

***Entropy in the Rise and Fall of a Japanese-American Dystopia - Karen Yamashita's "Through the Arc of the Rain Forest"***

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**Abstract**

Stephen Pepper first discussed the term "root metaphor" as the foundation of successful world hypotheses. The idea of a root metaphor as a metaphysical archetype can be expanded and used in literary analysis. For this paper we will rely mostly on Eric Zencey's theory of "Entropy as Root Metaphor," and will use the Second Law of Thermodynamics for a close reading and analysis of Karen Tei Yamashita's novel "*Through the Arc of the Rain Forest*." The world view and perspectives for the future depicted by Yamashita are as relevant today, as they were when the novel was first published. Her inclusion of Japanese characters and constant hinting at Japan throughout the novel makes it easy to identify aspects of Japanese culture that highly influence the development of the plot. We will also show how Maticão plastic (a newly discovered matter that triggers the entire plot) acts as generating substance for entropy. Using entropy as root metaphor, we will uncover how it works in the novel, emphasizing the dystopian tones brought to the narrative by technological advancements within the plot. The paper aims to bridge literary analysis and physics, while underlining the Japanese cultural elements that shape the entropy in Yamashita's narrative.

Keywords: entropy, Japanese American, literature, dystopia

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## Introduction

The reason we have chosen Karen Tei Yamashita's novel to exemplify the concept of entropy as root metaphor is that she is one of the Japanese American authors on whom we are currently doing research. We decided to use this particular novel because its magical realist traits make it easy to identify the entropy in the plot development and to understand how we believe it works.

Following, we will define a few terms used throughout the paper, then we will show you how the idea of a root metaphor can be expanded and used in literary analysis. We will use the Second Law of Thermodynamics for a close reading and analysis of Karen Tei Yamashita's novel *Through the Arc of the Rain Forest*. The world view and perspectives for the future depicted by Yamashita are as relevant today, as they were when the novel was first published in 1990. Her inclusion of Japanese characters and constant hinting at Japan throughout the novel help us identify aspects of Japanese culture that highly influence the development of the plot.

## Plot summary

The full title of the novel is *Through the Arc of the Rainforest*, but we will call it *Through the Arc* from now on. The plot begins when a foreign object hits the coast of Japan, knocking down a little boy, named Kazumasa Ishimaru, who is playing outside. What seems like a piece of debris hits him in the head, but instead of falling to the ground, it remains hovering a few centimeters in front of his forehead. Despite his mother's attempts to remove this floating ball, it keeps being pulled back in front of Kazumasa's face. Eventually, they all become accustomed to this new addition, it also acting and reacting in certain ways, according to Kazumasa's circumstances, thus becoming a sort of extension of the boy's. As Yamashita explains,

*Kazumasa and his parents began to accept the ball which continued to float before his forehead no matter where he went or what he did. They began to forget their early anxieties as Kazumasa seemed to draw confidence and security from the ball.*  
(Yamashita 2017: 5)

We later learn that this ball is made of a fabric called Matacão plastic and that it is also the narrator of the novel. We fast forward some years and see Kasumasa as an adult, working as Superintendent of Track Maintenance and Repairs for Japan Railways. Although a good job in the beginning, he is soon replaced by a piece of technology that is able to do his work perfectly and much cheaper. After some thinking, Kazumasa eventually decides to follow a cousin of his (Hiroshi) to Brazil, where railroads were still imperfect and his prospects of finding a job were much higher. It is here where all the characters meet and the plot takes place. Among the characters, the most influential for the plot development are the following: Kazumasa Ishimaru (the main character and already discussed above), Batista and Tania Aparecida Djapan (Brazilian couple with a keen interest in raising carrier pigeons; she is mostly business oriented; he is consumed by jealousy whenever she isn't close), Jonathan B. Tweep (CEO of American corporation GGG, who comes to Brazil allured by the prospect of becoming involved in the development of new technology; also, he has three arms), Chico Paco (young man who goes on pilgrimages in order to

help others have their prayers answered), Mané Pena (an old man who lives with his family on the Matacão, where he performs healing acts, using magical feathers).

All these characters' destinies are connected with the Matacão, which is described as a thick plastic-like mass underlying the rain forest. We first get a slight idea about the special abilities of Matacão plastic when introduced to Mané Pena who, unknowingly, directs some of that energy with the use of bird feathers, in order to heal people. Later, Chico Paco decides to walk barefoot to the Matacão and build a shrine to St George there, in the hopes that his selfless act would grant him a miracle, enabling his boyfriend to walk again. He is successful, thanks to the mysterious powers of the Matacão. JB Tweep moves his company from New York to Brazil, so as to study the Matacão and discover ways to turn it into a marketable product. Batista and Tania Aparecida DJapan start a business of their own, training pigeons to carry messages across Brazil, eventually also being pulled towards Matacão. As for Kazumasa, the fact that he has a piece of Matacão plastic acting as an extension of himself makes him extremely lucky. He wins the lottery and despite giving away a lot of the money, he keeps getting richer, which attracts a lot of attention from the locals.

