



Malabouian Plasticity in Porochista Khakpour's The Last Illusion

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Abstract

Malabou's concept of brain plasticity incorporates themes of fluidity and metamorphosis. It explores the dynamic relationship between human beings and the world, offering new perspectives on the boundaries of human identity. Although [Porochista Khakpour's \(2014\) *The Last Illusion*](#) has been examined from various perspectives, it has yet to be explored through the lens of plasticity. Thus, we aim to offer a Malabouian reading of *The Last Illusion* by applying the concepts of "trauma", "reparative plasticity", and the "neuronal self". We argue that changes in Zal's actions and thoughts suggest that his identity is a plastic entity—constantly changing and evolving. Zal's display of both human and avian characteristics highlights the adaptability of the neuronal self and its influence on his identity. The findings of this study highlight the metamorphic power of trauma. Furthermore, the findings suggest that the blurring of boundaries in Zal's brain is possible because the brain is a plastic entity, capable of delocalizing and reconfiguring neuronal connections through interaction with its environment. Zal's acquisition of self-awareness and self-acceptance stems from the brain's capacity to grow and change through the delocalization of neuronal networks and its flexibility in adapting to new experiences and memories. This also illustrates Zal's exercise of agency over his own identity, reflecting a sense of indeterminism grounded in brain plasticity and a movement toward empowerment.

Keywords: Catherine Malabou, identity, trauma, plasticity, Porochista Khakpour

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Introduction

Brain plasticity, also known as neuroplasticity, refers to the brain's ability to change, develop, and reorganize itself throughout an individual's life. It highlights the brain's dynamic nature and capacity for transformation. Understanding brain plasticity is essential for unraveling the mysteries of learning, memory, recovery from injury, and even the nature of human identity. According to Victoria Pitts-Taylor, "[t]he plastic brain is ontogenetically shaped in dynamic relation with its environment" (2015, p. 17). Similarly, Norman Doidge's findings on the developing and flexible nature of the brain show that "[t]he brain [changes] its very structure with each different activity it [performs], perfecting its circuits so it [is] better suited to the task at hand" (2007, p. xviii-xix). Both Pitts-Taylor's and Doidge's understanding of plasticity suggests a creative and positive transformation; yet, there are other perspectives in the realm of neuroplasticity not touched by either of them. Catherine Malabou offers a more nuanced theorization of brain plasticity by addressing its positive and negative aspects. The versatility of the idea of brain plasticity makes it possible to apply it to a variety of different realms. For example, Azadanipour, Maleki and Haj'jari (2022) use the concept of plasticity to suggest the existence of infinite realities and assert that "Toth's 'historioplasic metafiction' thus base [*sic*] reality on 'plasticity' in the course of time, allowing the freedom of thought and expression in different realities and flexibility of the past to be" (p. 257). The concept can also be applied to the realm of literature to flesh out how identity is shaped. Poro-chista Khakpour's (2014) novel, *The Last Illusion*, offers an engaging read on the ways Zal's character is formed as a result of various experiences of his life.

Poro-chista Khakpour is an Iranian-American author renowned for her insightful exploration of identity and belonging; her works often investigate themes of displacement and trauma as illustrated in her debut novel, *Sons and Other Flammable Objects* (2007). *The New Yorker* describes it as a well-written novel that adeptly examines "ethnicity, nationalism, and post-9/11 fear" (2007, para. 1). Another notable work of hers is *Sick: A Memoir* (2018), which Khakpour's webpage characterizes as "[a] story about survival, pain, and transformation" (Sick, n.d., para. 5). Additionally, Ann Tashi Slater praises Khakpour's collection of personal essays, *Brown Album: Essays on Exile and Identity* (2020), for its exploration of "alienation and the search for home" (2020, para. 1). Her most celebrated work, *The Last Illusion* also delves into the subject of identity formation.

The Last Illusion is Khakpour's imaginative reworking of *Shahnameh*, the famous Persian epic. It tells the story of Zal, an albino boy born in a rural Iranian village, whose mother sees him as a demon due to his unusual appearance. Ashamed of her son's physical abnormality, she locks him in a cage with birds. Growing up with no human contact until he is eight years old, Zal develops bird-like behaviors and features. After being rescued by Anthony Hendricks, a child psychologist and feral children researcher, Zal is brought to New York City, where he struggles to adapt to human society. Hendricks and his friend, Dr. Rhodes, work hard to help Zal adjust and learn the social norms. Zal meets Asiya McDonald in New York, an artist with whom he falls in love. She encourages him to embrace his uniqueness. While

Zal attempts to suppress his bird-like traits to fit in, he faces an existential crisis, made worse by Asiya's warnings of an approaching apocalypse. This internal conflict leads Zal to isolate himself and do things that he thinks would make him similar to a normal person. The novel explores themes of identity and the power of self-acceptance, as Zal learns that embracing both his past and present, his uniqueness and similarity to those around him is the true definition of being a "man".

