous etymological research, it can be seen that more than half of the meaning of "black" comes from this branch. Three second-level semantic meanings are derived from the "darkness" node, which can be described as follows, the physical original meaning of darkness results in "unawareness" and "dark light"; A series of negative psychological meanings produced by darkness, which is summarized here by the node of "dark psychology". From "unawareness", four third-level semantic nodes are extended: "stupid" "unexpected" "concealed" and "low voice". "Low voice" can further extend to "silence", while The "concealed" can be associated with "illegal" activities. The semantic node of "dark psychology" extends from the visual field to the psychological field. Darkness brings "deviled" "depressed" and some other spiritual feelings. The semantic meaning of "dark light" is generated by the change of light intensity, which continues to derive four third-level semantic nodes, such as "pass out" "delete" and so on.

4.2 Semantic Meanings and Semantic Map of "Black" in German

4.2.1 Semantic Meanings of "Black" in German

Black color terms in German also focus on the two core semantic meanings of "black" and "darkness", as follows:

(i) the color:

1) The color black, such as *schwarze Hare (black hair)*;

(ii) deep color, which gradually evolves into a stain, and some extended meanings:

2) Deep color, such as *schwarzer Tee (black tea)*;

3) Stain, such as *schwarze Ränder unter den Fingernägeln (black fingernail)*;

4) Slander, defame somebody or something, such as *Fritz versteht es immer großartig，anderen den Schwarzen Peter zuzuschieben，so dass er immer untadeligdasteht (Fritz always like to slander others to make himself innocent)*;

(iii) Blackening refers to the appearance of skin, face, or plants, which leads to the following related semantic meanings:

5) A kind of disease in plants, such as *Schwarzfäule (black rust)*;

6) A kind of disease in people, such as *der Schwarze Tod (black death)*;

7) Anger on the face, such as *sich schwarz ärgern (black in the face)*;

(iv) Extended meanings from darkness because of the weak light:

8) Dark night, such as *die Schwärze der Nacht (a black night)*;

9) Low voice, such as *dunkel klingen (dark ringing voice)*;

10) Blind, such as *Ihm wurde es dunkel vor den Augen (He felt dark for his eyes)*.

11) Unawareness, such as *Die Herkunft dieses Wortes ist dunkel (the etymology of the word is still dark)*;

12) Suspected, such as *eine dunkle Existenz (a dark suspect)*;

13) Stupid, such as *finsterling (stupid)*;

14) Concealed, such as *Im dunklen bleiben (concealed the name)*;

15) Illegal, such as *schwarze Markt (black market)*;

(v) Extended meaning from psychology:

16) Deviled, such as *schwarz pläne (deveiled plan)*;

17) Depressed, such as *düster blick (depressed eyesight)*;

18) Pessimistic, such as *du darfst dir nicht alles so schwarz ausmalen (you think too pessimistically)*;

(vi) Black objects and extended meanings:

19) Black character, such as *schwarze worten (black characters)*;

20) Surplus, such as *schwarze Zahlen (get a surplus)*;

(vii) The opposite side of truth:

21) Falsity, such as *aus schwarz weiss machen (say black is white)*;

4.2.2 Semantic Map of "Black" in German

According to the semantic and extended meanings of "black" in German, the semantic map is constructed and manifested in English form in order to compare with each other, as shown in the following Figure 3:

