

The Shapes of Thought and Methods of Thinking: on Ted Chiang's Stories of Your Life

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Abstract: Ted Chiang's science fiction *Stories of Your Life* can be viewed as a form of linguistic SF, language may mislead our thinking, yet it is not thought itself. After learning a new language, Louise develops another mode of cognition; the author uses the aliens' unique linguistic expressions to highlight the limitations inherent in human cognitive frameworks. As discussions on themes such as time and free will gradually extend to considerations of the future, linear cognition transforms from a disadvantage into an advantage. It is clear that worrying about a predetermined future is futile-only through action and choice can we shape the future, offering a fresh perspective on the novel.

Keywords: Linguistic SF, Linear Cognition, Free Will, Ontology

1. Introduction

In *Tractatus Logico-Philosophicus*, Wittgenstein said: The limits of my language mean the limits of my world.[1] In science fiction and films, alongside rich depictions of combat, exotic and diverse alien languages serve as distinctive features and plot catalysts for such works. From the Space Opera of the Golden Age to Stanisław Lem's works on alien encounters, extensive alien language systems have been developed. A prime example is the renowned Klingon language in the *Star Trek* series, which drew inspiration from North American Native American languages, although Klingon differs significantly from familiar English in pronunciation and grammar, evoking a sense of mystery, it follows discernible patterns. Ted Chiang is good at linguistic SF, in *Stories of Your Life*, aliens have been used to create entirely distinct linguistic frameworks. The language of Heptapod B as a system of communication. As Louise continued to learn this language, language seems to reshape her perception of reality itself. Actually,

Ted Chiang challenge the assumption that language merely describes the world.

2. Linguistic SF and Mind Model

This refers to the "linguistic worldview" proposed by the German philosopher and linguist Wilhelm von Humboldt. Humboldt argued that "language differences are not merely differences in sounds and symbols, but differences in worldviews themselves". In other words, "different languages correspond to different worldviews". Language shapes how its speakers perceive and think about the world. Consequently, "humans can only think, perceive and live through language". The theoretical foundation for Louise's study of heptapods theory and his development of future-prediction abilities lies in the Sapir-Whorf hypothesis, which sparked significant academic interest in the 1940s. This hypothesis is known as "linguistic determinism", which posits that different languages determine distinct modes of human thinking and emphasizes: "The contextual system (i.e., grammar) of each language serves not only as a means of expressing ideas but also actively shapes structures and guides individual mental processes.") [2], In *The Shape of Thought*, Ken Liu conceptualizes the Kalasani-a species whose way of dividing objects through language differs fundamentally from humans. Similarly, Samuel R. Dylaney's *The Tower of Babel-17* explores this theme. Both works underscore language's decisive role in shaping thought. Chapter 8 of Dennett's *Consciousness explained*, titled "How Words Do Things With Us", directly parodies Austin's central concept of "performative utterance" from *How to Do Things With Words* which as a theoretical interpretation of heptapod's theory that language constitutes action.[3]Dennett clarifies here that languages are not merely tools for expressing consciousness but, conversely, shape and construct human consciousness itself. For

thought to truly understand what it has contemplated and whether its reasoning is correct, it must engage in self-reflection, requiring the objectification of its own thoughts, a process achievable only through language. Thus, it can be asserted that reflective thinking and linguistic activity are inherently inseparable.[4]

Language is indeed the primary trainer of the mind; as illustrated by Helen Keller's the "Spring Journey" in *The Story of My Life*, it vividly demonstrates the wealth of resources language provides to the mind. However, it is crucial to emphasize that language does not determine thought, nor is it thought itself. Based on it, this text supports another view that Whorf's hypothesis has a weakened version known as "linguistic relativity", which posits that language influences thought. The British economist John Maynard Keynes was once asked whether he thought in words or pictures. "I think in thoughts" was his reply. He was right to resist the suggestion that the "things we think in" are either words or pictures.[5] This statement hits the nail on the head, demonstrating that Louise did not merely learn Heptapod B schematic language but mastered the thinking framework underlying its operation. Before learning an alien language, Louise had thoroughly reviewed and summarized her experiences learning other languages (such as Russian during high school) as well as the linguistic thinking patterns of her deaf-mute friends, laying the cognitive foundation for discussing how language reshapes thought.

A concrete example comes from Nabokov's novel *The Defense*. We can compare the character and structure of this novel with *Stories of Your Life*. The main character is Luzhin, a chess master who is a genius but suffers a mental breakdown during Top-competition. All characters in the novel are part of a chessboard scenario, the rules and strategies of chess profoundly influence Luzhin's behavior, the way of thinking and acting is shaped by chess tactics; moreover, the overall structure of the central chapters evokes a particular chess puzzle. Returning to the novel here, Louise is affected by heptapod's perception of time, altering the linear narrative and causing it to shift continuously between present and future memories. This not only reflects heptapod's understanding of time but also deceives the reader—a trick proves successful precisely

because readers are ordinary human-being. As Levelt summarized, although language influences thought, there is no inherent "language of thought". Natural language and vocabulary do indeed function in the brain much like a high-level programming language while language plays a crucial role in problem-solving, it is not the very structure of thought itself.[6]