Literature Review

Khakpour's *The Last Illusion* has been examined from a range of critical perspectives. [Khanam, Rashid and Ahmad \(2022\)](#) read the novel as a post-September 11th fiction and argue that it offers the author a way to express "the horrors of culturally traumatic boundaries", and to build "a third space for harmony" (p. 3406). They suggest that the novel aims to bridge the gap between First- and Third-World identities. Accordingly, it can "foster a feeling of civic equality in American culture" to calm down the chaotic society there (p. 3410). [Keshavarz Shal \(2018\)](#), in her thesis, which compares *The Last Illusion* with Zadie Smith's *White Teeth*, employs Pierre Bourdieu's notions of habitus and Homi Bhabha's concepts of cultural hybridity, third space, mimicry and identity formation to argue that ethnic identity cannot be understood without considering the social class (p. 3). She asserts that the colonial discourses continue to marginalize non-Western identities as they reinforce European superiority. Similarly, [Jafarnia \(2019\)](#) uses the same ideas of Homi Bhabha's cultural hybridity, third space, mimicry and identity formation, as well as Bourdieu's habitus to argue that the novel presents immigrant identity as a "structured social class", where characters "are treated with a continuous and sustainable relationship with the inequalities" (p. 83). He adds that this social field is a "battlefield" to either preserve or transform the power (p. 83). Elsewhere, Keeble reads the novel by drawing on magical realism. He contends that the novel offers correctives to the belief that "American 90s was a time of stability, innocence and optimism" which abruptly got punctured by the accident of September 11th, and the meanings it brought with itself ([2022, p. 3](#)). Moreover, he reveals that the experience of the end of the world in *The Last Illusion* works "as an evocative way to consider the experience of otherness in New York and America in the 90s" (p. 12).

There are also studies that have explored the novel's connections with Persian mythology, especially *Shahnameh*. [Yusefabadi and Fatollahi \(2025\)](#) review the impact of *Shahnameh* on the novel through a comparative analysis by using Rene Wellek's ideas. They argue that the traces of *Shahnameh* can be seen in "themes, motifs, and plots" in the novel (p. 16). The findings suggest that by retelling the story of *Shahnameh*, Khakpour establishes "a connection between her nostalgic past and the modern world in which she lives" (p. 17). In her review of the novel in [2014](#), Hermione Hoby introduces the characters and notes that what Khakpour does is a "reimagining of one of the most famous tales in the *Shahnameh*" as Zal, the character of *Shahnameh*, has white hair that frightens his parents (para. 5). She also points out that the novel is more about "falling rather than flying" (para.

9). Hoby ends the review by reporting that the story of Zal as a bird boy to a boy who is adapted and raised by a New Yorker to be normal shows us that we as human “must undertake the dogged, daily and lifelong work of becoming human beings” (para. 10). Manuel Gonzales (2014) has also reviewed *The Last Illusion* in *LA Times* where he argues that it is one of the best 9/11 novels in capturing the “contradictory sense Americans have of how easy and trivial life was before the attack” (para. 13). He highlights that the characterization of Zal is informed by the Persian epic, *Shahnameh*. Yet, he is no warrior like the Zal from *Shahnameh*. Rather, he is “battling against self-doubt, indecision and his own inability to be normal” (para. 11).

These studies have offered significant findings regarding the main character in *The Last Illusion* by looking at it through various lenses. However, Zal’s bird-man traits have surprisingly remained under-researched. This novel offers a nuanced representation of identity formation, which can also be studied from a neuroplastic approach through a detailed observation of Zal’s thoughts and actions. Thus, drawing on Malabou’s theoretical framework, we argue that the various changes in Zal’s actions and thoughts present identity as a plastic entity—constantly evolving and reshaping itself. In what follows, we introduce the theory on which we draw to read the novel, and then we flesh out traces of trauma in Zal’s life and his mind’s reparative plasticity. The second part of the analysis examines the neuronal self in Zal’s character and his dual identity.

Method

As Kouppanou (2020) declares, Malabou is regarded as a “philosopher of change” because of her extended studies on “the nature of transformation, its mechanics and milieus” (p. 1970). In her book, *Ontology of the Accident: An Essay on Destructive Plasticity*, Malabou draws an analogy between one’s identity and a snowball. This snowball changes in shape and size by various events in one’s life; she describes the two forces responsible for these changes by saying “[s]ome metamorphoses disrupt the snowball that one forms with oneself over lived time, that big round ball: full, replete, complete. These strange figures rise out of the wound, or out of nothing, an unhitching from what came before” (Malabou, 2012a, p. 2). The theoretical framework of Malabouian plasticity, therefore, is used to explore the implications of neuroscientific findings on our understanding of subjectivity, identity, and the nature of being. This study makes an important contribution by presenting the possibility of applying Malabou’s concept of brain plasticity to the field of literature. We aim to look at Zal’s identity and his brain’s structure by deploying Malabou’s theorization of destructive and creative plasticity. We apply a content-based interdisciplinary analysis to examine Zal’s actions and thoughts in *The Last Illusion* by utilizing Malabou’s concepts of “trauma”, “reparative plasticity” and “neuronal self”. These concepts are used to interpret the passages from the novel that portray the character’s thoughts and actions, the changes in both, as well as the development of his identity.

