Capgras Syndrome and Brain Plasticity
in Richard Powers's *The Echo Maker*

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[online presentation version]

*The Echo Maker* is an eco-neuro-novel exploring the synaptic mechanism of the brain and the mental state of the protagonists in terms of memory, (mis)identification and the environment. The five-part structure of the novel follows the five lines of the note, which serves as a riddle to be solved in the novel.

The novel opens as a subplot with a special family of cranes—the sandhill cranes—a megafauna on the Platte river, and the main plot of the narrative revolves around Mark’s car accident outside Kearney, Nebraska, which leads to his brain damage and a conspiracy against the preservation of sandhill cranes and conservation of their habitat. However, the story of sandhill cranes and the story of Mark’s accident are entangled.

There are two critical lines of thought concerning *The Echo Maker*. The first one is ecocritical. Laura Beiger regards *The Echo Maker* as a “belonging” narrative (197), an approach not unlike Jeffrey Williams’s comments that Powers expresses a predilection for place-based imagination (Harris 231).

Another group of critics are neuro-critical, such as Jason Tougaw, Valeria Gennero, and others. They put Richard Powers’s *The Echo Maker* in the same cluster of neuronovels with Ian McEwan’s *Saturday* and Tom McCarthy’s *Remainder* because these texts can be reread as neuronarratives in the context of neurosciences.

And my critical take is to blend the two major narrative threads—the migration of sandhill cranes and Mark’s cerebral wound—in terms of Catherine Malabou’s notion of plastic materialism, especially the plasticity of the newly wounded Mark who is caught between a neurologically induced radical revisioning of the world and a search for constancy of subjectivity. For Malabou, the notion of plasticity welcomes the possibility of the accident because it is a mediator of change as well as a mode of living that is becoming.

My paper is divided into three parts:

**Part 1: A Tale of Two Brains**
In the *Believer* interview, Alec Michod reports that Powers’s *The Echo Maker* was inspired by the sight of a carpet of Sandhill cranes during a visit to his mother when passing through “central Nebraska around sunset” (232). In this novel, the narrator anthropomorphizes these sandhill cranes. Characteristically, sandhill cranes are loyal, faithful and monogamous, having “gray bodies, necks, and heads, and a bare patch of red skin on the top of the head.”

In Powers’s hands, sandhill cranes are always among humans, but never of humans: they belong to different temporalities. Sandhill cranes are ancient creatures living in a time anterior to human civilization. Biologically, the cranes have a “prehistoric” sound (422); they are “the oldest flying things on earth . . .” (3). Moreover, the cranes are associated with “the fossils” (4). They live in a world that belongs to deep time, a world in parallel with humans.

While sandhill cranes follow the map in their brain for wintering, Mark’s sense of self has changed due to the brain damage he suffered in a car accident on February 20, 2002. The defect in brain functioning provokes inappropriate mental representations of self and others. Dr. Hayes notes that “The brain [is a] mind-boggling redesign,” and that we still don’t know what the brain can do: “We don’t see any explicit damage. . . ., but we did see some spiking in the amygdala, where some of the negative emotions, like fear, start” (17).

Mark’s unconscious response tells him that Karin is “an actress who looked very much like his sister,” which traumatizes Karin (60). After many tests, Dr. Hayes eventually confirms that Mark is “manifesting a condition called Capgras syndrome.” (60).

Capgras syndrome, first reported by Joseph Capgras and his associate in 1923, is an uncommon delusion in which the patient falsely believes that his or her close relative has been replaced by a double or imposter. According to their observation, this delusional misidentification includes the following symptoms: (1) the patient sees a double; (2) there would be numerous imposters; (3) persecutory imagination; and (4) bodily or facial changes (372).

In *The Echo Makers*, there are a plethora of examples that characterize Mark as a Capgras sufferer. He looks at Karin as “an actress” (60). She is, in effect, a “Kopy Karin” or “Karin Two” (391). He misidentifies his sister: “He knows he has a sister. He knows all about her. He says she looks just like [Karin]. But [Karin is]
not her” (102). At other times, he wonders “where my sister is” and becomes paranoid (64), “curs[ing] everything that moves” (86, 278, 386). Mark expresses no doubts or misgivings when he misidentifies her as a double and an imposter (32, 279).

In The Echo Maker, the two types of brains—the birds’ brain and the human (Mark’s) brain—has one commonality: both brains are plastic. If The Echo Maker is a tale of two brains, it means two different tales of brain plasticity. The narrator here suggests that the birds’ journeying and the human’s quest for home are the same. In other words, the narrator anthropomorphizes the cranes’ migratory behavior and ornithologizes the human behavior. For Powers, the mindset of the human is not unlike the birds’, especially Mark’s health state being likened to the cranes’ recurrent journey.

Part 2: Brain Plasticity

In The Elusive Brain, Jason Tougaw claims that plasticity is the core idea of the neuronovel, meaning a type of brain narrative “conceiv[ing] the physical brain as central to the stories they tell, the conflicts they plot, and the characters they portray” (3). Plasticity refers to “the ability of the body schema to form itself and to compensate after wounds or impairments” (Malabou, “Phantom Limb” 46).