3. Limitations of Linear language

We can confirm that language establishes a way of thinking, but it is not the cornerstone of civilization. Human language struggles to provide precise descriptions of nature, or rather, our understanding of nature does not reflect it exactly as it is. Kant demonstrated the concept of the thing-in-itself, we called the world as it truly is, while Hume's law of causality proves that the causal relationships we perceive those inherent in human consciousness and cognition do not exist in nature. We do not directly observe causality but only saw something happened one after then another, the reason of causality is expectation, and we cannot logically prove it, so we have limitations to predict future. Wittgenstein's theory of language games has long clearly demonstrated that our thinking can be misled by language. In fiction, Louise say language alters thinking habits is true but insufficient, more precisely, it suggests that a mode of thinking shapes our way of thinking, and what truly shapes our thought is this linguistic mode of thinking. For example, human written languages like English, clearly indicating tenses and representing temporal sequences, contrast with Chinese, have not tense but highly visual. The Heptapod B in novels resembles Chinese icon, but key difference is that it does not rely on individual words with independent meanings but integrates all necessary expressions within a single character without tense. So human linguistic systems fundamentally employ linear expression, both speech and written language, especially latter we have no idea what we written down until we finish it.

Here's another intriguing example: Alan Turing further employed serial computer operations to simulate the functioning of the human mind, this approach remains relevant today, particularly AI through the application of Bayes' Theorem is how to predict next token.

Heptapods knew everything they want. So Ted Chiang argues Heptapod B we called a

simultaneous mode of awareness, and imply the inherent limitations of human languages in depict the world. The novel mentions: "When the ancestors of humans and heptapods first acquired the spark of consciousness, they both perceived the same physical world, but they parsed their perceptions differently; the worldviews that ultimately arose were the end result of that divergence. Humans had developed a sequential mode of awareness, while heptapods had developed a simultaneous mode of awareness. We experienced events in an order, and perceived their relationship as cause and effect. They experienced all events at once, and perceived a purpose underlying them all. A minimizing, maximizing purpose." [7] Simply put, the physical world remains unchanged, it is merely perceived differently by humans.

In summary, the limitation of causal understanding constitutes what "Hume's Guillotine", also we called "guillotine of epistemology", that is, no matter how extensive one's knowledge becomes, it cannot predict the future. If this holds true, epistemology faces fundamental collapse, being limited to summarizing history rather than forecasting the future. Consider this, in the realm of human experience, even if the sun rises from the east every morning, it wouldn't be surprising if it didn't do so tomorrow. Borges's Babel Library has already demonstrated the chaotic nature of the natural world. Humans merely employ a linear causal approach to maximize their comprehension of nature and construct their knowledge systems. A notable detail in *Arrival*, when Louise's scientific team asks heptapods about the purpose on Earth, they replies to "offer a weapon". Due to Maslow's "Nail-and-Hammer" theory, we mistakenly assume heptapods intention was to invade Earth, but in reality, it was to offer a gift, as Colonel Weber's wish in novel. Beyond a linguistic perspective, the concept of gift holds significant academic importance across numerous disciplines, particularly anthropology. It is believed that in early human societal development, gifts served as primitive forms of exchange, while more advanced gift forms involved items that did not require repayment. Heptapod B is a gift, or rather, the perception of language as a gift, underscores the crucial role of cognitive approaches in language gifts.

4. Free Will: Live in the Future

The linear nature of language gives rise to free will, because the free will, the future cannot be predicted.

Ted Chiang is passionate and adept at discussing the issue of free will. Beyond *Stories of Your Life*, his works such as *Exhalation*; *The Merchant and the Alchemist's Gate*; *What's Expected of Us* and *Anxiety Is the Dizziness of Freedom* all offer profound and multifaceted explorations of this theme. Furthermore, the abstracted linear understanding of language gives rise to the concept of time in our daily lives. Discussions on free will and physical determinism have given birth to novels rooted in cyclical time theory. In SF studies, the most compelling explanation for nonlinear time is the alternate cosmologies, on the concept of free will in Ted Chiang's works, we must also mention another renowned SF author, Greg Egan. Egan is not the only science fiction writer to play around with the rigorous consequences of fantastic physics. Given Egan's notorious lack of in-person appearances, some wags have speculated that Ted Chiang and Greg Egan are one and the same (after all, like Clark Kent and Superman, they have never been seen together), and when one compares their themes and approaches (if not their styles), that joking proposition is tantalizingly tempting. [8]

In Louise's account of heptapod's cognitive framework: "New memories fell into place like gigantic blocks, each one measuring years in duration, and though they didn't arrive in order or land contiguously, they soon composed a period of five decades." [7] While Louise does not travel through time to the past or future, but the construction of time within mental models undergoes fundamental transformation, a complete restructuring of temporal perception and memory patterns. This phenomenon is extensively explored across multiple works, such as Borges's *Tlön, Uqbar, Orbis Tertius* delved deeper into temporal philosophy. The residents of *Tlön* created phenomenologically similar states through mental intention (Husserl's concept of exchanging time for space). Alternatively, works employing nonlinear temporal structures integrate this theme with humanistic history to create the genre of alternate history fiction, giving rise to concepts such as time travel, space tunnels, and reversing the future (as seen in Christopher Nolan's *Interstellar*, a concept rooted in Theory of relativity). Regardless of their approaches, these

works all seek to use human free will to resist an irreversible destiny.