Discussion

Examining Zal's Trauma and Reparative Plasticity

As Malabou writes, “[t]he word ‘trauma’ in Greek means ‘wound’ and derives from *titrosko*, which means ‘to pierce’” (2012b, p. 6). She maintains that trauma “designates the wound that results from an effraction—an ‘effraction’ that can be physical ... or psychical” or simply, from an explosive accident (2012b, p. 6). An explosive accident is also defined as any physical or mental trauma that inflicts the life of an individual and produces the metamorphosis of someone who has become unrecognizable to the people who already knew them (Malabou, 2012b, p. 6). For destructive plasticity to occur, there is a need for a trauma to split the life into two parts: before and after the event, so that the “change of the personality” can take place (Malabou, 2012b, p. 15). Malabou considers trauma a qualified force that can cause metamorphosis to take place, resulting in the identity of the traumatized person being changed or lost. In a conversation with Reshe (2023) regarding destructive plasticity, Malabou states that the concept of trauma can be applied to “all kinds of traumatized people, including socially traumatized people, excluded people, but also people suffering from any kind of what I call ‘social traumas’... , including natural phenomena like natural catastrophes that ... appear as social catastrophes” (p. 49). Williams (2013) views Malabou’s definition of trauma as a “radical reformation,” one that Malabou initiates by awakening discourses rooted in the Enlightenment tradition (p. 9).

Zal’s childhood experiences in the cage resonate with Malabou’s metaphor of “cutting the thread of life” (2012a, p. 6). The explosive accident that pinpoints Zal’s trauma is his experience of being raised in a cage for the first eight years of his life. When Zal’s sister meets with him, it becomes clear that humanity is lost in the pitiful creature in front of her; “[S]quatting, motionless, eyes closed, suspended in a cage that was so small; he looked almost bound in a wiry eggshell, like a tiny, half-dead child embalmed in a womb-jail” (Khakpour, 2014, p. 6). An explosive accident is similar to a shock, which “forces open or pierces a protective barrier” (Malabou, 2012b, p. 6). In other words, an explosive accident is like removing the safety pin from a grenade—it leads to trauma. Malabou describes the life of individuals after experiencing such an accident thus:

You could say: ‘nothing’ ... They do not look like nothing because ‘nothing’ is a word that still resembles itself too much. It is one of those ontological inventions that says being backwards, and that consequently speaks of a way of coinciding that, even paradoxically, participates again in identity. Actually, ... [they] look like less than nothing. (2012a, p. 71)

Zal’s condition of being raised in a cage reflects the effraction Malabou discusses. It evokes a state of nothingness and the consequences of ‘throwing the grenade’ by portraying Zal as an embryo with closed eyes, confined in a womb-like jail. This image functions as a concrete dramatization of destructive plasticity as it depicts the moment Zal’s identity is shattered and rewritten.

Zal's experience of being raised as a bird in a cage appears to be a traumatic event. Malabou argues that due to the pathological force of the explosive accident (trauma), the past life of the individual does not exist anymore; instead, it creates "another history" (2012b, p. 15). Zal's physical posture and his eating habits display the traces trauma has left behind on his body. When Mr. Hendricks comes to Iran and meets Zal for the first time, he realizes that Zal cannot talk or walk (Khakpour, 2014, p. 7). Mr. Hendricks believes that "it would take years and years to get [Zal] to walk upright, to get him to straighten his arms, to get him to hold utensils, a pen, another human" (p. 10). These are some of the easy tasks that any person can do; yet the event of being raised as a bird has deformed Zal's body. His ability to talk is just as much as a bird does, as "Khanoom [his mother] had seldom spoken to him but apparently sang to all the birds and he could sing back as much as they could" (p. 9). Moreover, Zal is incapable of eating normal food and his diet consists of "only seed and water" (p. 10). Because of this diet, "[h]e was thin but not emaciated, definitely too thin, but not in a way that disgusted" (p. 22). According to Malabou (2012b), the brain of a traumatized person is associated with destructive plasticity, which causes "an absolute metamorphosis of the subject" (p. 68). This metamorphosis manifests as physical or mental damage that affects the individual's life, which explains why Zal's human body appears to be replaced by a bird-like form that struggles with basic human functions, such as standing upright or speaking. Indeed, it demonstrates how the destructive force of trauma reshapes the lived body.

