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**Brains with character: Reading and writing neuronarrative**

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And you can hide under the bed but brain damage is under the bed, and you can hide in the universities but they are the very seat and soul of brain damage... Brain damage caused by bears who put your head in their foaming jaws while you are singing “Masters of War.” ...Brain damage caused by the sleeping revolution, which no one can wake up... Brain damage caused by art. I could describe it better if I weren’t afflicted with it...

Skiing along on the soft surface of brain damage, never to sink, because we don’t understand the danger—

Donald Barthelme, “Brain Damage”

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## Summary

“Brains With Character: Reading and Writing Neuronarrative” tracks the concept of neuronarrative by analyzing the reciprocal and catalytic relationships between neuroscience and literary media. Crucial to understanding the contemporary stakes in these two cultural endeavors is how their relationships implicate reading and writing as concepts, operations, and activities. This dissertation examines these implications by analyzing the characters to which neuroscience gives form in culture as well as the characterizations that concomitantly shape scientific understandings of the brain. From the protagonist struggling with a brain tumor, to the villain who one comes to discover acts out of a neurochemical imbalance, stories play out cultural, technological, and highly personal excitements and anxieties about the place and importance of brain knowledge today. They invite new literacies of readers, by demanding one learns from the vocabulary of scanning machines and the latest anatomies, as well as encouraging one to think through and with accounts of everyday life that centralize the significance of brain activity.

Five objects, which index five brains with character, help me encounter the concept of neuronarrative and productively destabilize it beyond the frame of genre.

Chapter One reads a character in Richard Powers’s novel *The Echo Maker* to problematize the concepts and practices of reading and writing engendered by a ‘typical’ neuronarrative. As noted above, *The Echo Maker* features on many critics’ lists of neuronovels. Yet, by looking closer at one character, a neurologist, who, over the course of the story, rewrites himself by confronting a neurological disease, I find a productive way to encounter both the literary conceit of inscription and the neuroscientific—and philosophical—theory of material plasticity. My encounter with the novel questions the basis of cultural and scientific literacy in a pursuit to understand—through the interface of fictional characters and moldable selves—how neurologic narratives engage storytelling today.

Chapter Two analyzes a character who undergoes a change in character as a result of a surgically removed brain tumor. It engages the concept of metastasis as a productive way of revisiting the trope of metamorphosis in literature. The nun protagonist Sister John of the

Cross in Mark Salzman's novel *Lying Awake* discovers that her deeply spiritual connection with God is a result of an epilepsy-inducing meningioma. After surgical removal of the tumor, she loses this connection with God. While the narrative accords with the emergence and imbrication of neurobiology in modern narrative fiction, the novel engages the changes needed to depict character transformations when writing with and through contemporary neurobiology and psychology. Reading the concept of metastasis in dialogue with the text challenges what *Lying Awake* does to and for a tradition of writing about metamorphosed characters in literature. Rather than classifying it as an illustration of neuronarrative-as-genre or as an example of neural plasticity, this chapter's approach questions the contemporary stakes of literary metamorphosis and inspires questions about the novel's affiliations and deteriorations with politics, religion, psychology, and history as well as challenging the new forms of literacy neuroscience demands of narrative today.

Chapter Three looks to a character known as Patient S.M. in current scientific literature. Formerly pathologized as a woman who could feel no fear, the chapter closely reads a neuroscientific report from the University of Iowa that destabilizes that previously stable neurological understanding of fear. This chapter takes up the concept and presence of fear as a productive problem for both neuroscience and affect studies in the humanities. The concept and mechanics of fear proves a productive point of departure to think about affect and the careers that affect studies enjoys in contemporary scholarship. Interior to the report, from 2013, are moments of neuroscientific storytelling that expose the affective and literary conventions enfolded by scientific texts. Noting the rich disciplinary cross-literacies, the chapter questions how particular narrative patterns shape scientific research agendas about fear, as well as the methods by which neuroscience propagates and solidifies inquiries of affect in critical analyses by way of narrative conventions. What the chapter discovers is how the habits of scientific case studies themselves, alongside popular scientific and philosophical appropriations of scientific material, can be determined by affective responses formed in relation to narrative.

Chapter Four looks to a particular character introduced through the widespread appeal of popular science advocacy, and tracks its materialization from metaphor to corporeality. It analyzes how popular psychologist and corporate spokesperson Michael Gurian's creation of

the persona “bridge brain”—to describe, diagnose, and nurse parental anxieties about gender conformity—functions as pedagogical tool and neurological foil to so-called “male” and “female brains.” Gurian’s use of therapeutic anecdotes vivifies the “bridge brain” character, which exposes that ways neuroscience then writes that brain into its own archive of literature. His metaphoric ontology of “bridge brain” focuses the analysis as a way to understand the science/culture divide as well as a tool to speak back to character conventions that make use of neuronarrative.