The novel have a classic question: If we knew the future, and free will still exist? As I mentioned earlier, heptapods way of thinking is simultaneous, and the mode no matter reason and time, they all no significance, so everything is predetermined and inevitable. Under this framework, neither free will nor forced actions. The film *Arrival* is adapted from *Stories of Your Life* contains two lines that illustrate this point: Now i'm sure i believe the beginings and endings, there are days that define your story beyond your life, like the day they arrived. Please note the vocabulary used in the monologue is arrival not landing. Easily, it can still be interpreted as the wisdom of Chinese philosophy. The fundamental characteristic of Western philosophy is metaphysical, or we called platonic approach, which separates and opposes the sensible world from the super-sensible world, it entails a conflict between the metaphysical and the physical worlds. Chinese philosophy does not operate within a metaphysical explanatory framework. The *Book of Changes* (Zhouyi) systematically expounds the inseparability of Dao and vessels and the non-duality of ti and yong as core categories of Chinese philosophy. Although clearly defined, but not oppositions, both sides move together in one world, Eastern philosophy and Chinese philosophy emphasis on adapting to nature and facing life's changes peacefully (It is so of its own accord, what is termed ziran (self-so spontaneity) is nothing other than being so of itself) Another line is: Despite knowing the journey and where it leads, i embrace it and welcome every moment of it. So Louise knew the future, accept the future and a daughter was born, in movie her daughter named "Hannah", the spelling is equal with both ends (cyclical time theory in previous paragraph).

For Louise, whatever the future holds, she accepts it willingly-neither good nor bad will alter her actions. This perspective appears to foster an optimistic outlook even in the face of a bleak outcome. As Ted Chiang noted in an interview: "*Stories* (*Stories of Your Life* and *The Merchant and the Alchemist's Gate*) try to frame the situation in a way that is not about awaiting your doom. They are attempts to find the positive in this predicament, to find some way of living with it." [9] The paradox of this perspective lies in the fact that while "actively accepting

inevitable outcomes" certainly provides a perfect response to textual analysis, it fundamentally avoids addressing the complex issue of free will. In reality, however, adopting a pessimistic stance would still lead to a grim outcome. The flaw is that human attitudes and responses toward inevitable results are entirely ineffective, excessive contemplation and anxiety about what is bound to happen are not only irrelevant but utterly futile. When the mind can simultaneously comprehend the future, language essentially represents action (i say is i do). Consequently, actions arising from free will become insignificant in the face of such planning. This interpretation undermines the significance of human action, we are merely adrift in the face of the future. Under this framework, every action remains confined to the present moment without temporal extension, rendering the future obsolete. François Hartog demonstrates that contemporary historical systems focus solely on the "present", harboring profound crises regarding the future; once the concept of time narrows to the present, both the past and the future are inevitably lost. [10] Human existence thus lacks clear evidence and definition, even when exhibiting great heroism or optimism toward plans and the future, one cannot escape falling into the trap of nihilism.

Ted Chiang's approach of simultaneously considering both human and alien perspectives, much like Fermat's principle as novel cited, illustrates the limitations of human cognitive methods: they cannot directly comprehend all fundamental laws as directly as light does, and are inherently constrained in predicting future outcomes. In this sense, the limitations of linear cognition become an advantage-even the future is predetermined, we cannot know it, we can only shape it through action. Under these circumstances, the conflict between free will and natural determinism disappears, while action and choice themselves define the future, since every behavior contributes to its creation. Thus, humans regain control over the future from this perspective.

5. Conclusion

From an ontological standpoint, Chinese philosopher Zhao Tingyang further extended the ontology of being from the existence of "things" to the existence of "events" that constitute life. In other words, the question in life is not about human "is", but rather what kind of existence

humans are "made to be". As the saying goes, "to be is to do"[11] From this perspective, we define ourselves through action and shape the future (whether predetermined or not) only in this way, humans may attain a solid meaning and definition.

We ultimately focus the discussion on the core issue: a problem becomes a problem precisely because it entails two or more possibilities, if there were only a single answer, that answer would be fact, just like those arrivals. Wittgenstein resolved Heidegger's question: why existence rather than non-existence? Formally expressed as "being is being and no more", existence itself is not a question, any additional possibilities arise only through literary imagination. Epicurus remained consistently vigilant: What necessarily occurs is not the subject of philosophical inquiry. Let us re-examine the concept of "pessimistic determinism" in Ted Chiang's novels. We can confidently argue that Ted Chiang does not focus on predetermined or inevitable events like the beginnings or endings, rather the process. We should focus on the "period" and experience of life itself.

All in all, like Louise read the story to her daughter:

"I'm reading just what it says here, I'll say all innocence."

"No, you're not. That's not how the story goes."

"Well if you already know how the story goes, why do you need me to read it to you?"

"Cause I wanna hear it!"[7]

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