Design of Micro-course as Re-semiotization in Technologically Multimodal Context

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Abstract—The present article views the design of micro-course as the re-semiotization from source text to target text. It starts with the introduction of micro-course, a new technologically multimodal genre, and moves forward to discuss the process of transforming from book to screen production, involving semiotic shift in different context. Based on Iedema's term "re-semiotization" and Halliday's systematic functional linguistics, this paper puts forward theoretical framework for the production of micro-course as re-semiotization, and emphasizes the decisive role that socio-cultural context plays on modality selection. This article analyzes the semiotic resources involved in ideographic system of micro-course, that is, image, voiceover, text, color, and sound, and holds that each semiotic has its own specific constraints and affordances, and further elaborates on the affordance of each modality respectively. The article also suggests that transposition between different semiotics is not just a matter of finding semiotic equivalents, and the micro-course actually does not just displace language by visualizing its meanings, but reconfigures the source text into a multimodal discourse. During the process of micro-course design, apart from affordance of each modality, the inter-semiotic relations should also be considered, and the coupling relationship between different modalities and semiotics will produce different ideational meaning and interpersonal meaning, leading to the overall construction of textual meaning of micro-course. The article also analyzes the semiotic comparison of source text and target text.

Index Terms—Design, micro-course, multimodality, re-semiotization.

I. INTRODUCTION

Due to the increasingly rich material means involved in social activities, the traditional method of meaning-making through language has been gradually replaced by the complex in which multiple media coexisted, and multimodality are the compound discourse with sound, images, charts, apart from text. The term multimodality aims to offer a way of talking about how language and image work together [1]-[3], or how image, language and sound are coordinated [4], [5], and it also enables us to talk about how multimodal discourse should be designed across different semiotics.

With the impetus of technology, the meaning-making for human has been growing multimodalized, throughout the initial dictation era and lengthy printing era, and now has entered the technologically multimodal hypertext era. Technological multimodality, a new IT-driven form of

ideographic system for mankind, is the technology-aided integration of semiotic resources, and the co-construction of meaning is achieved through the interaction between modes. From the viewpoint of the habit of human perception, multimodal context with multiform and multimodality fits cognition best, and it is in this context that the new genre of micro-course is born with typical multimodal properties. Micro-course is a new genre generated in the technologically multimodal context, and through technology, semiotic resources such as image and sound are manually integrated. It is a fragmented teaching resource, aiming at explaining a certain knowledge point, and is characterized by contextualization. Compared with traditional class, the representation of teaching information in micro-courses has evolved from words, languages and objects to more diversified and integrated representation forms including human voice, words, pictures, sound effect and animation. Micro-course contributes to mobilizing multi-sensory experience, thus becoming an effective learning method for its conformity with learners' cognitive habits.

II. THEORETICAL FRAMEWORK FOR THE PRODUCTION OF MICRO-COURSE AS RE-SEMIOTIZATION

Multimodality is concerned with the multi-semiotic complexity of a construct or a practice. The definition of micro-course tells us that, different from the traditional teaching context dominated by teacher talk, micro-course is the visualized and contextualized information transmitter. Its information is composed of two parts: text and context, and it is a multimodal resource integrating sound, text, image and other semiotics. In technologically multimodal context, the visual and auditory elements in the representation system of micro-course should consist of semiotics with informative, aesthetic and emotional elements. Each of those semiotics is the source of information, contributing to meaning construction organizationally and structurally. Therefore, the design process of a micro-course is essentially a process of re-semiotization.

The term "re-semiotization" was first used by Iedema[6] to refer to "how meaning shifts from context to context, from practice to practice, or from one stage of a practice to the next". Jewitt [7] summarizes Iedema's use of the term as the phenomenon "in which a particular set of meanings is transformed from one semiotic system (and configuration of media and modes) to another". The approach taken to analyzing these re-semiotizations across different media is based on Halliday's [8] social semiotics, where language and other semiotic resources are seen as resources for making meaning. Halliday's social semiotic approach, developed as

systemic functional Linguistics (SFL), views semiotic resources as systems of meaning which fulfill a range of functions for human communication.

