

A Study on the Design Thinking in Literary Text Interpretation and Translation : A Case Study of Metaphors in *The Three-Body Problem* Universe

Hao Yang

School of Foreign Studies, Jiangnan University, Wuxi Jiangsu, 214122, China

Abstract: *The development of students' innovative capabilities has always been a central concern in higher education reform agendas. Design thinking, as a key methodology for driving innovation, holds significant yet underexplored value in teaching and learning of foreign languages and literature. This study takes the three fairy tales told by Yun Tianming in Death's End, the third volume of Liu Cixin's The Three-Body Problem trilogy, as an example to explore the importance of the design thinking in literary text interpretation and translation. We argue that by conducting a comparative analysis of metaphorical expressions in the Chinese and English versions of the trilogy and guiding students through divergent thinking exercises, three key competencies can be effectively enhanced: translation skills, interdisciplinary design thinking, and cross-cultural communication skills. This approach would offer a pedagogical model for cultivating innovative foreign language talents.*

Keywords: Design Thinking; Three-Body Problem Trilogy; Metaphor; Interpretation

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1.Introduction

In recent years, the widespread popularity of *The Wandering Earth* film series and the TV adaptation of *The Three-Body Problem* has brought Chinese science fiction into the global spotlight. Liu Cixin's *Three-Body Problem* trilogy, in particular, has elevated Chinese science fiction literature to world-class standards (The Hugo Award, 2015), captivating international audiences with its grand narrative, profound cultural connotations, and philosophical depth. These works not only showcase the unique appeal of science fiction but also provide rich material for translation and textual interpretation.

The appeal of science fiction lies above all else in its reflection of reality. For instance, humanity's response to the solar helium flash in *The Wandering Earth* mirrors real-world reactions to the COVID-19 pandemic, while the struggle against alien civilization in *The Three-Body Problem* serves as a metaphor for contemporary cultural clashes between China and the West. Second, science fiction stimulates readers' imagination through deliberate ambiguity and expansive world-building, such as the "Dark Forest" theory and the space cities under the threat of dark forest strikes, which blend philosophical inquiry with open-ended interpretation. Besides, the skillful integration of cultural symbols (e.g., the East-West elements in *the Three-Body Problem* trilogy) further enhances its cross-cultural communicative value.

Underlying these features is the synergy between design thinking and creativity. Design thinking not only underpins literary creation but also offers a methodological framework for translation and textual analysis. By examining the metaphorical expressions in *The Three-Body Problem* across Chinese and English versions and guiding students through divergent thinking exercises, their translation skills, interdisciplinary design thinking, and cross-cultural communication abilities can be significantly enhanced. Science fiction, with its distinctive linguistic style, culture-loaded terms, and philosophical complexity, serves as an ideal resource for training English majors in translation and textual comprehension. Through the study of sci-fi texts, students can not only hone their language conversion skills but also gain deeper insights into cultural contexts and cognitive differences, thereby cultivating more innovative foreign language talents.

2.The Theoretical Framework:

The "Human-Centered Design" theory (Brown, 2008) in design studies offers a novel perspective for translation

research. This theory likens the design process to mountain climbing, where optimal solutions are sought within a multidimensional parameter space. This framework is equally applicable to translation studies: the improvement of translation quality (vertical axis) requires optimal synergy between solid translation techniques and creative imagination (horizontal axis).