Chapter Five locates a distributed brain with character from Jennifer Egan’s tweeted short story “Black Box,” which appeared serially on the *New Yorker’s* Twitter feed in 2012. “We could think of genres as clusters of metadata—information about how to use information—that help define the possible uses of textual materials,” writes John Frow, and in this chapter I approach the metadata that a particular brain with character produces (“Reproducibles” 1631). Twitter is a noisy and fractured forum for narrative, but it nonetheless engages many readers’ screens and thoughts with immediacy. Egan takes advantage of this aspect to deliver her story as if each tweet is the recorded mental thoughts of her protagonist. Archived outside of the text of the object—the cascade of tweeted neural bursts describing the experiences of the focalized character—are users’ own re-tweets, hashtags, and networked conversations. Thus, the narrative afterlives of Egan’s story and their method of distribution through popular social media complicate direct readings of brains with character and interrogate contemporary communication of neural-based information. Revisiting the concept of neuronarrative in a final way helps analyze the cooperative reading required to make meaning from the brain that ‘writes’ this particular story.

## Samenvatting

“Breinen met Karakter: Het Lezen en Schrijven van Neuronarratief” traceert het concept van ‘neuronarratief’ door het analyseren van de wederzijds productieve relaties tussen neurowetenschappen en literaire uittingen. Cruciaal voor het begrijpen van de hedendaagse toepassingen in deze twee discursieve praktijken is hoe deze de culturele technieken lezen en schrijven impliceren. Dit proefschrift onderzoekt deze implicaties door karakters te analyseren die de neurowetenschappen in culturele uittingen heeft voortgebracht. Tegelijkertijd onderzoekt ‘Breinen met Karakter’ karakterbeschrijvingen die wetenschappelijke ideeën over de hersenen vormgeven. Van de non die met een hersentumor worstelt, tot de schurk wiens handelingen, zo komen we te weten, veroorzaakt worden door een neurochemische onbalans, brengen deze verhalen culturele, technologische, en zeer persoonlijke opwindingen en angsten tot stand over de plaats en het belang van de hersenkennis van vandaag. Ze nodigen uit tot een nieuwe manier van lezen. Niet alleen door de introductie van het jargon van scanmachines en de nieuwste anatomie, maar ze stimuleren om na te denken over de manier waarop wetenschappelijke, literaire en alledaagse verhalen elkaar vormen en veranderen.

Vijf objecten, die vijf hersenen met karakter aanduiden, maken het mij mogelijk het concept van neuronarratief te verkennen. Ook maken zij het mij mogelijk vastgeroeste genrekaders te destabiliseren.

Hoofdstuk één problematiseert de concepten van lezen en schrijven aan de hand van een personage uit de roman *The Echo Maker* van Richard Powers, een boek dat door vele critici wordt gezien als ‘typische neuronarratief.’ Door in te zoomen op een personage - een neuroloog die in de loop van het verhaal zichzelf ontdekt door de confrontatie met een neurologische ziekte - vind ik een productieve manier om de literaire erruditie van opschriften en de neurowetenschappelijke / filosofische theorie van hersenplasticiteit te duiden. In mijn ontmoeting met de roman onderzoek ik de basis van culturele en wetenschappelijke geletterdheid in een poging te begrijpen hoe—via de interface van fictieve personages en het kneedbare ‘zelf’—neurologische verhalen opgaan in de hedendaagse vertelkunst.



Hoofdstuk twee analyseert een personage die als gevolg van een chirurgisch verwijderde hersentumor een karakterverandering ondergaat. Het gaat in op het concept van metastase als een productieve manier om de stijlfiguur van de metamorfose in de literatuur te herzien. In de roman *Lying Awake* van Mark Salzman, ontdekt de hoofdpersonage, non en voorvechtster Sister John of the Cross, dat haar diep spirituele verbinding met God een gevolg is van een hersentumor die epilepsie veroorzaakt. Na het chirurgisch verwijderen van de tumor verliest ze deze verbinding met God. Hoewel het verhaal in overeenstemming is met de opkomst en de overlapping van de neurobiologie in de moderne verhalende fictie, verbindt de roman de veranderingen die nodig zijn om het karaktertransformaties te verbeelden met hedendaagse neurobiologie en psychologie. Het lezen van het concept van de metastase in dialoog met de tekst, daagt uit wat *Lying Awake* doet voor de schrijftraditie in de literatuur over personages die van gedaante zijn veranderd. Mijn analyse weerstaat de verleiding om *Lying Awake* eenvoudigweg te zien als een illustratie van neuronarratief als genre of als een voorbeeld van neurale kneedbaarheid. In plaats daarvan, onderzoekt dit hoofdstuk het hedendaagse gebruik van literaire metamorfose en inspireert het tot vragen over politiek, religie, psychologie en geschiedenis. De neurowetenschappen vragen om nieuwe vormen van geletterdheid. Dit hoofdstuk laat zien hoe *Lying Awake* deze vraag op een uitdagende manier beantwoordt.