Writing plasticity also means both writing the self and writing the brain. Plasticity dramatizes the possibility of change, transforming all the characters into new selves, including sandhill cranes. In the face of extinction, these sandhill cranes need to find a way out. Similarly, Mark, being newly wounded needs to adapt to his new self as a Capgras syndrome sufferer. Per Karin’s request, neuropsychologist Dr. Weber flies to Kearney to treat Mark’s Capgras syndrome. As a renowned author of three books, he dares challenge “the solidity of the self” because the self is “not one, continuous, indivisible whole, but instead, hundreds of separate subsystems . . .” (171). In Wider Than the Sky, Dr. Weber argues that our mental space is “larger than anyone can think. A single brain’s 100 billion cells make thousands of connections each” (93). Dr. Weber here seems to suggest a synaptic self whose consciousness makes connections between the individual and world.

Part 3: Plasticity and the Care of the Self/Cell

In an interview with Stephen Burn, Powers points out that The Echo Maker is “a little more triangular, with Karin as the middle term. I sure wouldn’t want to overdo this analogy, but you could think of this trio of central protagonists as a little bit like
MacLean’s triune brain—one part reptilian, one part limbic, one part cerebral, and all parts improvised, interdependent, perpetually revised . . .” (178, emphasis mine).

Our brain is plastic. The word “plasticity” signifies a triple meaning: (1) the creation of a form, (2) the explosion of a form, and (3) the formation of a form of flight: the becoming-other. Plasticity denotes an individual’s “inherent capacity to remake herself” (Plastic Materialities 9); hence, it is malleable, non-claustrophobic, non-deterministic, and modifiable [or persistent] “open to external influences and affects” (Self 28).

Now my Conclusion:

The ancient Greek ekheo means “to make noise,” “to resound,” and “to return a sound” . . . . In The Echo Maker, Powers pushes the reader to think about the tension between different interest groups; the intention of the characters, human and nonhuman; and the contention among friends and family members. He uses the term “echo makers” to describe those characters impacted by Capgras syndrome.

To conclude: “Echo maker” is originally a term for the nonhuman, but it was later used by Richard Powers to describe the human ecologically and neurologically.

KEYWORDS:
Richard Powers’s The Echo Maker: a novel
Neuronovel: the novel that studies the brain
Econeuronovel: the novels that studies the brain and its plasticity as the source of the self in relation to environmental issues
Joseph Capgras: a French psychiatrist who is known for the Capgras delusional case.
Capgras syndrome: delusional misidentification
Dr. Hayes: a young neurologist in the novel
Dr. Weber: a well-known neuropsychologist in the novel
Amygdala: Amygdala is regarded as a component of the limbic system; it also plays important roles in emotion and behavior.
Catherine Malabou: a French philosopher
Anthropomorphize: to attribute a human form or personality to
Ornithologize: to look for or study birds in the wild
MacLean’s triune brain—one part reptilian, one part limbic, one part cerebral
Jason Tougaw’s The Elusive Brain: a monograph that analyzes neuronovels
Capgras Syndrome and Brain Plasticity
in Richard Powers’s *The Echo Maker*

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Abstract: Richard Powers’s *The Echo Maker* is a neuro-narrative of recovery in which Mark Schluter’s brain damage caused by a car accident results in Capgras syndrome, meaning “a delusional misidentification disorder.” Though Mark physically recovers from his injuries, his sense of reality is reversed: whatever is genuine becomes fake. In order to help restore her brother’s health, Karin writes to neurologist Dr. Gerald Weber requesting that he travel from New York to visit her bother. In this essay, I attempt to reread the two major narrative threads—the narrative of the migration of sandhill cranes and Mark’s cerebral wound—in terms of Catherine Malabou’s notion of plastic materialism, especially the plasticity of the newly wounded Mark who is caught between a split and search for constancy. While demonstrating Mark’s Capgras syndrome as a cerebral event, this paper also articulates the formation and deformation of self brought about by the possibility of accident, which transforms the body, the habitat of the cranes, and the human relationship into a matter of mutation of essence.

Introduction

Richard Powers’s *The Echo Maker* is an econeuronovel exploring the synaptic mechanism of the brain and the mental state of the protagonists in terms of memory, (mis)identification and the environment.1 The five-part structure of the novel follows the five lines of the note left by the hospital bed stand in the wake of a car accident: “I am No One [Part 1] / but Tonight on the North Line Road [Part 2] / GOD led me to you [Part 3] / so You could Live [Part 4] / and Bring back someone else [Part 5]” (10). The novel opens as a subplot with a special family of cranes—the sandhill cranes (*Grus canadensis*)—a *megafauna* on the Platte river, and the main plot of the narrative revolves around Mark’s car accident outside Kearney, Nebraska, which leads to his brain damage and a conspiracy against the preservation of sandhill cranes and conservation of their habitat. However, the story of sandhill cranes and the story of Mark’s accident are entangled. Due to this human-avian encounter, the bird’s narrative and Mark’s illness narrative are woven together.

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1 For Caragh Brosnan and Mike Michael, the 1990s is “the decade of the brain” (681) which, for Marco Roth and Christian Knirsch, marks the beginning of a new type of writing—“neuronovel,” meaning “the novels that studies the brain and its plasticity as the source of the self.” It is also known as neurological novel (Gennero 311), neurofiction (Manolescu 128) or neuronarrative (Johnson 172).
neurologically and ecologically.