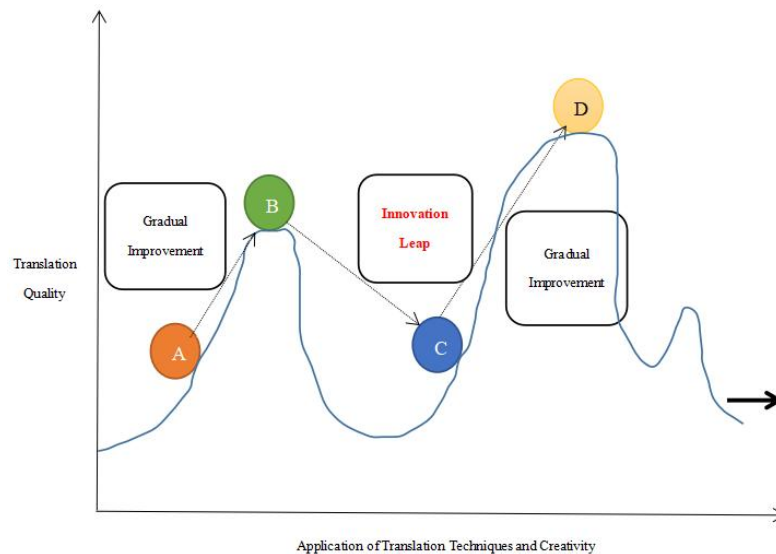


Figure 1: Translation Quality Optimization Model

As figure 1 illustrates, the translation process can be viewed as a dynamic optimization system. Starting from an initial point A, translators progressively advance to a local optimum B through micro-level lexical techniques (e.g. equivalence translation, transposition, etc.) and syntactic techniques (e.g. recasting, voice shift, etc.). However, the system contains multiple optimization paths. By employing macro-level translation strategies (e.g. domestication, foreignization, etc.) and creative methods (e.g. transcreation, free translation, etc.), translators may discover an optimal solution D. This path transition (Robinson, 2016, pp. 45-48) embodies the core value of design thinking: while ensuring local optimization, it seeks global optimization possibilities (Kussmaul, 1995).

To achieve such optimization, translators need to develop three core competencies: professional foundational skills - mastery of various basic translation techniques through systematic training; interdisciplinary literacy - expansion of knowledge across multiple domains; and conceptual integration ability - application of visualized tools to organize complex information.

This study takes the three fairy tales told by Yun Tianming in *Death's End* (the third volume of Liu Cixin's *The Three-Body Problem* trilogy) as a sample text, which is based on the following considerations. First, the work itself exhibits strong design qualities, with its imaginative narratives effectively stimulating innovative thinking. Second, the text integrates multidisciplinary knowledge, providing an ideal resource for interdisciplinary translation practice. Finally, its rich metaphorical system is particularly suited for training in-depth comprehension and information integration skills. This training model introduces design thinking into translation pedagogy, offering new insights for cultivating innovative translation talents.

3. Metaphor Interpretation and Analysis:

Liu Cixin, in *Death's End*, the third volume of *The Three-Body Problem* trilogy, ingeniously embeds multi-layered metaphors through Yun Tianming's three fairy tales, namely *The New Royal Painter*, *The Glutton's Sea* and *Prince Deep Water*. These metaphors do not convey information directly but instead employ a dual-layer structure (See Figure 2) and two-dimensional coordinates to progressively reveal meanings. In the dual-layer metaphor, the imagery in the story first points to an intermediary, which then leads to the ultimate intelligence. For example, the princess's boat, the He'ershingenmosiken soap, and the Glutton's Sea refer to a soap-powered paper

boat, which in turn symbolizes space curvature propulsion technology. This metaphor design tightly wraps critical information within seemingly simple fairy-tale plots.

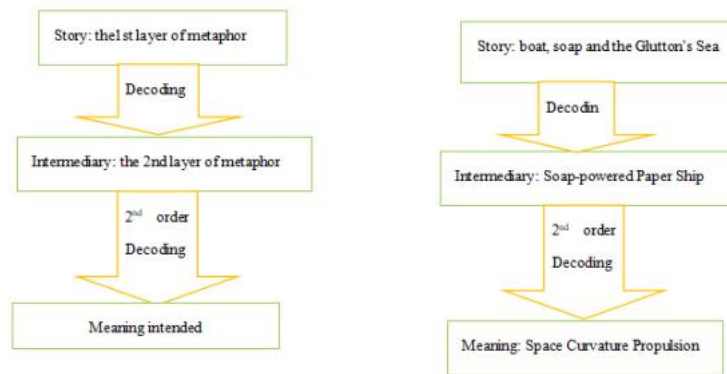


Figure 2: Dual-layer Metaphor Framework and the Story Pointing to Space Curvature Propulsion

To ensure the accuracy of the dual-layer metaphor, the author also introduces a single-layer metaphor as a "meaning coordinate.(See Figure 3)" Take, for instance, the curling and flattening of snow wave paper—this single-layer metaphor specifically anchors the concept of space curvature represented by the soap-powered boat. On its own, this detail appears meaningless, but when taking the dual-layer metaphor aforementioned into consideration, it instantly determines a point on a rectangular coordinate system, transforming vague literary expressions into a piece of precise, decipherable information. This metaphorical system preserves literary beauty while achieving the accurate transmission of scientific intelligence.