Hoofdstuk drie kijkt naar een karakter, dat in de wetenschappelijke literatuur bekend staat als Patiënt S.M. en vroeger gepathologiseerd als een vrouw die geen angst kon voelen. Dit hoofdstuk behandelt het concept en de aanwezigheid van angst als een productief probleem voor zowel de neurowetenschappen als de geesteswetenschappen. Het doet dit aan de hand van een neurowetenschappelijk rapport van de University of Iowa, dat het standaard neurologische begrip van angst ondermijnt. Het concept en de mechanieken van angst bewijzen een productief uitgangspunt te zijn om na te denken over macht en andere onzuivere motieven die studies in de hedendaagse wetenschap beïnvloeden. Het rapport uit 2013 bevat momenten van neurowetenschappelijke verhalen die de invloedrijke en literaire conventies door wetenschappelijke teksten laten zien. Wijzend op de rijke kruisverbanden in deze discipline, onderzoekt dit hoofdstuk hoe narratieve patronen wetenschappelijk onderzoeksagenda's over angst vormgeven. Ook onderzoekt het de methoden waarmee de neurowetenschappen vragen in kritische analyses propageert en consolideert door middel van

narratieve conventies. Wat het hoofdstuk ontdekt is hoe de praktijk van wetenschappelijk onderzoek zelf—samen met populair-wetenschappelijke en filosofische toeëigening van empirisch material—bepaald kunnen worden door de emotionele reacties op case-studies.

Hoofdstuk vier kijkt naar het karakter “bridge brain” en traceert diens transformatie van metafoor naar lichamelijkheid. De bekende psycholoog en bedrijfspersoonlijkheid Michael Gurian introduceert de “bridge brain” om ouderlijke bezorgheid over ‘gender confirmity’ te beschrijven, te diagnosticeren. Het analyseert hoe de creatie van het karakter “bridge brain” functioneert als pedagogisch instrument en neurologische tegenhanger, of verhelderend contrast, voor de zogenaamde “mannelijke” en “vrouwelijke hersenen.” Gurians gebruik van therapeutische anecdotes brengt het “bridge brain” karakter tot leven en creëert op deze manier voor dit brein een eigen literair archief. Zijn metaforische ontologie van “bridge brain” gebruikt de analyse als een strategie om de kloof tussen wetenschap en cultuur te verkleinen, en als middel om stereotypische karakters uit neuronarratieven van replek te voorzien.

Hoofdstuk vijf zet een verstrooid brein aan de hand van een karakter van Jennifer Egan’s getweete korte verhaal “Black Box”, die in 2012 als serie op de *New Yorker’s* Twitter-feed verscheen. “We konden genres bedenken als clusters van metadata—informatie over hoe je informatie moet gebruiken—die mogelijke toepassingen van tekstuele materiaal helpen bepalen,” schrijft John Frow, en in dit hoofdstuk benader ik de metadata die een bepaald brein produceert (“Reproducibles” 1631). Twitter is een luidruchtig en versplinterd forum voor verhalen, maar desalniettemin—of juist daarom—vult het de schermen en gedachten van veel lezers voortdurend. Egan gebruikt dit aspect in haar voordeel voor haar verhaal, waarin elke tweet een snapshot van de mentale toestand van haar hoofdpersoon is. Gearchiveerd buiten de brontekst—in dit geval een waterval van getweete neurale uitbarstingen die de ervaringen van dit gefocaliseerde karakter beschrijven—zijn re-tweets, hashtags en correspondenties onder de volgers. De narratieve onderwereld van Egan’s verhaal en zijn wijze van distributie via de populaire sociale media, compliceren het direct ‘lezen’ van breinen met een karakter en ondervragen ze de hedendaagse communicatie van ‘neural-based’ informatie. Het herzien van het concept van neuronarratief helpt uiteindelijk het gezamenlijke lezen te analyseren dat nodig is om een brein te begrijpen dat zijn eigen verhaal schrijft.