The mysterious car accident has created many ripple effects. Karin is forced to come back home to take care of her brother Mark. Though Mark has recovered physically from the accident, he is diagnosed with Capgras syndrome, an uncommon psychiatric disorder that can cause someone to believe that people they know well have been replaced by imposters. To restore Mark’s health, conservationist Daniel Riegel suggests Karin invite neurologist Dr. Weber based in New York to visit Mark. Journalist Barbara Gillespie, disguised as a nurse, volunteers to take care of Mark in the hospital. Interestingly, a new form of life was born of the car accident, by accident, and out of accident. By way of the accident, Powers yokes together all the important characters in the novel—Mark, Karin, Daniel, Robert, Barbara and Dr. Weber—under the rubric of “the echo maker” to alert us to the tensions and conflicts of interest between different camps of characters: the developers and the conservationists.

The intriguing part of the novel, for me, is the juxtaposition of the arrival and departure of the wintering sandhill cranes alongside Karin’s home-coming. Critic Laura Beiger regards The Echo Maker as a “belonging” narrative (197), an approach not unlike Jeffrey Williams’s comments that Powers expresses a predilection for place-based imagination (Harris 231). Small wonder that in the epigraph Powers cites Loren Eiseley—an anthropologist and naturalist, as well as a native of Lincoln, Nebraska—in response to the “ miracle” of the “immense journey” of the birds (Harris 237). The migration of sandhill cranes, therefore, exemplifies the motif of “the journey home” which is seen as the working of the internal mechanism in the body of the sandhill cranes: “We [human and nonhuman] are all potential fossils still carrying within our bodies the crudities of former existences, marks of a world in which living creatures flow with little more consistency than clouds from age to age” (The Immense Journey 6). Perhaps we might say that the migration of the sandhill cranes must not be reduced to the background story. Conversely, their stories are as important as the human stories since these two narratives complement each other.

There are two critical lines of thought concerning The Echo Maker: the ecological and the neurological. Ecocritic Heather Houser believes that The Echo Maker can “increase readers’ awareness of their surroundings as a way to promote ecological protection” (383). Critics such as Jason Tougaw, Valeria Gennero, Christian Knirsch, to name only a few, put Richard Powers’s The Echo Maker in the same cluster of neuronovels with David Lodge’s Thinks, Ian McEwan’s Saturday and Tom McCarthy’s Remainder because these texts can be reread as neuronarratives in the context of neurosciences. Drawing on these two camps of critics, I look at The Echo Maker as an “econeuronovel” that integrates the neurological

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2 In the “The Last Generalist,” Powers notes that “You can’t understand a person completely in any sense, unless that sense takes into consideration all of the contexts that that person inhabits” (108, Harris 231).
and the ecological as a new type of novelistic discourse. In this disruptive neuronarrative, I argue that, unlike traditional eco-mimetic theory that sings the praise of home-coming, Powers’s econeuronovel problematizes the eternal values of being-at-home. Following the critical insights of the above critics, I attempt to blend the two major narrative threads—the migration of sandhill cranes and Mark’s cerebral wound—in terms of Catherine Malabou’s notion of plastic materialism, especially the plasticity of the newly wounded Mark who is caught between a neurologically induced radical revisioning of the world and a search for constancy of subjectivity. For Malabou, every vital motion is “plastic,” and she welcomes the possibility of the accident because it is a mediator of change as well as a mode of living that is becoming. While demonstrating the notion of plasticity based on a “cerebral event,” Richard Powers’s The Echo Maker also articulates the formation and deformation of self by an accident, which transforms the mechanism of the brain, the habitat of the cranes, and the human relationship into a matter of mutation of essence.

1. A Tale of Two Brains

In the Believer interview, Alec Michod reports that Powers’s The Echo Maker was inspired by the sight of a carpet of Sandhill cranes during a visit to his mother when passing through “central Nebraska around sunset” (232). In this novel, the narrator anthropomorphizes these sandhill cranes whose “[w]ings curl forward, the length of man” (3). Characteristically, sandhill cranes are loyal, faithful and monogamous, having “gray bodies, necks, and heads, and a bare patch of red skin on the top of the head.” In “Migration of Sandhill Cranes, Grus canadensis, in East-central Alaska, with Routes through Alaska and Western Canada” Brian Kessel notes that Sandhill cranes “fly under a wide range of weather conditions, but most migration occurs on days with good visibility . . . .” (288). Their flight height ranges roughly from 300 to 900 meters above ground level at 50-55 km/h (288). Sandhill cranes are “daylight migrants and their flight activity begins in the twilight and ends in the evening. The appropriate overnight roosting types are riverbeds, open meadows, wetmeadows, ponds, lakes, creek margins, and agricultural fields” (290). They eat earth-worms, beetles, mosquitoes, spiders, grubs, moths, millers, houseflies, crickets, katydids, grasshoppers and other foods. In The Echo Maker, the onset of the migration of sandhill cranes is “determined by the interplay of an endogenous program and predictive cues . . . and then fine-tuned to local environmental conditions by supplementary cues such as temperature, food abundance, and social environment” (64). For Powers, the cranes seem to know when to start the wintering journey since the landscape is mapped in their mind and the birds have an instinctual ontology of the world.