Socio-cultural context determines modality selection, and readers in the era of visual communication need to switch from linear reading to multimodal reading. The video-oriented nature of micro-course calls for the transformation from reading semiotics into visual situations, thus for micro-course authors, the re-semiotization process from text to multimodal discourse should be completed accordingly. Re-semiotization involves the re-choice of semiotic resources in different contexts and the realization of the meaning of multimodal discourse with new semiotics. Micro-course is, in technologically multimodal context, a transformation activity from textbook (source text) to video (target text), and the core of the transformation lies in the transmission of meanings, and ideal transformation is to reproduce the source text perfectly in terms of function and information, the process of which highlights the micro-course author's (designer's) subjectivism, and actually is a process of re-creation (design) of source text.

III. IDEOGRAPHIC SYSTEM OF MICRO-COURSE

A. Central to Design of Micro-course: Modality Affordance

Multimodality provides the means to describe a practice or representation in all its semiotic complexity and richness. Micro-course is a multimodal discourse, in which semiotics are the main medium of information transmission. Semiotics design in micro-course is the basic content and goal of micro-course design. To establish a semiotic system accepted and understood by the learners, the design of micro-course has to start with the cognitive rules so as to realize effective communication of semiotic meaning, during which the accurate decoding of the information in micro-course is central to semiotics design, thus the priority should be given to the functions of those semiotics. Arguably, the accurate grasp of those semiotics makes the difference between the success or failure of the micro-course production. Therefore, re-semiotization is not a simple code-to-code conversion, but a process of selecting codes, combining codes, and effectively evaluating decoding effects, based on modality affordance. In short, it is a process of reconstructing the meanings of various semiotic resources.

Each semiotic has its own specific (systemic) constraints and (material) affordances. And the things we can do with language, for example, cannot all be done in visual representation, and vice versa[1]. Specifically, five linguistic and non-linguistic semiotics are involved in the micro-course meaning construction: image, voice, text, color, sound.

1) Image

Micro-course is a kind of visualized learning resource, whose audiences prefer to receive information connotations with highly refined semiotics and easy-to-understand visual language. Thus, the design of micro-course requires visual language to express information content in a simple and popular form. The design of micro-course calls for concise and popular visual language to express the information content, and for micro-course, it is necessary to free from simple reading semiotics and transform into images with visual situation. Image is a very intuitive signal element, whose semantic function comes from its analogy, and the semantic functions of images are embodied in two levels: explicit and metaphorical. Explicitness means that an image reflects reality as it really is, while metaphor may function to guide particular interpretations which otherwise may have been left more open. The pragmatic functions of image semiotics are mainly to explain the theme and supplement the context. Images make statements convincing by virtue of their unique visual advantages, providing readers with an intuitive, instantaneous sense of presence. Therefore, image works as an important way of information visualization in micro-course teaching.

2) Voice

The linguistic audio semiotics, namely the voiceover of human voice, are one of the main semiotics of information transmission in micro-courses. The reason why its dominant role is emphasized is that it can express the teaching connotation in a direct and straight-forward way, which is very important for the short and pithy micro-course. Verbal audio communication is characteristic of direct and accurate transmission, for it may minimize the translation via other semiotics. Voiceover is marked by exact sememe and unambiguity, making it the most powerful and convenient semiotic for micro-course video to transmit educational information. Voiceover, plus paralinguistic semiotics such as intonation, speed, and even pauses, occupies the main body of the auditory system of micro-course.

The linguistic audio semiotics can be designed to perform the following functions: First, the pragmatic function of voiceover is to act as cohesive devices and play a role in the formation of discoursal coherence in micro-course; Second, to answer the questions that cannot be answered by images; third, to help complete scene cuts (picture switching). Its semantic function mainly lies in content elaboration or analysis and comments, and in most cases, micro-course cannot do without voiceover.

3) Text

In the ideographic system of micro-course, text exists as a visual semiotic of language, both a record of sound and a visible semiotic. It combines the reception mode of image with the interpretation mode of text, and specifically, it refers to the written information (words) presented on the (main part of) screen and the subtitles added in post-production. For micro-course, text are almost indispensable. Needless to say, text has its semantic function, and its pragmatic functions are reflected differently on the (main part of) screen and in subtitle respectively:

For the words on the (main part of) screen, the pragmatic functions of which mainly include two aspects: The first is to highlight. Compared with images, words are strong semiotic, and it can intuitively list the core of micro-course content, stating the theme and highlighting the key points; The second is to anchor, the ambiguity of image meaning needs to be anchored in more ways, that is, to explain the image and make the image more concrete and avoid ambiguity so as to

ensure the clear communication of information.

