

Somatosphere Presents

A Book Forum on

Tracing Autism: Uncertainty, Ambiguity, and the Affective Labor of Neuroscience

by Des Fitzgerald

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Des Fitzgerald writes of his book, [Tracing Autism](#), "This is a book about scientists talking about their own practice, in tones that are beset by ambiguity, uncertainty, complexity, and even



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some anxiety" (9). This is true, and after reading the book one might find the description a little understated. By now the idea that neuroscience, any science, is fraught with uncertainty and complexity is the baseline for science studies and kindred fields of study. In [*Tracing Autism: Uncertainty, Ambiguity, and the Affective Labor of Neuroscience*](#), Des Fitzgerald uses this insight as a point of departure and puts these concepts to work—to trace the work they do—in (and through) the words of his scientist-interlocutors. Words are key. He structures his chapters around quoted speech which he amplifies through his interpretations, reflections, restatements, and rebuttals, which makes the book feel like part transcript, part therapy session notes, and part eavesdropping on a wholly intriguing conversation. The following are a diverse and careful set of commentaries on *Tracing Autism*—we hope you enjoy.

The Unicorn and the Trash Bag: A Defense of Wariness

ELIZABETH FEIN

Duquesne University

Reading Des Fitzgerald's *Tracing Autism: Uncertainty, Ambiguity and the Affective Labor of Neuroscience* brought me more fully into contact with my own range of scholarly affect. I read it for the first time on an airplane, and was dimly curious about what the passenger in the seat next to me might be making of my sporadic chortles and chuckle-snorts and cheers, the faces I was making, my occasional irrepressible exclamations of astonishment, exasperation, gratitude, recognition. The experience felt a lot like a lively conversation in a pub with a colleague who is thinking through a vexing problem over a couple of beers, wringing his hands and tearing his hair and waving his arms. I felt a sense of camaraderie; the autism Fitzgerald is tracing the tracing of here is the same entity whose contours I have sensed in my own work, maddeningly difficult to elucidate but compellingly recognizable all over the place nonetheless, ringing out in resonances between the lines. The book is wonderfully personable. It is in many ways a book about being a human being with other humans, in all of our awkwardness and melancholy, with all of our weirdness and fascination and love turning up in unexpected places, mediated through the work that connects us and that comes between us all at the same time.

There might be something in my response to this book, my gratitude for its embrace of organized knowledge-work as a component of human co-existence, that is peculiar to people who are nerdy in a certain kind of way – people for whom such structured, sense-making work is a fundamental part of how we go about *being* in the universe. A young man I once interviewed for a research study on Asperger's Syndrome described this fellowship to me:

Me and Robert, we'll go to a museum, he'll get all excited and I'll just stand there in, in *reverence*. Of a dinosaur skeleton. Because that structure itself is just so compelling. And Michael is the physics guy. There's just something about – *knowing* the *universe*. That even if you're not totally into that, and it doesn't strike a chord with you? There's still something deep and meaningful. That touches – it touches us. I think for *all* of us.

This young man was talking about his friends who were also on the autism spectrum, and what they shared with each other, but I think the kinship extends more broadly, beyond those with autism spectrum diagnoses. It can certainly be extended to Fitzgerald's scientists. The work they do, their way of knowing, has been accused, implicitly and explicitly, of separating them from the ambiguity and complexity of multidimensional social life, but the work is also one way in which they come into contact with that life and its liveliness. This fraught *sympatico*, between people with autism and the people who study autism and the people who study the people who study autism, glows like a fine thread throughout *Tracing Autism* in a way few other texts have been able to evoke.