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3 In The Echo Maker, Powers writes that sandhill cranes “reach fifty miles an hour, make five hundred miles a day, little beating of wings. In the evenings, they glide to the surface and roost in shallow, open waters remembered from previous years” (277).
Powers note that the cranes, like animals, are “territorial,” and in the wild they are forced to fight for survival: “A seasonal switch flips in their brains as they near their nest. They turn fiercely territorial. They attack even their baffled yearling, the one they have nursed all this way back, driving it off with beak jabs and beating wings” (97). They “converge on the river at winter’s end as they have for eons, carpeting the wetlands” (3). When the night falls, “it’s a beginner’s world again, the same evening as that day sixty million years ago when this migration began” (3-4). Powers offers a comprehensive description of the phenological migration of sandhill cranes that are influenced by seasonal changes as well as weather conditions. Without a doubt, the structure of their brain is a blend of genetic blueprint and autopoietic system.

In Powers’s hands, sandhill cranes are always among humans, but never of humans: they belong to different temporalities. Sandhill cranes are ancient creatures living in a time anterior to human civilization. Biologically, the cranes have a “prehistoric” sound (422); they are “the oldest flying things on earth, one stutter-step away from pterodactyls” (3). Moreover, the cranes are associated with “the fossils” (4). They live in a world that belongs to deep time, a world in parallel with humans. Powers juxtaposes sandhill cranes’ deep time with the Schulters’ present time via the mysterious car accident outside Kearney: “[S]he [mother sandhill crane] leads him [baby sandhill crane] within ten yards of the spot where, late last February, she and her mate huddled themselves, yards from where the truck flipped over” (278). When sandhill cranes are prepared for wintering,

[half a million birds—four-fifths of all the sandhill cranes on earth—home in on this river. They trace the Central Flyway, an hour-glass laid over the continent. They push up from New Mexico, Texas, and Mexico, hundreds of miles each day, with thousands more ahead before they reach their remembered nests. For a few weeks, this stretch of river shelters the miles-long flock. Then, by the start of spring, they’ll rise and head away, feeling their way up to Saskatchewan, Alaska, or beyond. (4)

Powers invites the readers to observe the longue duree of the sandhill cranes not as eternally static or empty, but as dynamic, processual, and agential. The now-time is rendered as event and the bird’s brain has activated the annual trans-continental migratory journey: they “home in on this river” in February, and “by the start of spring,” they fly to “Saskatchewan, Alaska, or beyond.”

While sandhill cranes follow the map in their brain for wintering, Mark’s sense of self has changed due to the brain damage he suffered in a car accident on February 20, 2002. The defect in brain functioning provokes inappropriate mental representations of self and others. Dr. Hayes notes that “The brain’s mind-boggling redesign,” and that we still don’t know what the brain can do: “We don’t see any explicit damage. . . . The hippocampus and
amygdala seem intact, but we did see some spiking in the amygdala, where some of the negative emotions, like fear, start” (17). Though Mark is able to “piec[e] himself back together,” the activity in his prefrontal cortex is still “struggling to synchronize into consciousness” (17). His unconscious response tells him that Karin is “an actress who looked very much like his sister,” which traumatizes Karin (60). After many tests, Dr. Hayes eventually confirms that Mark is “manifesting a condition called Capgras syndrome. It’s one of a family of misidentification delusions. It can occur in certain psychiatric conditions” (60).

Capgras syndrome, first reported by Joseph Capgras and Jean Reboul-Lachaux in 1923, is an uncommon delusion in which the patient falsely believes his or her close relative has been replaced by a double or imposter. In their seminal essay “L’Illusion des ‘sosies’ dans un delire systematize chronique,” Capgras and Reboul-Lachaux observe that such a delusional state of mind is psychological, uncanny and unusual (127-128). The delusional misidentification includes the following symptoms: (1) the patient sees a double; (2) there would be numerous imposters; (3) persecutory imagination; and (4) bodily or facial changes (372). In The Echo Makers, Dr. Hayes recapitulates Mark’s symptoms as a Capgras sufferer:

In Capgras, the person believes their loved ones have been swapped with lifelike robots, doubles, or aliens. They properly identify everyone else. The loved one’s face elicits memory, but no feeling. Lack of emotional ratification overrides the rational assembly of memory. Or put it this way: reason invents elaborately unreasonable explanations to explain a deficit in emotion. Logic depends upon feeling. (106)

Neurologists Edward L. Merrin and Peter M. Silberfarb add that Capgras syndrome comes in two types: the positive type and the negative type (965). The former confuses a stranger with someone familiar while the latter falsely believes someone familiar to be a stranger. Perhaps we might say that Mark’s case consists of both symptoms: He regards the nurse Barbara as someone he knows; conversely, he regards his sister Karin as an imposter.

In The Echo Makers, there are a plethora of examples that characterizes Mark as a Capgras sufferer. He looks at Karin as “an actress who looked very much his sister” (60). She is, in effect, a “Kopy Karin” or “Karin Two” (391). He misidentifies his sister: “He knows he has a sister. He knows all about her. He says she looks just like me. But [Karin is] not her” (102). At other times, he wonders “where my sister is” and becomes paranoiac (64), “curs[ing] everything that moves” (86, 278, 386). Mark expresses no doubts or misgivings when he misidentifies her as a double and an imposter (32, 279):

Who planted that doubt? Karbon Karin again, trying to do to him what she’s managed to do to Bonnie [Mark’s girl friend]. Convince him his friends are foes,
and vice versa. The whole three-car theory: all the impostor’s idea. He’s crazy to give it a second thought. (279, emphasis mine)

Mark’s delusion enables him to suspect Karin’s boyfriend Daniel Riegel who does “[a] kind of brainwashing to trick him into taking all these fakes at face value” (278). He even questions his own questioning: “I don’t know where my sister is. I don’t even know where I am. This whole so-called hospital could be a movie studio where they take people to fool them into thinking that everything’s regular” (64). At one time, Mark was unsure about the true identity of Daniel and, at other times, he is at a loss about the place he lives after discharging from the hospital.