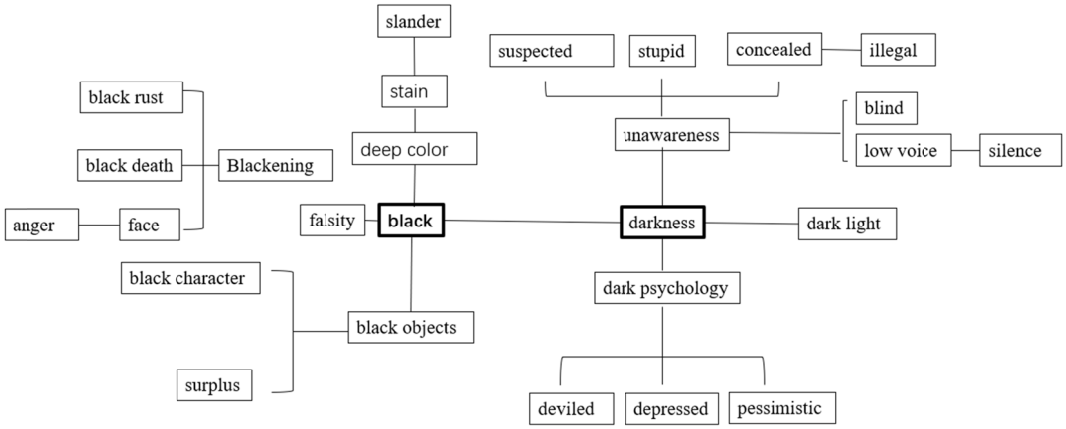

Figure 3. Semantic map of "Black" in German

The semantic meaning category covered by the German "Schwarz (black)" in the semantic map is basically the same as that in English, which also expands secondary semantic nodes around the two core semantic meanings of "black" and "darkness". The difference is that the extended meanings of "blackening" are not as rich as that in English, only including the kind of disease in plants and people and anger. Secondly, the semantic meaning of "slander" "blackmail" and some other meanings are extended from the semantic English of "stain", while the entries in German have only evolved the semantics of "slander", with slight differences. Besides, the extended meanings of "black objects" is also not as rich as that in English, only including "black character" and "surplus". while the psychological extended meanings and extended meanings from darkness because of the weak light are the same as that in English.

4.3 Semantic Meanings and Semantic Map of "Black" in Chinese

4.3.1 Semantic Meanings of "Black" in Chinese

The studies of the semantic meanings of the color term "black" in Chinese and its extended meanings mostly focus on the basic coloring meanings but pay insufficient attention to the dark meanings, which hold the view that these words have nothing to do with color words, and do not combine the two to summarize the universality and commonality of color. This paper holds the view that the color term "black" is not only related to color but also related to light and shade, which means darkness. They are inseparable, which asks us to extend and analyze the core semantic meanings of the two categories in order to find the commonness of color terms. So black color terms in Chinese also focus on the two core semantic meanings of "black" and "darkness", as follows:

(i) The color:

1) The color black, such as "黑色 *(black)*";

(ii) Deep color, which gradually evolves into a stain and some extended meanings:

2) Deep color, such as "暗红色 *(dark red)*";

3) Stain, such as "弄的你黑眉乌嘴的 *(make your mouth stained)*";

4) Notorious, such as "背黑锅 *(be notorious)*";

5) Corruption, such as "贪墨 *(corruption)*";

6) Slander, such as "抹黑 *(slander others)*";

(iii) Blackening refers to the appearance of skin, face, or plants, which leads to the following related semantic meanings:

7) Burning, such as "烧黑 *(burning to black)*";

8) Swelling, such as "脸色发黑 *(his face turned into black)*";

9) Low position, such as "黑氓 *(common people)*";

10) Anger on the face, such as "黑脸 *(black face)*";

11) Fair, such as "铁面无私 *(be fair to others)*";

(iv) Extended meanings from darkness because of the weak light:

12) Vague, blind, such as "黑灯瞎火 *(the light is dark)*";

13) Dark night, such as "黑夜 *(dark night)*";

14) Unawareness, such as "偏听则暗 *(you are fooled if you did not listen others)*";

15) Stupid, such as "否德暗弱 *(you are fooled)*";

16) Unexpected, such as "黑马 *(black horse)*";

17) Concealed, such as "黑状 *(concealed report)*";

18) Illegal, such as "黑钱 *(illegal money)*";

(v) Extended meaning because of weakening:

19) Pass out, such as "昏黑过去 *(he passed out)*";

(vi) Extended meaning from psychology:

20) Deviled, such as "地主都一样黑 *(all the landlords are deviled)*";

21) Depressed, such as "黯然神伤 *(feel depressed)*";

22) Bad luck, such as "黑运 *(the luck is bad)*";

23) Pessimistic, such as "黑色幽默 *(black humour)*";

(vii) Black objects and extended meanings:

24) Black clothe, such as "黑衣 *(black dress)*";

25) Seriousness, such as "庄严黑 *(serious black)*";

26) Black animals, such as "黑色的猪 *(black pig)*";

27) Black plant, such as "黑色的粟米 *(black rice)*";

28) Black chess, such as "黑棋 *(Black chess)*";

29) Youth, such as "黑发 *(black hair)*";

(viii) Other meanings:

30) Degree, such as "黑雨 *(heavy rain)*";

31) Falsity, such as "颠倒黑白 *(say black is white)*";

4.3.2 Semantic Map of "Black" in Chinese

According to the semantic meanings and extended meanings of "black" in Chinese, the semantic map is constructed and manifested in English form in order to compare with each other, as shown in the following Figure 4:

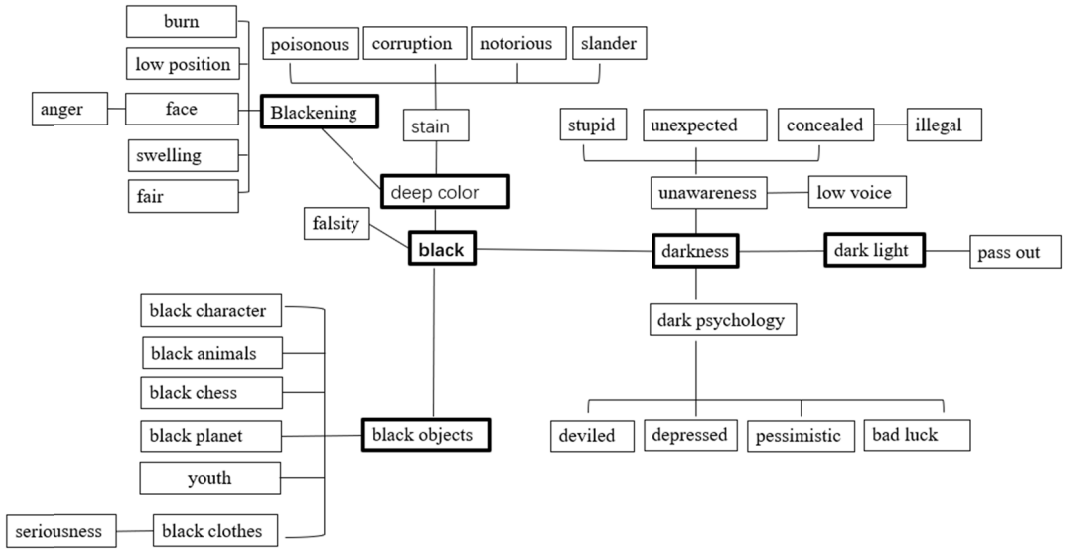

Figure 4. Semantic map of "Black" in Chinese

The semantic meanings covered by the semantic map in Chinese are basically the same as those in English and German. While there are some special meanings in Chinese, most of the semantic meanings of "black" in English and German can be found in the corresponding nodes in the semantic map of Chinese. English "darkness (black)" has some specific semantic meanings, such as "delete" "visit" "strike" and some other extended meanings with the emergence of the industrial revolution, which have not happened in China. Besides, because Chinese is an ancient language, some extended meanings derive from its own unique culture, so some scope of semantic meanings is wider than that of English.

4.4 Comparison of the Three Semantic Maps

In order to figure out the commonality and university of the color term "black", this paper tries to make a comparison among the three semantic maps above, illustrated in Figure 5:

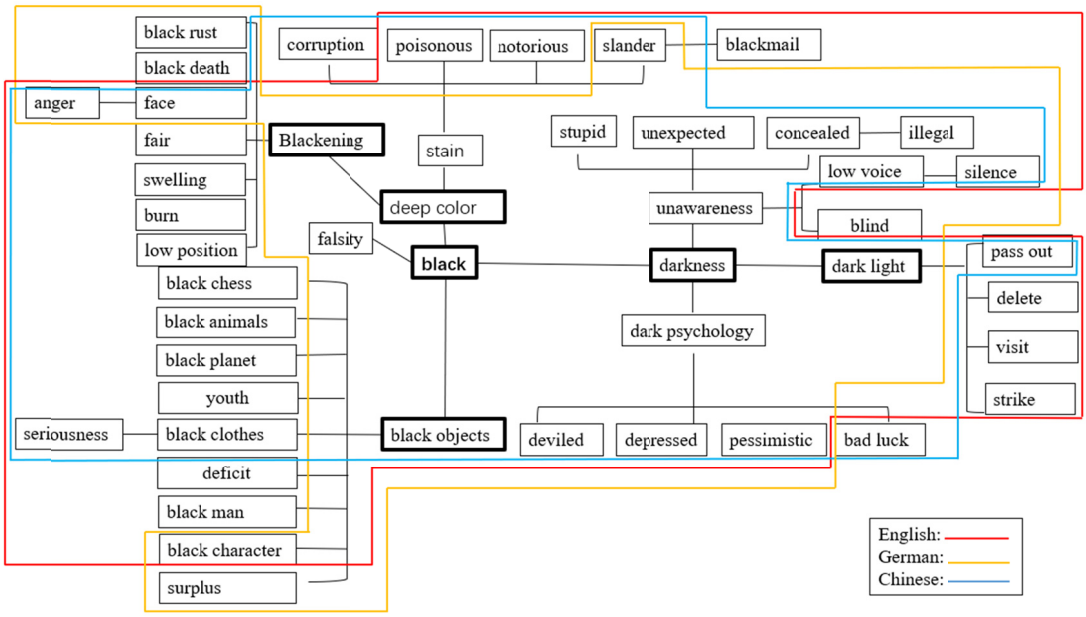

Figure 5. Comparison of the Three Semantic Maps

The red line stands for the English semantic meanings of the color term "black", the orange line stands for German, and the blue line stands for Chinese. Through comparison among three languages by virtue of semantic map, the following semantic meanings and concepts tend to be the same in the cognition of the color term "black": deep color, stain, falsity, black character, black rust, black death, concealed, illegal, unawareness, angry, stupid, low voice, deviled, depressed, pessimistic. These common semantic meanings depict the picture of human's semantic cognition of the color term "black".

Besides, it also shows that the semantic meanings of the color term "black" are closely related to the color black and darkness. Due to the origin of the color black and darkness, human beings instinctively think of the negative side of black, such as anxiety, sad and death, etc. At the same time, darkness also reminds people of the unclear meaning, which further extends into other meanings like conceal, unawareness, and so on. Besides, because the color term "black" is related to "dark color" as well as "dark light", black can also express a deep degree in most languages. And "black" has more negative semantic meanings, so it is also the symbol and representative color of the abstract semantic meaning of falsity. In addition, black also has some positive meanings, such as black clothes, giving people the impression of seriousness and making people respected.

As for the semantic evolution of the color term "black", metaphor and metonymy play a significant role in this period. The internal organization of different meanings in a word is not a random and specific information base, but is constructed through universal cognitive principles, which are systematic and recurring in the extension of word meaning (Gibbs & Matlock, 1997, p. 215). Metaphor and metonymy are the two main cognitive mechanisms by which human beings live. They are the internal driving force of semantic evolution and the reason for the formation of the color term "black". On the one hand, metaphor is to understand and experience one thing in terms of another, and when one concept is constructed by another, they have the same cognition type. The meanings of "anger" "anxiety" and "sadness" are the results of the metaphorical extension of the color term "black". On the other hand, human cognition and naming of colors start from concrete things, and then comes the abstract concept of color. So metonymy is the process of returning to concrete things from abstraction, and various colored objects are the results of extensive metonymy. The meanings of "black man" "black character" "black clothes" "black chess" etc., are the results of the metonymic extention of the color term "black".

5. Conclusion

Through the study of the semantic meanings of the color term "Black", it is found that the evolution of the semantic meanings of color terms is similar among different languages, so the commonality of the semantic meanings of color terms among languages is more than the difference. As Huang (2011) predicted, People's thinking mode is the same, and people's cognition is also roughly the same. Language is not only a tool for human communication but also a means for human beings to recognize the world. People use language to recognize the world, and the process and results of this cognition can be expressed by language, so the evolution mode of most color terms among languages could be similar.

Through comparison among three languages by virtue of semantic map, the following semantic meanings and concepts tend to be the same in the cognition of the color term "Black": deep color, stain, falsity, black character, black rust, black death, concealed, illegal, unawareness, angry, stupid, low voice, deviled, depressed, pessimistic. These common semantic meanings depict the picture of human's semantic cognition of the color term "black".

In primitive society, the color was monotonous. Black and white were the primary colors with which human beings first contact, and the contrast was also outstanding. It was bright during the day and dark at night. Therefore, the color term "black" and "white" were not recognized as colors, but as the concept of brightness, which is the reason why the semantic map of the color term "black" is basically around the two core semantic nodes, that is the color black and darkness. In addition, black is always related to a dark night without light in people's minds. In the early days of human society, beasts haunted in the dark night which produces a fear of the night. Therefore, Black is often used to express anger and anxiety the night. Without light in the darkness, people's vision is bad, which results in the extended meanings of concealed, stupid, and so on. At the same time, Black often causes psychological reactions such as depression and unhappiness, so it often has such semantic meanings as depressed, deviled, and pessimistic. And there are two mechanisms that can explain the extensive meanings of the color term "black", that is, metaphor and metonymy. The current research is mainly based on the comparison among English, German, and Chinese by means of the semantic map in order to reveal the commonality and universality of the color term "black". The color terms are not only restricted to the "black", and the language sorts are limited, which is not enough to figure out the commonality and universality of the color terms. Besides, the related corpus materials are not updated in recent times, which is not enough to conduct

further study. In addition, the experiment of people's cognition on color terms should take into consideration if conducting the further study.

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