Zal's body deformation can also be looked at as another consequence of trauma. Zal's height is one of the many body deformations that he suffers from: "He was five feet seven inches ... if he had grown up under normal conditions, he'd be well over six-two" (Khakpour, 2014, p. 22). The other distinction is his skin which "was pale and was prone to irritations—burns, eczema, acne, the works—but nothing so different from the usual blemishy human" (p. 22). Moreover, "his skin could not endure normal clothing, and would not for many years" because he has not worn any clothes since he was an infant (p. 10). These alterations indicate the way the traumatic effraction re-organizes Zal's entire bodily structure, as it creates a form that no longer aligns with normal human development. Zal slowly sheds his human physical traits as he transforms more into a bird. These changes alter him and alienate him from himself as a human. According to Malabou (2012b), destructive plasticity possesses "the power of creation *ex nihilo*, since it begins with the annihilation of an initial identity" (p. 68). All these physical distortions, as well as Zal's embodiment of avian habits, serve as evidence of the destruction and re-creation that follow destructive plasticity, showing how trauma creates a new identity entailing the loss of Zal's former human identity.

As Doidge (2015) points out, the problems caused by trauma are either due to the brain becoming 'miswired' by an external source or to its being 'undersupplied with sources' (p. 108). It is only because of the plasticity of the brain that it can "alter the connections between the neurons and to change its 'wiring'" (p. 109). Reparative plasticity is understood as the response of the brain to the destructive force of the trauma and destructive plasticity in general. In other words,

this plasticity only occurs once the brain is damaged as an effect of destructive plasticity, and the brain is trying to minimize the damage, and heal itself. According to Malabou, trauma and reparative plasticity have a cause-and-effect relationship. Reparative plasticity consists of two processes: neuronal renewal or secondary neurogenesis and the brain's ability to compensate for losses caused by lesions.

In the same vein, Zal's verbal and mental improvement can be analyzed by drawing on reparative plasticity. According to the narrator, it was believed that "language would not come to him, would never come to him; by the time Zal was fifteen he could speak and read on the level of a ten-year-old" (Khakpour, 2014, p. 21). Also, there are revealing passages about his progress during the therapeutic sessions with Dr. Rhodes; here is one illustrative excerpt: "'Am I a new man or something?' Zal joked. 'You tell me,' Rhodes said and smiled, a bit sinisterly. He wrote down immediate *levity* → *intro, comic greeting, a new thing*" (Khakpour, p. 164). This clearly illustrates that Zal has developed a good understanding of human language and communication. On another occasion, Zal states "'Look, shall I just spit it out?' 'Sure, a good use of our time,' Rhodes egged him on, scribbling *annoyance markedly heightened, bantering abilities also up*" (Khakpour, p. 165). Zal keeps surprising Rhodes with the change in his behavior. Malabou (2012b) explains: "The goal of such therapeutic processes—which combine the talking cure with the development of new adaptive behaviors ... is to renew cerebral connections. Such treatments spur new processes of growth that allow the brain to regain its lost plasticity" (p. 167). Indeed, the various tasks and questions that Dr. Rhodes challenges Zal with are aimed at provoking the lost connections to heal themselves.

Dr. Rhodes' asking Zal to repeat certain sentences also represents the influence of reparative plasticity on the brain reformation. In one part of the novel Zal talks to himself saying, "*I am a boy* ... and then, *I am a man*, he reminded himself. He was just that and that alone, he thought over and over and over, until it all sounded meaningless" to reassure himself (Khakpour, 2014, p. 23). At times when he doubts his normalcy, he repeats the same thing repeatedly: "for a moment he had the irrational worry the bird in him was bursting out. No. I am not a bird, he told himself, as he had told himself several thousand times before. *I am a man. Not a bird*" (Khakpour, p. 60). He repeats to himself that he is a man whenever he needs courage to do something he is not confident about, such as confessing his love to Asiya. "He went right ahead and told her—he was feeling so bold, bolder than ever, with her eyes all over him, all of him, a man, yes, he was a man, not a bird not a bird not a bird" (Khakpour, p. 133). As Malabou (2008) writes, "secondary neurogenesis [one of the two processes in reparative plasticity] also seems to permit a subject's personal experience to leave an imprint on the core of neuronal networks, in the form of regular morphological and functional reworking" (p. 27). In this manner, minor personal activities involving repetition and practice can help the brain repair itself.