According to Dr. Hayes, Mark’s symptoms are related to a “cerebral edema” (8), which “damaged only the sense of loved ones” (61), but “his brain, his . . . thinking isn’t damaged” (61, emphasis original). However, Karin has qualms about the consequences and poses an important question to Dr. Hayes: “What’s the treatment?” (61). Dr. Hayes responds curtly, but politely, that “The best thing now is time and tests” (61). Luckily, Karin’s lover Daniel makes himself useful by suggesting Karin turn to Dr. Gerald Weber for help, who believes in “the brain’s . . . plasticity” (93).

In The Echo Maker, the two types of brains—the birds’ brain and the human (Mark’s) brain—has one commonality: both brains are plastic. If The Echo Maker is a tale of two brains, it means two different tales of brain plasticity. The narrator here suggests that the birds’ journeying and the human’s search for home are the same. In other words, the narrator anthropomorphizes the cranes’ migratory behavior and ornithologizes the human behavior. For Powers, the mindset of the human is not unlike the birds’, especially Mark’s health state being likened to the cranes’ recurrent journey:

It had to be the hospital, again. A year’s long loop back to where he was, this time last March. Some migrating thing that can’t know any better. Mark Schluter back in Good Samaritan, not the same ward, but close enough. (404, emphasis mine)

2. Brain Plasticity

In The Elusive Brain, Jason Tougaw claims that plasticity is the core idea of the neuronovel, meaning a type of brain narrative “conceiv[ing] the physical brain as central to the stories they tell, the conflicts they plot, and the characters they portray” (3). Plasticity refers to “the ability of the body schema to form itself and to compensate after wounds or impairments” (Malabou, “Phantom Limb” 46). Originally, plasticity denotes the possibility to take form (such as clay) and to receive form (such as plastic surgery). Later, the notion of plasticity is expanded to signify the “annihilation of all form” (Dusk 67). Plasticity is the “logic” of these metamorphoses. According to Malabou, the brain operates on three levels:
to connect, to modify and to repair (Brain 5). Unlike a vision of the brain that is pictured as “the sum of distinctive parts,” and compared to an apparatus or a pump that stands for a “unifying” idea of governance (xi), Malabou asserts that the brain is supple, adaptive and evolving and that brain plasticity indicates that a brain can change itself under certain conditions of (im)possibility. For Malabou, we still don’t know what the brain can do until it is short-circuited or truncated. Her idea of brain plasticity stays away from the classical concept of the brain as a “stabilizing” power; it is likened to a “machine” that “learns, differentiates itself, reconstructs itself” (xii). In other words, the brain consists of “vibrant” matter that is always adapting, changing, and recreating in its interactions with the outside world.

In The Echo Maker, three main narrative threads are juxtaposed: the natural history of the migration of the sandhill cranes, the car accident of Mark Schluter and the medical history of Capgras in relation to other characters such as Karsh, Gillespie and Dr. Weber. For both the sandhill cranes and Mark, their brains seem able to acclimatize themselves to the new environment. Similarly, the mindsets of the other characters are undergoing a sea-change and the conflicts between the real (Karin) and the fake (Gillespie), conservationist (Daniel) and developmentalist (Karsh), and the observed and the observer observing the system (Dr. Weber) are acted out, but not resolved.

Writing plasticity also means both writing the self and writing the brain. Plasticity dramatizes the possibility of change, transforming all the characters into new selves, including sandhill cranes. In the face of extinction, these sandhill cranes need to find a way out. Similarly, Mark, being newly wounded needs to adapt to his new self as a Capgras syndrome sufferer. Per Karin’s request, neuropsychologist Dr. Weber flies to Kearney to treat Mark’s Capgras syndrome. As a renowned author of three books—The Country of Surprise, Wider Than the Sky, and The Three-Pound Infinity—he dares challenge “the solidity of the self” because the self is “not one, continuous, indivisible whole, but instead, hundreds of separate subsystems, with changes in any one sufficient to disperse . . . into unrecognizable new countries” (171). In Wider Than the Sky, Dr. Weber argues that our mental space is “larger than anyone can think. A single brain’s 100 billion cells make thousands of connections each” (93). Dr. Weber here seems to suggest a synaptic self whose consciousness makes connections between the individual and world.