Subtitle is a unique representation element, owning dual identity in both visual and auditory systems, and acts as a supplementary means to increase the channel of image information. It is another channel of information superimposed on top of the image, and enhance the reception and decoding of information in limited time and space.

4) Color

As a visual language, color is a semiotic that cannot be ignored in the design of micro-course. According to Peirce's semiotics theory, color can constitute a complete semiotic system, which participates in or determines the composition of the signification of semiotics. Although color has independent semiotic property, it needs to be attached to other semiotics such as text and image to present. The combination of color and image is more about realizing its semantic function, that is, the psychological implication brought by the associative function of color.

Compared with image and text, color is a more perceptual semiotic for design, whose transmission speed has a stronger and faster visual impact on people, and has strong decorative characteristics such as suggestion and distinction. In use of color, we should not only consider the metaphorical feeling of color to the viewer, but also consider the contrast effect against the background. From the perspective of overall color matching, complementary colors usually lead to a higher degree of harmony in the picture, creating a sense of beauty. In the design of micro-course, the combination of text and color is to highlight and to deepen memory, which is the commonly used pragmatic function.

5) Sound

Traditionally, sound exists as the background to voiceover and occupies a secondary position in the inherent concept of information communication. Non-verbal sound semiotics, including sound effect, music and so on, constitute the auditory system of micro-course together with verbal semiotics. In the design of micro-class, sound effect is a concrete semiotic of sound. If image is visual representation, sound effect is auditory representation, which belongs to concrete language. Each sound effect indicate a specific meaning, and the audience will perceive what happened upon hearing. Sound effects are purely objective sounds, When constructing the micro-course situational statement, it only has one tense -- the present continuous tense. Its semantic function is embodied in the on-the-spot documentary, and its pragmatic function lies in the creation of the context.

The biggest difference between music and sound effect is that sound effect is realistic while music is freehand. Unlike sound effects, music has no source of reality and is characterized by abstraction and subjectivity. The decoding of semiotics of music is divergent and the semantics are uncertain. Pragmatically, for most micro-courses, music exists as an auxiliary representation semiotic. In addition to acting as setting, it can also be used for scene cuts, that is, to realize discourse function by using music.

Re-semiotization is meant to provide the analytical means for tracing how semiotics are translated from one into the other as social processes unfold, as well as for asking why these semiotics (rather than others) are mobilized to do certain things at certain times [6]. And familiarity with the affordance of each modality is central to the effective design of micro-course.

B. Inter-semiotic Relationships

According to Law and Mol [9], a semiotic is hard-pressed to provide an unproblematic, transparent and direct translation for meanings made in another semiotic. Transposition between different semiotics inevitably introduces a discrepancy between the source and the target, and such transposition is not just a matter of finding semiotic equivalents for specific discourse participants in the other semiotic. The micro-course actually does not just displace language by visualizing its meanings, but reconfigures the source text into a multimodal discourse or a semiotic complex.

On the basis of analyzing affordance of each modality, the inter-semiotic relations should also be considered. According to Zhang's [10] classification of inter-modal relations, the intermodal relations of multimodal discourses are mainly complementary and non-complementary. Complementarity is further divided into the relationship between reinforcement (prominence, priority, expansion) and non-reinforcement (coordination, association, crossover). Non-complementary relationships are further divided into overlapping (redundancy, exclusion, and counteraction), inclusion (whole and part, abstraction and concreteness), and contextual interaction (independence, dependence). And the coupling relationship between different modalities and semiotics will produce different ideational meaning, interpersonal meaning and textual meaning. In the design process of micro-course, the designer's selection, reorganization and arrangement of semiotic resources are a process of re-semiotization and meaning reconstruction. In this process, only by fully considering the complementary and restrictive relationship between modal availability and modal symbols can the target text be presented in the best way.