Zal's physical and digestive progression prompts the brain's ability to regain its lost plasticity. When Zal first moves to New York City, Hendricks wants to show others that they are wrong to have no hope for his treatment: "They said his

body would forever remain deformed—but nine surgeries later, Zal went from a walker to standing upright on his own, with aches and pains and inflammation not so different from those of someone with MS” (Khakpour, 2014, p. 21). His digestive system also improves with the passage of time: “he had a sensitive digestive system and for years could tolerate only a bland diet of bread and rice and dull fruits and vegetables ... As time went on, he began to indulge in the edibles of everyday life” (Khakpour, p. 24). These examples show us the processes by which reparative plasticity attempts to treat the consequences of trauma by “the power of *healing*—treatment, scarring, compensation, regeneration, and the capacity of the brain to build natural prostheses” (Malabou, 2008, p. 27). Zal’s digestive system and general body posture begin to take a new form considering the new environment and living situation he is in, and this is all due to the self-repair nature of the body and the brain.

The emergence of Zal’s emotions depicts the progress of reparative plasticity as well: “They said he would not be capable of experiencing human emotions, but Hendricks witnessed them all: the embrace out of nowhere he once or twice got, the welling of tears during frustrated episodes, *the fear the fear the fear*” (Khakpour, 2014, p. 22). Yet, there is no sign of him being successful in smiling. “Zal had cringed, Zal had grimaced, frowned, scowled, pouted, kissy-faced, even silent-scream-faced, but no smile” (Khakpour, p. 42). As is evident in a conversation between Zal and Dr. Rhodes, Zal develops a sense of embarrassment as well. “‘Zal, I need to just make sure: how do you know it’s sex? Are you sure you’re having intercourse?’ Zal turned red, and Rhodes wrote *registers significant embarrassment at idea of sex*” (Khakpour, p. 167). Zal is no longer the emotionless bird boy he had been before. He is healing and obtaining the normalcy that he wants. When numerous pathological factors interfere with brain functions — such as trauma or neurodegenerative disorders like Alzheimer’s — the brain strives to adapt. According to Malabou (2008), the affected structures attempt to resolve the disruption by either “modify[ing] themselves so as to compensate for the new deficit” or forming “a new and abnormal organizational schema” to regain normalcy (p. 28). Zal’s new ability to express his emotions is an example of reparative plasticity’s functioning, where the brain generates new neuronal connections which account for emotions. Thus, the lost plasticity of areas responsible for emotions is coming back.

Exploring Zal’s Neuronal Self and His Bird–Human Duality

Destructive plasticity refers to traumatic and destabilizing changes that can rupture identity, while creative plasticity involves constructive transformations that develop gradually throughout life. The neuronal self develops from creative plasticity, continually reshaping as the brain interacts with experience. As Malabou (2008) argues, the concept of neuronal self encompasses the three key notions of “network, delocalization and adaptability” together (p. 42). Network, which is also called “populations” or “assemblies”, refers to an assembly of connections of neurons that forms the cerebral organization (Malabou, p. 42); as a result, an image or a concept, a mental object, needs a “correlated, transitory activity” in a large population of neurons in different cortical zones, which like “discrete assemblies of

neurons,” form mobile and momentary centers to transfer the suppleness hand in hand (Malabou, p. 42). These networks have no function; instead, they work as “associative areas of the brain,” which get activated in various cognitive tasks (Malabou, p. 42-3). In other words, the brain must show its adaptability and flexibility to switch from one situation to a completely different one and adjust to it. Silverman (2010) discusses Malabou’s definition of the neuronal self and points out that, based on her conceptualization, “we are able to shape or sculpture ourselves, to overcome rigidities and limitations, so too a democratic society can develop, by further extension, in terms of its brain-like decenteredness and natural activity of self-forming,” which results in systems of “mutual support, freedom of choice, harmony and justice” (p. 96). Malabou’s definition of the concept and Silverman’s comments help us gain a clearer vision of why and how a positive and healthy brain is associated with fluidity, and how the brain’s plasticity directly influences the development of the self.

There are many passages in *The Last Illusion* that depict Zal as having bird characteristics. For example, Zal’s dream of flying appears as a sign of mobility of networks and the emergence of his hybrid identity in the neuronal self. Regardless of being traumatized by his experience of being kept in a cage as a bird, his heart desires to have wings and to fly: “Zal wanted to fly more than anything” (Khakpour, 2014, p. 60). Additionally, he is well aware that he does not want to go back to the cage; “he knew no part of him wanted to be back with the birds, back in the cages, back to the birdseed and the beaks and the water feeders and the messes”; rather, it was “the part he never possessed: wings” (p. 60). In addition to representing the enduring influence of Zal’s early life, his desire to fly also reflects the complex interplay between his past and present self, as there are still fragments of Zal’s past identity within his newly emerging identity as a human. Malabou (2008) explains, “[t]he primary qualities of assemblies of neurons are their mobility and their multifunctionality” (p. 44). Therefore, flying carries a history in Zal’s brain, and for the same reason bird-leaning characteristics might appear at times, making him resemble a bird. Due to the mobility and flexibility of the neuronal networks and the brain, Zal can shift between his two identities.