Dr. Weber’s observation of the synaptic self is close in spirit to Joseph LeDoux who argues that there are multiple ways that “you,” human or nonhuman, can redefine “who you are” in that the brain somehow retains “the essence of who you are over time,” and “the self is essentially a memory, or more accurately, a set of memories” (298). Since synaptic connections might be at the core of mental disorders, Dr. Weber tries to understand the cause of Mark’s Capgras syndrome and how the synaptic interfaces in the brain affect his emotions.
Dr. Weber is a neuropsychologist who began his academic life as a Freudian, treating the brain as a “hydraulic pipe,” a “steam engine,” a “telephone switchboard,” or a “computer” (190). For him, the brain is also like “the Internet”—“a distributed network, more than two hundred modules in loose, mutually modifying chatter with other modules” (190). Dr. Weber’s intellectual pursuits aim at deepening his thinking about the brain, especially how new discoveries in neuroscience impact “old depth psychology” such as “repression, sublimation, denial, transference” (190). When Karin called him for help, Dr. Weber was solely interested in studying Mark Schluter’s case to prove that Capgras is understandable in modular terms, as a matter of lesions and severed connections between regions in a distributed network,” however, “it still manifested in psychodynamic processes—individual response, personal history, repression, sublimation, and wish fulfillment that couldn’t be reduced entirely to low-level phenomena” (191).

According to Dr. Weber’s diagnosis, Mark showed a lack of coordination between the facial recognition system, which is associated with memories, and emotional identification with those images. He concludes that the Capgras sufferer “isn’t primarily psychiatric. But his brain is struggling with complex interactions” (133). Moreover, the Capgras sufferer “almost always misidentifies his loved ones. A mother or father. A spouse. The part of his brain that recognizes faces is intact. So is his memory. But the part that processes emotional association has somehow disconnected from them” (61).

Dr. Weber’s professional duty requires that he keep a detached attitude towards his patients. Regarding the doctor-patient relationship, he can only “sit still and watch, not some syndrome, but some improvising being” (308) because “[o]nly the act of honest observation matter[s]” (172). Critic Julie Hawk looks at Dr. Weber as a Luhmannian observer observing what happened in Kearney (23). Luc Herman and Bart Vervaeck note that Dr. Weber lacks empathy (417) while Richard T. Stock points out that Dr. Weber’s moral stain rests in his “exploitation” of his patient so as to “sell books to make himself rich and famous” (393). Based on these critical insights, perhaps we can surmise that Dr. Weber’s visit to Mark is only for an advanced study on accident-induced Capgras syndrome:

Once, he knew a man who thought that telling other people’s stories might make them real again. Then others’ stories remade him. Illusion, loss, humiliation, disgrace: just say the words and they happened. The man himself had arisen from doctored accounts; Weber had invented him out of whole cloth. (414)

However, Dr. Weber asserts that he himself is “not an exploiter,” nor “an opportunist” (405). Rather, he is keenly interested in unraveling the mystery of Capgras syndrome to win the “holy grail of brain studies”:
All things come down to belief. Belief in a gossamer too ephemeral to fool anyone. That will be the holy grail of brain studies: to see how tens of billions of chemical logic gates all sparking and damping each other can somehow create faith in their own phantom loops. “He’s in agony. He wants to talk to me. He needs something from me.” (405, emphasis mine)

In The Echo Maker, Karin’s lover Daniel is a vegan, who is also described as “Saint Daniel.” He lives in an animal kingdom as a “selfless,” “self-effacing,” “patient,” and “devoted” conservationist. He is like “a wild child,” a steady and familiar “mammalian” with “long, sandy hair, the wisp of goatee, the narrow, vertical face: a gentle seed-eater” (53), he is “like the birds [sandhill cranes]” because “once the route was taught him, he stayed on it, returning, so long as there was still a place, always turning home” (192). Being an ecologically-minded person, he subscribes strongly to Berry Commoner’s first principle of ecology: “Everything is connected”: “No one is on a separate path. Everything connects. His life, yours, hers, his friends’ . . . mine. Other . . .” (72). In Mark’s opinion, Daniel is the very embodiment of a vital sign, persevering as a “tree”: “Daniel was a tree. A decades-long trunk, tilting toward the sun. No victory or defeat, only constant bending” (297). Being a conservationist, Daniel is strongly opposed to the damming project on the Platte river:

“That’s a symptom. The river’s being used up. Fifteen dams, irrigation for three states. Every drop used eight times before it reaches us. The flow is a quarter of what it was before development. The river slows; the trees and vegetation fill in. The trees spook the cranes. They need the flats . . . someplace to roost where nothing can sneak up on you.” He spun in a slow halfcircle, eyes scouring. “This is their only safe stopover. No other spot in the center of the continent they can use. They’re brittle . . . a low annual recruitment rate. Any large habitat break will be the end. Remember, the whoopers used to be as plentiful as the sandhill cranes. A few more years’ and we can say goodbye to something that’s been around since the Eocene.” (57)

Daniel is a hardliner, more than happy to sacrifice himself for the conservation of the habitat of the sandhill cranes. He might be a deep-ecologist, all too didactic, religious, and impulsive: “Every word Daniel spoke was gospel” (346), having the “maddening mask of selflessness” (286). When fifteen dams were constructed on the Platte river, “[s]omething in Daniel mourned more than the cranes.” In Karin’s opinion, “[t]he truth would only have incensed him” and “She understood him now. Saint Daniel: needing to transcend the rest of the race. Needing to prove that a human could be better than humans, could be as pure as an instinctive animal” (286). Whenever Karin is in need of help, Daniel’s advice is always
“clouded in morality” (326). When the developers wish to turn the Platte river into a tourist attraction, Daniel's response is moralistic too:

He [Daniel] needed humans to rise to their station: conscious and godlike, nature's one shot at knowing and preserving itself. . . . “We’re crowding them into one of the greatest spectacles going. That’s why crane tourism has exploded. Big business now, and every spring we use even more water. So the show will be even more spectacular next year.” Daniel spoke almost sympathetically. . . . But his own ability to grasp the race was shrinking faster than the habitat. Many species of birds migrate thousands of kilometers every year. Migration is driven mostly by weather and the availability of food. (57, emphasis mine)

In contrast to Daniel’s die-hard conservationist view, Robert Karsh is a developer, working for the Platteland in the belief that

[v]isitors would come, one way or another. Didn’t it make sense to absorb them as ecologically as possible, in buildings that preserved an historical awareness, integrated into the natural landscape? Visitors would leave more aware of the need to conserve wildness. Wasn’t the whole point of conservation to protect nature for our appreciation? Or, did the Refuge believe that only a select should enjoy the birds? (346).