C. The Overall Construction of Textual Meaning of Micro-course

All the multimodal study are actually the study of meaning. Following Halliday's SFL, systems are organized according to metafunctions which the resources serve in society [11], that is, ideational meaning, interpersonal meaning, and textual meaning. Semiotic resources have differential capacities with regard to the metafunctions and achieve different meaning-making, and multimodal discourse are characterized in terms of options selected from the systems which realize the metafunctions. In SFL, each meaning is constructed by different linguistic patterns. For micro-courses, the theme of each micro-course is the ideational meaning to be represented; How to effectively attract viewers' attention constructs interpersonal meaning of micro-course; The main content of textual meaning is how to complete interpersonal meaning and ideational meaning by means of semiotics. These three meanings are interwoven together, bearing the following two characteristics:

First, interpersonal meaning is the premise. Micro-course belongs to contactless online teaching, which is mostly carried out in an unmonitored state, lacking compulsive

measures of attention control. Therefore, micro-course learners can easily switch web page, and attention control is crucial to them. The higher the stickiness of micro-lectures, the easier it is to achieve interpersonal meaning. Only by successfully attracting viewers' attention can ideational meaning and textual meaning be achieved.

Second, ideational meaning, interpersonal meaning and textual meaning overlap at times and are all realized by interaction. Interactivity of discourse is an important resource to realize the three meta-functions of ideational, interpersonal and textual meaning. In micro-courses, various modal combinations such as human voiceover, image, animation and sound effect are used to convey teaching information, persuade and change others' positions, as well as improve the attractiveness, so as to jointly complete the construction of discourse meaning.

IV. SEMIOTIC COMPARISON OF SOURCE TEXT AND TARGET TEXT

Multimodal discourses are characterized in terms of options selected from the systems which realize the meta-functions. The book, for instance, relies for the most part on one semiotic resource, written language, for meaning making; while video (like micro-course), relies on multiple semiotic resources for meaning construction. Micro-courses are generated texts based on the target semiotic system, and are corresponding to the source text in meaning. Comparison of the source text (book-based) and target text (video-cased) shows that the representation of meaning in books is shifting away from using language towards using and privileging alternative semiotics. In the book (print) arrangement, the writing is put in charge of explaining almost all the teaching information, commonly presented in pages composed of black text and white background, sometimes with drawings or photographs; while micro-course shows a very different set of patterns: the visuals are rich, colored and realistic (photographs or cartoons rather than drawings). Unlike the prominence of printed language in source text, many other semiotics may predominate over the writing in target text, and the foregrounding of one is often accompanied (or achieved) by the backgrounding of other semiotics. A multimodal perspective would emphasize that its language-in-use does not occur on its own, and that it is integrated with and heavily dependent on other forms of meaning making, and micro-course is a good example of this. What's more, in the shift from source text to target text, the logics are moving from linear progression (associated with linguistic expression) to more disparate non-linear, more freely re-combinative representations (associated with multi-semiotics). In addition, compared with source text (book), micro-courses are constructed more from the user's perspective, more user-friendly and task-oriented, which may be more suitable for user-centered fragmented learning in the digital age. The comparison is shown in Table I.

The analysis above shows that the transition from the book to micro-course involves more than a translation of one kind of meaning. Clearly, micro-course privileges the combinations of semiotics, and it deploys a more life-like modality of representation, and it is framed within a user-oriented meaning making.

TABLE I: THE TRANSITION FROM BOOK TO MICRO-COURSE

	Book	Micro-course
genre	one-dimensional linear genre / two-dimensional multimodal genre	non-linear, three-dimensional multimodal genre
pattern	presented in pages composed of black text and white background.	reproduced on screen as colored video full of semiotics
semantic configuration	stable / relatively stable	freely re-combinative
foregrounding	printed language are prominent	different semiotics are possibly prominent
interface	serious-looking	more accessible, easy, friendly
self-projection	linguistic-technical	visual-simple

V. CONCLUSION

This study introduces the application of re-semiotizations on the design of multimodal discourse. In the process of moving from book to screen, the production involves taking meanings encoded in particular ways in one medium and semiotically reconstructing them in a different medium. In this paper, that is, in technologically multimodal context, the production of micro-course most typically use the range of resources available (e.g. IT, images, sound, and so forth) to reconstruct the meaning conveyed in source text.

The design of micro-course is the process of de-centering of language as favored meaning making in print age, in the process of micro-course re-semiotization, linguistic representation is not being backgrounded or even marginalized, but being re-allocated meaning-making function. The rewriting from text to micro-course is a process of meaning reconstruction based on situational context and social and cultural context, during which, all semiotics are to be coordinated, enabling us to complete "design".

CONFLICT OF INTEREST

The author declares no conflict of interest.

AUTHOR CONTRIBUTIONS

Zhang Qing-Mei designed research, performed research, and wrote the paper.

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