Similarly, Zal’s inner desires serve as an illustration of delocalization as a key feature of neuronal self. While Zal and Asiya are spending time together in Asiya’s art studio, which she refers to as a bird cage, she asks Zal to pose as what he most desires to be. “[H]e told her he would like to fly. And if he couldn’t exactly fly, he wanted the next closest thing. ... Real flight. ... [M]aybe something like that photo of hers, the one with the dead bird suspended by string” (Khakpour, 2014, p. 133). Before long, Asiya’s upcoming art gallery is full of pictures of Zal modelling like the dead birds in her old photos. This improves his sense of pride as he has had never been the “most important bird” (p. 142). Zal’s choice to embody bird-like traits in modeling reflects the fluidity of his identity by blurring the boundaries between human and avian characteristics. Malabou compares the brain and assemblies with a capitalist company and its members. Drawing on Boltanski and Chiapello, Malabou writes, in capitalism, “valued staff members are those who succeed in working with very different people, prove themselves open and flexible

when it comes to switching projects, and always manage to adapt to new circumstance” (Boltanski & Chiapello, 2007, as cited in. 2008, p. 45). The blurring of boundaries in Zal’s brain is possible because the brain is a plastic organ, able to shift and reorganize its connections in response to new experiences and stimuli.

Moreover, the formation and reformation of neural networks in the brain are accompanied by adaptability—another key feature of the neuronal self. Zal’s depression and the way he expresses his sadness through self-torture exemplify this adaptability. He is depressed because he has been fired from his previous jobs; therefore, he decides to try a job he has long avoided. It is at a fried chicken restaurant that Zal confronts his depression. He had long refused to enter because of his history with birds and the discomfort of handling dead chickens, which made him feel like a serial killer. He chooses to do things he normally avoids to torture himself and, in doing so, express his emotional pain. His new job at the restaurant involves washing, cutting, and frying chicken, which is his worst nightmare. “He entered the restaurant that he had avoided so effectively for years ... First step: he took deep breath after deep breath and almost relished the torture. It was worse than he thought” (Khakpour, 2014, p. 215). Khakpour describes Zal’s joy of torturing himself thus: “[h]e was slashing his wrists and finding a certain joy in it. Worse than its smell was the fact that they were not hiring” (p. 215). Malabou (2008) writes, “[t]he connections that constitute the anatomy of the mature brain are obviously not the result of chance or spontaneous arrangement; the migration of nerve cells and their adaptation to their targets are programmed” (p. 18). Adaptability enables the brain to form new synapses, strengthen existing ones, and, at times, repurpose neuronal circuits for different functions. In other words, the newly reorganized neuronal patterns, initially developed in the context of Zal’s upbringing, have become part of his cognitive and emotional repertoire. Therefore, this neuronal configuration emerges when he deals with complicated feelings such as sadness, depression, or experiences a mental breakdown triggered by an existential crisis. Zal’s depression over his inability to hold a normal job reflects the coexistence of his bird and human identities. As a result, he chooses a job he would typically avoid—one that is painful for him to confront both as a human and as a bird.

There are also some passages in the novel that depict Zal as having human characteristics, which indicate the adaptability of the neuronal self and its influence on his identity. Similarly, delocalization and adaptability in neuronal networks show their influence on the neuronal self by overcoming genetic determinism. These passages illustrate indeterminism in the neuronal self. For example, Zal’s sincere confession to his father about his secrets underscores the tension between determinism and free will in the neuronal self, highlighting his change in behavior over time. At the beginning, when Hendricks visits Zal, Zal tends to hide all the evidence that might lead his father to suspect that he is disobeying his instructions or behaving more like a bird than a man. However, after some time, he stops hiding the evidence of his avian characteristics and confesses to his father about his desire for insects, closing his eyes: “‘Those, these, they’re yogurt covered insects. Beetles” (Khakpour, 2014, p. 251). He continues: “‘I eat insects, Father,’ Zal confessed. ‘I’ve been doing it for years” (p. 251). Another confession Zal makes is that he has been

dating Asiya all this time, despite his father's disapproval: “‘And one more thing,’ Zal said. ‘Since, you know, I’m confessing.’ Hendricks held his break for a moment. ‘Go ahead.’ ‘I’m still seeing Asiya. She’s in the bathroom. Asiya!’” (Khakpour, p. 252). Revealing these secrets not only does not intimidate him, but, as a matter of fact, makes him relieved: “Zal nodded, more slowly, a sudden peace floating over him. ‘I think everything will be better from now on’” (Khakpour, p. 253). Malabou (2008) expresses, “to talk about the plasticity of the brain means to see in it not only the creator and receiver of form but also an agency of disobedience to every constituted form, a refusal to submit to a model”, which is possible by “our individual experience, skills, and life habits, by the power of *impression* if existence in general” (p. 6). This agency of disobedience in Zal is shown by his embracing the change in behavior and point of view. Hence, his new identity is not fixed; rather, it is fluid—a dynamic product of his neuronal plasticity interacting with his life experiences—neither fully human nor purely bird-like. These cases demonstrate Zal’s exercise of agency over his own identity, reflecting a sense of indeterminism and a movement toward empowerment.