Being every inch a developer, Robert spares no efforts to leave “a scar on the landscape” (343). His personal motto is: “The asshole of truth. The more brutally truthful, the better” (293, emphasis original). Small wonder Robert’s development discourse wins out in the end in the public hearing: “This last point was met by room-wide approval. Student council all over again. The [Robert] Karsches of this world always crush the [Daniel] Riegels; in any open poll. The Karsches had humor, style, unlimited budgets, sophistication, subliminal seduction, neuromarketing . . . The Riegels had only guilt and facts” (346, emphasis mine). Lacking in a coherent green rhetoric, Saint Daniel is fighting a losing battle. Like it or not, the narrator concludes that “Karsh and the developers will develop the area, build a living museum and a zoo, and a water park” (410-11).

For Powers, the body of sandhill cranes is “a map of where it has been, in this life and before. Arriving at these shallows once, the crane colt knows how to return.” (443). It will then continue that pattern throughout its life and pass on that knowledge to its offspring. Their ability to navigate the environment is innate, always already existing in the brain: the onset of the migration of sandhill cranes is “fine-tuned to local environmental conditions by supplementary cues such as temperature, food abundance, and social
environment” (64). For the crane, “[s]omething in its brain learns this river, a world sixty million years older than speech, older even than this flat water. This word will carry when the river is gone. When the surface of the earth is parched and spoiled, when life is pressed down to near-nothing, this word will start its slow return. Extinction is short; migration is long. . . . When all else goes, birds will find water” (443).

3. Plasticity and the Care of Self/Cell

In an interview with Stephen Burn, Powers points out that *The Echo Maker* is “a little more triangular, with Karin as the middle term. I sure wouldn’t want to overdo this analogy, but you could think of this trio of central protagonists as a little bit like MacLean’s triune brain—one part reptilian, one part limbic, one part cerebral, and all parts improvised, interdependent, perpetually revised, and mutually self-deluding” (178, emphasis mine). In his “The Triune Brain in Conflict,” neurologist Paul MacLean comments that “the primate brain evolves and expands along the lines of three basic patterns that may be characterized as reptilian, paleomammalian [limbic] and neomammalian [cerebral]” (208). The Reptilian brain centers on “self-preservation, the establishment and defense of territory and the continuation of the species,” displaying “aggressivity” or becoming “lapsed into a kind of depression” (211). The limbic brain “derives information in terms of emotion feelings that guide behavior required for self-preservation and the preservation of the species” (214). As for the neomammalian brain, language and self-reflection play a pivotal role in interpersonal communication. MacLean recapitulates the triad in metaphorical terms of writing:

In describing the functions of the triune brain metaphorically, one might imagine that the reptilian brain provides the basic plots and action; that the limbic brain influences emotionally the development of the plots; while the neomammalian brain has the capacity to expound the plots and emotions in as many ways as there are authors.

To recast the Karin-Mark-Dr. Weber triad: Karin is the care-giver, Mark an emotionally distraught Capgras patient and Dr. Weber an “expounder” of Capgras syndrome. The three characters work through the healing processes via three interconnected domains of the human psyche: territorial, affective and cognitive. However, individually each is insufficient; thus, these characters are susceptible to self-delusion. As a care-giver, Karin feels herself ashamed because “she betrays the river” (408). In addition, she also finds herself in a straight jacket: “…a conservationist and a developer at the same time. Making herself over, personality du jour. Imagination, even memory, all too ready to accommodate her, whoever her is” (407). Karin has no personality, “Nothing to recognize,” and her loss of self means
the annihilation of a form of life. Dr. Weber is known as “the brain guy,” but he disowns it: “He [the brain guy] is not ‘me.”’ He finds the right drug for Mark, but he himself betrays his wife and daughter. For him, “the case’s name—Gerald W.—sounds like the feeblest of pseudonyms” (414). In the beginning, Dr. Weber is skeptical of “bogus empathy” (404), but he later realizes that “responsibility has no limits” and that “The case histories you appropriate are yours” (404). When he goes back to visit Kearney, he cheats on his wife and sleeps with the journalist, Barbara.

Mark is newly wounded, a sufferer of car accident which results in memory loss and leads to a radical restructuring of the logic of his consciousness. Perhaps we can say that an accident or a series of accidents can transform our identity so that a “new being comes into the world” (2). For example, “When the brain is damaged, it is our whole ‘self,’ our subjectivity itself, which is damaged or altered” (Self 28). In The Echo Maker, Mark’s car accident renders him no longer capable of recognizing familiar faces, such as family members or loved ones, leading him to “reject one’s next of kin, in the face of all evidence” (102). As a result, we must accept the introduction of the contingent as an accident in the quotidian life.