The convergence of all these characters to the Matacão leads to a variety of conflicts:

1. Firstly, pilgrims flock to the site as the Matacão becomes the site of religious miracles. Chico Paco's initiative also gathers a lot of attention, which makes some people ask him to perform miracles as he had for his boyfriend, and others copy his actions and start pilgrimages to the Matacão themselves.
2. Batista continues to train pigeons, while Tania Aparecida sets business meetings and tries to promote their carrier pigeon activity collaborating with media outlets, and converging upon the area to use it as a site of advertising and media spectacle.
3. Mané Pena starts broadcasting his healing sessions, creating a sort of new religion in the process, and also becoming fascinated with his own image in TV, as a kind of central divine figure of this movement.
4. J.B. Tweep represents American consumerism, and arrives in Matacão looking to explore the commercial potential of the site and substance.
5. Kazumasa is invited to Matacão by J.B. Tweep. However, as Kazumasa's spinning ball shows a clear connection to the plastic mass in Matacão, JB imprisons Kazumasa until he can decide how the Japanese man can influence the Matacão plastic and what possible use he could have of it.

It becomes obvious that we already have a fairly large number of characters, all with different plans, all acting in different directions, but in the small, confined space of the Matacão. The general image this creates is that of chaos, doubled by the Brazilian masses who turn each of these characters' endeavours into religious-like beliefs. This chaos, confined to the world created by the author reflects closely how entropy works.

## **Entropy**

Before moving forward, let's define entropy. Ludwig Boltzmann described it simply as "missing information," however, there are more aspects to this concept that we can apply to analyze Yamashita's novel. For example, entropy is also:

1. a thermodynamic quantity representing the unavailability of a system's thermal energy for conversion into mechanical work, often interpreted as the degree of disorder or randomness in the system.
2. the second law of thermodynamics says that entropy always increases with time
3. lack of order or predictability; gradual decline into disorder.

Applied to *Through the Arc*, we considered the world created by the novel as a closed system, which enabled us to identify entropy as the way in which characters use Matacão plastic, the plastic itself acting as *generating substance* of the root metaphor (to be explained later). Of course, the characters' intention is not to create chaos, to increase entropy. Quite the contrary: they aim to find a purpose to this raw material, if anything, they are trying to create order. They either want to cure the world, make money, or generally have some sort of benefit from the use of this newly discovered material. We could say that they are trying to use it in order to pave the way to a better world, a utopic one even. But because of lack of information, they achieve the opposite. Using this plastic without fully understanding its properties, makes them overly-rely on it, and causing total chaos when they are being stripped of it, because in the end, anything and everything that had been made of, or contained Matacão plastic, simply disintegrates, unexpectedly being eaten from the inside out by bacteria. To create a more vivid image, keep in mind that they had used it in making buildings, clothing, prosthetic limbs, facial rebuilds, even Matacão plastic hamburgers and French fries for consumption. So by the end of the novel, it quickly becomes apparent that unbeknownst to them, they had all contributed to the realization of a nightmare, a proper dystopia.

Matacão and the plastic it produces stand for lack of order. The fact that it is used without fully understanding it, shows the effects of missing information, the lack of predictability and it also leads to a gradual decline into disorder. We could say that Matacão plastic is the degree by which we can measure disorder in the system (in our case, in the novel): the more Matacão plastic, the bigger the chaos. So entropy here is the quantity of Matacão plastic used by the character, the level up to which it infiltrated their lives.

### **Root metaphor**

As defined in Merriam-Webster dictionary, the root metaphor is "a fundamental perspective or viewpoint based on a supposition of similarity of form between mental concepts and external objects which though not factually supportable determines the manner in which an individual structures his knowledge."

So a root metaphor can be an image, a narrative, or a fact that shapes or changes one's perception of the world. According to Eric Zencey, who first discussed entropy as a root metaphor, *successful root metaphors generate world hypotheses with a high degree of structural corroboration.* (Zencey 1990: 188)

We are not going to stress too much the *structural corroboration*, as we are not applying the concept to a practical field, but to a piece of literature. However, we are going to look at how entropy generates world hypotheses in the closed system of the novel.

## **Entropy as root metaphor**

In his book, *World Hypotheses*, Stephen Pepper first talks about root metaphors, defining and classifying them according to different archetypes (which we will not describe further, so as not to divagate). At one point, he finds that pre-Socratic philosophies are based on root metaphors of *generating substance* (i.e., a fundamental element that gives rise to all things). Eric Zencey builds on this theory and states that entropy can just as well be seen as a variant of this theory, with energy being its generating substance.

In our case, the generating substance of entropy as root metaphor is Matacão plastic, since it is the element that triggers and fuels the plot, it is the energy that literally depicts the second law of thermodynamics, degrading from useful to less useful, shifting work potential from free to bound, but never allowing entropy to decrease within the closed system, as explained by Zencey:

*In one of its more accesible guises, the second law of thermodynamics holds that energy spontaneously degrades from more useful to less useful forms, even if it accomplishes no work in the process, and that in any transformation of energy [...] some part of the energy is irretrievably lost to us. [...] In an entropic process what is at first "free" energy ("free" in the sense of available to do work) becomes "bound" energy (energy that [...] cannot be used to accomplish work). (Zencey 1990: 188)*

So entropy is a root metaphor, and the way it changes the world hypothesis of the novel is in the end of the novel, by facing the characters with the result of their actions. Their overindulgences, their readiness to worship, and their willingness to blindly trust a technology they don't understand lead to destruction. It changes their viewpoint from "anything goes," to a more cautious "what if it's wrong?" or "what else should I know about this?" Unfortunately, not all characters live to have this epiphany.