Similarly, Zal’s change of attitude towards his past fears and obsessions suggests the perception of indeterminism in the neuronal self because of adaptability. Throughout the story, Zal overcomes some of his past struggles and fears, one being his fear of looking at his own reflection. “Sometimes he found himself uncovering mirrors and really looking at himself and really seeing himself and weeping” (Khakpour, 2014, p. 170). Another example is his attachment to birds. He lets go of the canary in the pet store he worked in: “Until one evening, during closing, whether he meant to do it or not, he took her out and let her go into the night sky” (Khakpour, p. 205). He frees the bird he adores, and at some point, has developed feelings for it, into the sky which symbolizes the beginning of his journey to become normal. Malabou (2013) points out, “emotional and affective mechanisms are not predetermined. Experience plays a major part in forming neural connections. These connections are highly modifiable—their shape change—which shows that the brain is not a rigid structure, closed in on itself” (Johnston & Malabou, p. 27-8). In other words, due to the indeterminate nature of the brain, the emergence of changes in behavior and beliefs is possible within the neuronal self; as a result, Zal can develop his identity by going through various experiences and reforming the neuronal connections in his brain. Yet, he must first adjust to his current life. This means that Zal needs to recognize the uniqueness of the life he has experienced and accept the bird side of his identity. This requires him to let go of the definition of a “normal” human that he once believed he had to become. Only after this process of acceptance and transformation is Zal able to demonstrate how the neuronal self’s indeterminism enables growth and change.

Accordingly, Zal’s self-awareness serves as a foundational step towards indeterminism by showcasing delocalization in the neuronal self. One of the brain’s main goals is to heal itself by reorganizing its network of neurons. Zal wonders how “he always came back to the same nagging thought: what was he waiting for? What was it? What on earth was *normal*?” (Khakpour, 2014, p. 293). Then he realizes something: “[h]e knew he was further away from it than he had been, or perhaps

thought he'd been, all along" (p. 293-4). The answer to his question about what it means to be 'normal' comes to Zal as he sees his own reflection in the huge mirror at the town: "He focused on the freeze-frame of what was actually in front of him, all that was still and frozen, with Zal at the center of it all, thinking one thing: *I exist. I am here. I am real*" (Khakpour, p. 316). In this way, he starts to form a new perspective about himself and his place in the world. This change in Zal can be explained by drawing on Malabou's theorization of delocalization as "making ourselves available, showing ourselves to be without attachment, ready to break old ties, to create new ones" (Malabou, 2008, p. 45). The various experiences Zal undergoes prepare him to come to terms with his unique identity. Malabou is right to argue that "every event coming from outside necessarily comes to affect homeostasis and calls upon 'another level of cerebral structure,' charged with transforming maintenance into a creative ability" (p. 74-5). She adds that homeostasis refers to "the maintenance of the system," which is the opposite of a self-generating system or "the ability to change the system" (Malabou, p. 74). Therefore, this act of questioning and answering demonstrates Zal's cognitive and emotional reconfiguration. Indeed, his brain is giving form to new patterns of thought and understanding to balance the new urge to redefine what it means to be normal with the old definition.

Zal becomes self-aware and accepts himself because the brain can grow and change. This happens as brain networks shift and adapt based on new experiences and memories. There are two incidents that touch Zal's heart and make him realize the way the human world works. The first moment occurs when Zal asks the prison officer what Asiya's room looks like. At that point, he realizes there is no real difference between the human world and the birdcage he once lived in. The officer responds, "It's like that. Cell blocks, cells. Nothing to see" (Khakpour, p. 297). But when the officer turns to open the door to retrieve Asiya, Zal describes the scene before him as "*row after row of cages*" (p. 297). Meanwhile, the second example sheds light on Zal's newly developed understanding of what it means to be a man; it no longer depends on physical similarities, but rather on something deeper—within a person's heart. This realization occurs when Zal sees his reflection in the mirror: "Zal had awakened to his own image, as if his own reflection had shaken him to consciousness. It was his face and body, but several stories high and wide and distorted ... that he looked more monster" (Khakpour, p. 316). In this moment, Zal understands that anyone marked by a feature that sets them apart from what is considered "normal" is destined to be separated from others. As a result, he begins to see himself not as a man, but as a monster—though in this context, being a monster is not necessarily a negative thing. Drawing on LeDoux, Malabou writes that a person's identity depends on neuronal configurations, as the essence of the self is restored in the formation and destruction of neuronal connections, as well as in the interactions between different subsystems of the brain (2008, p. 58). She adds that there is a relation between the "synaptic mechanisms of memory" and the "neuronal basis of the self" which helps individuals to adapt to new circumstances (p. 58).