Mark’s nurse, the undercover journalist Barbara, is a “private investigator,” a patronized “researcher,” and an “industrial spy” (412). We later discover that she is also lying about being a journalist working on a news story about the Refuge, when in fact she is actually working for the developers. Daniel told her everything about those birds because he mistook her for a bird lover but now regrets giving that information to the “enemy.” Afterwards, Daniel can still vividly recall Barbara’s voice by ear due to his birding, which makes him feel as if he has “some lesion, some sickness worse than Mark’s [Capgras]” (412).

Our brain is plastic. It has an ontological history through which it recreated itself, and in those neurological structures is a history about how they come into existence: “The work proper to the brain that engages with history and individual experience has a name: plasticity. What we have called the constitutive historicity of the brain is really nothing other than its plasticity” (Brain 4). The word “plasticity” signifies a triple meaning: (1) the creation of a form, (2) the explosion of a form, and (3) the formation of a form of flight: the becoming-other. Plasticity denotes an individual’s “inherent capacity to remake herself” (Plastic Materialities 9); hence, it is malleable, non-claustrophobic, non-deterministic, and modifiable, “open to external influences and affects” (Self 28). It creates “the conditions for a new world of questioning” (Plastic 9) and offers the potential to make changes. In this perspective, plasticity is a novel form of living that promotes a new “form of resistance” for transmutation.
Plasticity provides a possible escape route from Capgras’s effects and the vicissitude it generates so that Mark can face up to the growing pains of his current environmental changes. Unlike the traditional ecomimetic story, Richard Powers’s *The Echo Maker* does not preach realism, harmony, totality, or love of nature; his subject “had been changed so profoundly by illness or accident that each called into question the solidity of the self”: “We were not one, continuous, indivisible whole, but instead, hundreds of separate subsystems, with changes in any one sufficient to disperse the provisional confederation into unrecognizable new countries. Who could take issue with that?” (171).

**Conclusion**

In Powers’s hands, sandhill cranes are a foil to humans. Both humans and the cranes have a brain that is plastic and adaptive. In this econeuronovel, Powers’s association of the Capgras syndrome with the uncanny double, double-voicedness, or “echo-making,” alludes to a paradoxical relationship between the authentic and the fake, program and project, and human logic and ornithological logic. As the title of the novel suggests, “the echo makers” refer to “the sandhill cranes” at the outset, but in the end they also symbolize those who have delusional misidentification.

The ancient Greek *ekheo*, from which “echo” comes, means “to make noise,” “to resound,” and “to return a sound” which is always already “returned” and “restored” (*Listening x*). In *The Echo Maker*, Powers is not interested in preaching the love of nature or respect for nature. Rather, he pushes the reader to think about the tension between different interest groups; the intention of the characters, human and nonhuman; and the contention among friends and family members. He uses the term “echo makers” to describe those characters impacted by Capgras syndrome, not just Mark, but also Karin, Dr. Weber and Barbara. Though the novel recounts the story of Karin Schluter as a caregiver to her twenty-seven-year-old brother Mark to help him through his recovery from Capgras, she herself becomes an echo-maker. On the one hand, she works for the Refuge; on the other, she also helps her one-time lover Robert Karsh to steal information from the Central Platte Scenic Natural Outpost. Similarly, Karsh is also a Capgras double: “‘You think you knew me. You think you know me!’ Years of effort, and she might pass him on the street and not feel a peep. Karsh, too: mimetic Capgras, a smile that fails to acknowledge anything, standing there grinning like he’s just bribed the grade school teacher with an infected apple” (420). As for Dr. Weber, he is also a Capgras double who plays the dutiful husband to his wife Sylvie, but sexually betrays her with Barbara Gillespie (423). Perhaps we could say: the cranes are echo makers; Mark is an echo maker; Karin is an echo maker; Barbara is an echo maker; and Dr. Weber is an echo maker too. Echo maker is originally a term for the nonhuman, but it was later used to describe the human ecologically, biologically and neurologically. Antithetical to the wilderness discourse, in Power’s
econeuronovel the migration of the birds and ethics of care are unromantically brought to bear against each other. As an environmentalist, Karin concludes that “Mark is right, you know. The whole place, a substitute. I mean: Is this country anyplace you recognize?” (433). Towards the end of the story, Karin accepts Mark’s transformation: “Mark still felt familiar; only the world had gone strange. He needed his delusions, in order to close that gap (301).

Reading the novel in terms of Malabou’s plasticity and the metaphor of Capgras sufferers as the echo makers emphasizes freedom from genetic necessity in its paradoxical disguise: “Every form carries within itself its own contradiction, and precisely this contradiction, makes transformation possible” (71). Powers, like Malabou, examines Mark’s brain injury and its Capgras syndrome in the wake of the accident. For Malabou and Powers, every vital motion is accidental. The political life of the Schulters and the migrant life of sandhill cranes suggests a new materialism of the brain that connects the human and the nonhuman. Both welcome the possibility of the accident as a mediator of change as well as a mode of living that is becoming. While demonstrating Mark’s Capgras syndrome as a cerebral event, I also articulate the formation and deformation of notion of the self brought about by the possibility of the accident, which transforms the body, the habitat of the cranes, and the human relationship via mutation of essence.

Works Cited
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