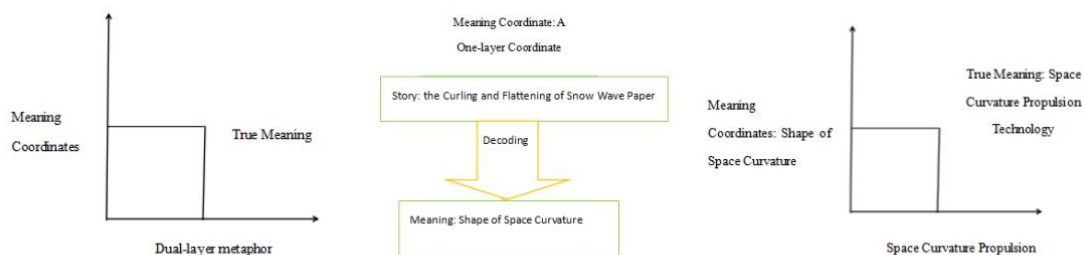


Figure 3: Meaning Coordinate Pinpointing Space Curvature Propulsion

The second example concerning the magic umbrella is even more ingenious (See figure 4). This umbrella, which can be kept open only when spun at a constant speed, represents an automatic control system which is in turn taken to symbolize the constant velocity. The interpreters tried to identify the true meaning of the dual-layer metaphor by looking into three meaning coordinate candidates: Prince Deep Water's fixed height in the eyes of people regardless of distance hints at physical constants; the lightweight bubbles of the magic bubble tree symbolize the speed of light, while the gauze net used to catch them metaphorically represents reducing the speed of light. Eventually, however, deciphering the place name "He'ersingenmosiken" became the key to unlocking the dual-layer metaphor—its reference to the Norwegian maelstrom alludes to a black hole, leading to the initiation of the "black domain" plan (See figure 5), which would reduce the solar system's light speed to the third cosmic velocity. This self-enclosed safety declaration offers humanity a second possibility for escaping the Dark Forest Strike. Through this interlocking system of metaphors, Yun Tianming successfully transforms cutting-edge physics concepts into fairy-tale elements, ensuring both the security and interpretability of the intelligence.