Zal's final conversation with his father reflects the influence of his earlier experiences of delocalization and adaptability—rooted in his self-awareness and

self-acceptance—and culminates in the formation of a new definition of what it means for him to be ‘normal.’ Amidst the following conversation with his father, Zal comes to a new realization about himself: “‘I’ve never been normal and I’m never going to be normal,” Zal announced. “And really, did I want all that stuff? Love and my own home and a job and wife and kids and all that stuff?’” (Khakpour, 2014, p. 301). His father asks him if he is okay, and he replies, “‘I don’t know. But I do know that’s not the point. I know that doesn’t matter.” He paused again. “I know that now. So in a way, I guess I am okay’” (Khakpour, p. 302). Malabou (2008) writes, “we *live*, what in many respects we make—our brains, which are, once more, our work, fashioned throughout a whole life within the intimate experience of the outside” (p. 37). In this passage, Malabou explores themes of formation and modification, emphasizing the indeterminacy of the neuronal self. She also highlights the importance of external factors, such as environment and experience, in shaping the brain. Consequently, Zal’s candid reflection provides evidence that he is entering a new phase of change and becoming, where his neuronal connections take on a new form after undergoing a variety of life experiences.

On this account, the concept of the neuronal self leads to the formation of what is called a mental object. Malabou (2008) defines a mental object as an “image or concept” (p. 42). These can include “visual images, auditory images, tactile images, and so forth—images that can convey any object, any relation, concrete or abstract, any word, and any sign” (Malabou, p. 61). Such images are produced through the dynamic flow and transition of neurons within networks, shaped by processes of delocalization and adaptability. These processes carry history formed by memories and experiences. The last sentence of the novel is regarded as a trace of a mental object, representing all of Zal’s past efforts and experiences as an individual striving to appear normal. Throughout the novel, it is repeatedly mentioned that Zal gradually acquires human traits that make him seem more like a typical person and less like the feral child raised by birds—except for one thing: his inability to smile like everyone else. Thus, when the novel ends with the line, “Zal Hendricks was smiling,” it signifies that a refined version of Zal has emerged—one who is now more like a typical man (Khakpour, 2014, p. 319). However, it takes many years and countless failed attempts for Zal to reach this point. Malabou (2008) notes,

To exist is to be able to change difference while respecting the difference of change: the difference between continuous change, without limits, without adventure, without negativity, and a formative change that tells an effective story and proceeds by ruptures, conflicts, dilemmas. (p. 79)

If every attempt were to lead directly to the intended outcome, then would that truly reflect the ideas of freedom and indeterminism that Malabou’s concept of brain plasticity describes? To embody these ideas, there must be rupturing, detours, and failures. Although Zal eventually succeeds in smiling, his earlier inability to do so highlights the uncertainty and indeterminacy at the core of his transformation. Smiling, then, becomes a metaphor for Zal’s evolving understanding of what it means to be a normal man. It represents the multiple definitions he has formed—

shaped by the repeated reconfigurations of neuronal networks that occur through creative plasticity.

Conclusion

The application of Catherine Malabou's theory of brain plasticity to *The Last Illusion* highlights the fluidity of identity. As the findings suggest, the power of trauma lies in its ability to transform; it reshapes the past, allowing a new life to begin for the traumatized individual. Zal's emotional detachment and his struggle with various illnesses serve as one example of this metamorphic process. Following Dr. Rhodes' use of behavioral therapy, the signs of healing that appear in Zal demonstrate that the brain is a flexible structure, open to change and modification. The concept of brain plasticity challenges traditional views of strict localization, in which specific cognitive functions were believed to reside exclusively in particular brain regions. Indeed, brain plasticity rejects the idea of the brain as a fixed and rigid structure; rather, it emphasizes that the brain is constantly undergoing changes to adapt more effectively to its living conditions. Zal's gradual verbal and mental improvement, along with his growing ability to express emotions, illustrates the power of brain plasticity in its destructive, reparative, and creative forms. His embodiment of both human and avian characteristics further reflects the delocalization and adaptability of neuronal networks of the neuronal self and its influence on the formation of identity. Therefore, this study invites readers to reconsider the boundaries of selfhood, and to embrace the plastic nature of our neurological existence as a source of empowerment and renewal.

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