## **Japanese cultural elements & their influence in the novel**

The Japanese cultural elements and their role in the way this root metaphor shapes up are not obvious at first. The fact that it is written like a South American telenovela, and it abounds in lighthearted jokes make for a very entertaining reading, which in turn makes it easy for the reader to overlook certain details or nuances that the author did not include by chance. For example, once you get into the heart of things, it is easy to even forget that the whole action started in Japan. Only very little of the plot is set elsewhere than in Brazil: the beginning in Japan, containing the origins of the narrating ball and Kazumasa, and the episode where we are introduced to JB, that is set in New York. So Kazumasa and JB are the only two characters we meet outside of Brazil, and both of them have a key role, being not only individual characters, but representing typologies of their native lands.

As a result, JB Tweep is the head of a corporation. He has three arms, meaning that he can do a lot more than the average person, but he also has more hands with which to grab and hold. His goal is not necessarily to become rich for the sake of it, but rather to expand and conquer. While in the US, he is not described as a greedy type, but as a doer, as one who is eager to grow, try new things, and change the world. As soon as

he arrives in Brazil and is faced with the untapped business potential of Matacão, he immediately becomes obsessed with it, trying to use this fabric for absolutely anything. He is blinded by his need to possess and subjugate Matacão and its miraculous powers.

In turn, Kazumasa gives us a different kind of typology: your regular *salaryman*. Although he doesn't do a desk job, he is that particular stereotype: he just wants to go to work, do a good job, earn his living, go back home, and maybe sing some karaoke somewhere in between. Even when moving to Brazil and becoming extremely rich, he doesn't overindulge, overspend, or do anything reckless. He also represents the technologically developed country, which (at least at the time the novel was written) goes hand in hand with pollution. The more developed the country, the more consumerist, the greater the waste, especially in plastic. His employer in Japan fires Kazumasa and replaces him with a piece of machinery – that is also the sign of such a country. Also, the fact that the narrating ball, which is, as it turns out, made of Matacão plastic (meaning an accumulation of waste from all over the world), hits Kazumasa in the face and stays attached to him, is also revelatory. It is as if he stands for all the people from developed countries who produce(d) plastic waste in excess, but are oblivious to it. They become accustomed to, what ultimately is rubbish, right under their noses, to the point that they become emotionally attached to it. Moreover, this becomes a model to be emulated by technologically underdeveloped countries. We can see this in the novel with Kazumasa and the Brazilians. Kazumasa is an exotic appearance in Brazil, doubled by his tiny satellite. As soon as he becomes known to the locals, some start to imitate him by attaching small globes to their heads with string.

So Kazumasa and JB Tweep are the silent influencers. They each act in their own ways, but they are the doers. The Brazilian masses are the loud ones, and also the ones being influenced. The Japanese and American (technologically developed) are the doers, the Brazilians (technologically underdeveloped) react to the doers. Ultimately, Kazumasa and JB Tweep are the triggers to the fact that Matacão plastic starts being used.

All the Brazilian characters involved in promoting Matacão plastic fall under the influence of one, or the other. Chico Paco's pilgrimages are endorsed by Kazumasa, while JB Tweep hires Mane Pena, the healer, and sends him on tours to talk about the healing feathers.

The only ones that act on their own are Batista and Tania Aparecida DJapan. However, they represent something different altogether. The nature of their relationship and their last name leads us to believe that they represent the way in which the second generation Japanese-Americans relate to their motherland in Yamashita's conception.

## **Conclusion**

In the end, we have shown that entropy is a root metaphor, but also a valid literary tool. Moreover, I believe that it is in literature where entropy appears much more clearly as a root metaphor. *Through the Arc* is a good example in this regard, especially due to its magical realist traits. However, it is our opinion that it being a magical realist novel only makes it easier to identify entropy within its system; that is not to say that

entropy cannot be applied when discussing other types of literature. But coming back to *Through the Arc*, we have seen that the novel is the closed system, the magical Matacão plastic is the generating substance, while the characters' frantic attraction to Matacão and the drive, the energy behind their actions is the entropy. Without their intention to act the way they do, nothing would have happened. But their desire for more only grows in time (2nd law of thermodynamics), which in turn establishes the degree of the final destruction (the greater the desire, the greater the chaos, leading to entropy). Not knowing exactly what Matacão plastic is also implies the lack of predictability (which equals entropy), and it also leads to decline into disorder (entropy again). Needless to say, entropy shifts the way all characters view the world. Kazumasa alone is completely dephased by the loss of his beloved ball, and has to learn how to function without it, for example. But most importantly, we believe that the root metaphor in this novel has the power to shift the reader's viewpoint on technology, the way we use it and its effect on the environment.

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