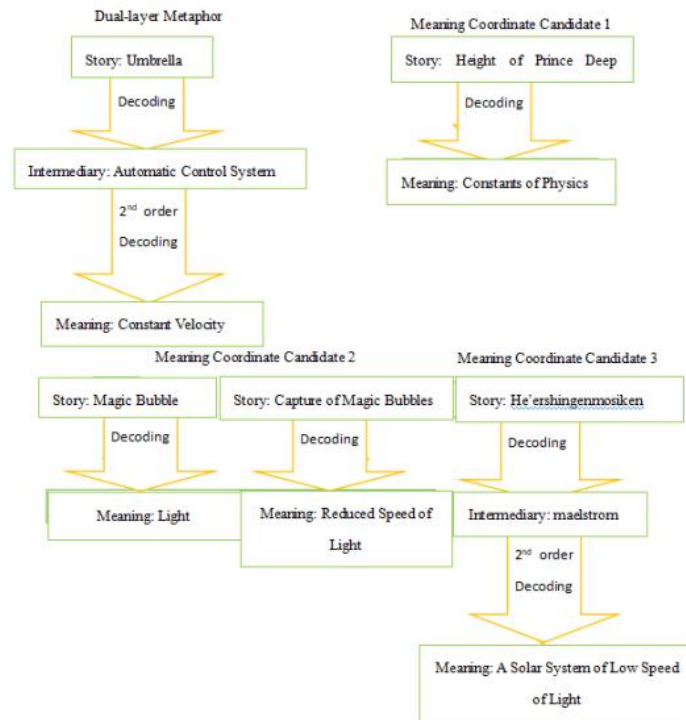


Figure 4: The Story Pointing to a Solar System of Low Speed of Light

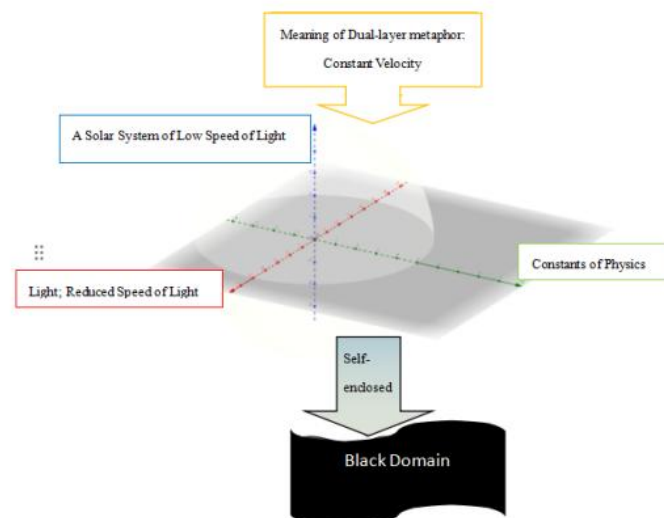


Figure 5: Meaning Coordinates Pinpointing to Black Domain Plan

This intricate metaphorical design system not only showcases the seamless combination of science and art but also makes for high-quality cognitive training texts. Such training is not only applicable to the field of English language and literature but can also be transferred to interdisciplinary learning and real-world crisis management scenarios, cultivating students' ability to grasp core issues and make wise decisions amid uncertainty.

4. Discussions and Conclusion:

Liu Cixin's construction of the "dual-layer metaphor" and "two-dimensional metaphor" systems in *The Three-Body Problem* trilogy provides English majors with highly challenging translation and textual analysis materials. This case study not only develops students' language conversion skills but also, through the integration of design thinking, establishes a systematic problem-solving framework for translation.

Guided by design thinking principles, students could first adopt a audience-centered approach (Brown, 2008), considering the cognitive psychology and reception habits of target readers. When decoding "dual-layer metaphors" and "two-dimensional metaphors", they could then employ a tool called empathy maps to analyze comprehension barriers for readers from different cultural backgrounds.

For translating interdisciplinary terminology, the prototyping concept in design thinking (Brown, 2008) encourages students to experiment with multiple translation solutions (e.g., rendering "黑域" as "light-reduced domain" or retaining the pinyin "Hei Yu" with annotations) and rapidly iterate to identify the optimal version (Plattner, Meinel, & Leifer, 2011, p14) When handling culture-specific items like "赫尔辛根默斯肯," the collaborative innovation method in design thinking prompts students to form cross-disciplinary teams (Plattner, Meinel, & Leifer, 2011, p97), integrating perspectives from linguistics, politics, philosophy, physics, and other fields to develop translations that are both accurate and creatively refined.

During metaphor interpretation and construction, visualization tools (Koh, et al., 2015) highly valued in design thinking help students transform abstract metaphorical relationships into visible mind maps. This process not only enhances systemic thinking but also cultivates innovative expression. Through rapid prototyping and repeated test for the optimum (Liedtka, 2015)—emphasized in design thinking—students receive immediate feedback on their translations, allowing for continuous strategy refinement.

This problem-solving-oriented training model enables students to break through the limitations of conventional language conversion when tackling complex concepts like "curvature propulsion." By prioritizing holistic narrative effects and reader experience, they produce translations that balance scientific precision with literary elegance. Ultimately, this design-thinking-infused translation training not only elevates students' professional competence but also equips them with problem-solving skills and innovative thinking for handling complex texts, paving an effective path for cultivating a new generation of versatile translation talents.

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