By this point, my fictional pub scenario has gotten around to the second pint or so. This is when I generally go from being an eager and attentive listener to tearing my own hair and waving my own arms and saying a lot of candid things. So let me say, too, that there were things about this book that made me itchy (as, perhaps, was intended). The book forthrightly acknowledges that its reliance on interviews alone might be seen as a skimpy approach. I don't think that's the case in and of itself – these conversations seemed abundantly, generously sufficient for an exploration of the psychological and affective terrain of neuroscientific practitioners. But a focus on the inner life of particular scientists did not feel sufficient to justify the book's overall exhortation to let down our wary paranoia when it comes to neuroscience *as a whole*. The author observes that he has “no interest in yet another account of what actually goes on behind the scenes at the laboratory” looking instead at “what neuroscientists think they're up to, what the strange practice of neuroscientific experimentation looks and feels like to them, and how they talk about it when they are asked” (26). This is a deeply worthwhile endeavor that leads to an enjoyable and thought-provoking book. But in my view, a convincing case that we ought to be less critical of *neuroscience* (not just less critical of *neuroscientists*) would have to adopt a wider lens, taking into greater account the assemblage of practices within which neuroscientists and their labors are entangled. (There is, for example, practically no discussion here of how the work gets paid for, and by whom, and under what circumstances). It would need to look not only at individual motivations, but also at collective outcomes. At times, this book seems to take the stance that the road to hell cannot be paved with ambivalent, self-aware intentions.

I certainly sympathized with Fitzgerald's provocative yawns in the face of incessant critique, and his closing encouragement to embrace the charisma of the “strange, risky and

unexpected”. I also thought to myself that such a stance feels safer in a text where the people whose bodies will bear those strange unexpected risks are absent, as autistic people are absent here – a text, instead, peopled exclusively by the social scientists for whom risk and unexpectedness are a source of profit. This is, according to the author’s rubric, a rather tiresome sort of thing for me to point out, and I agree - I would just as soon move on to perseverating on a topic less politically correct, more edgy and innovative. But I continue to be troubled by the way these neuroscientific endeavors continue to pose threats to the integrity of our personhood, without much regard for the growing sophistication of our attitudes toward them. For example, within the same 2010 Scientific American article Fitzgerald cites, Tom Insel (at that time the head of the NIMH) proposes a vaccine to prevent depression as a reasonable goal for 2020. Precisely what it is we would be inoculating ourselves against remains unclear. This preventative intervention would arise through a new initiative (the Research Domain Criteria Project) that seeks to redefine psychopathology independently from subjective experience, and persistently conflates abnormality with pathology. Noncompliance, too, is easily re-inscribed as a neurological vulnerability. On a recent conference call, open to the public, in which officers from this RDoC initiative took questions from callers, I heard an inpatient psychiatrist observe that his patients often refused to take the medications he prescribed for them. Eager to conduct research on how to solve this problem, he was encouraged to consider such “lack of insight” a form of neurological abnormality that might be productively investigated through this preventative model. Such objectives suggest we ought to keep an eye on the kind of practical outcomes that Fitzgerald’s vision of a reparative attitude toward neuroscience, one that “basically hopes for the object of its discussion to do well” (168), would be supporting. What would it mean for such a project to *do well*?

A tension throughout this book, discussed with refreshing openness, is the degree to which such concerns are relevant to the author’s project. I found myself, as I read, feeling that they were quite relevant indeed. One of the book’s most compelling moments, exemplary of its overall ethos, features a young scientist who passionately describes her feeling of empathy and rapport with the autistic kids she works with. “I love the kids” she declares. And then a moment later:

But at the same time, I want to know why – what it is, fundamentally, about kids with autism that is different to typical kids, so how do they perceive the world, and view the world that might be different to us...

and how... and *what we might do to ameliorate any differences*” [emphasis mine] (110).

This is a powerful statement, breathtaking in its breadth. To gloss this comment, as Fitzgerald does on the following page, as “retain[ing] a sense of disadvantages and problems that can impinge upon an autistic life – on things that may yet be in need of amelioration” diminishes the scope of her professed aim: to ameliorate *any difference*, not merely disadvantages and problems. Gentling her words in this way conceals a move that is deeply relevant to the affective tone of neuroscientific life, missing an opportunity to bear witness to its demands. What melancholies are evoked, what affectively rich ambivalences are generated, what *traces* are left when one invests one’s life energies in a project that is powered by fascination, appreciation and love for the very particularities it aims to eliminate? How does *difference* (as opposed to, say, social isolation, which she poignantly discusses elsewhere) become the problem to be ameliorated, even amidst heartfelt appreciation of (and, perhaps, lip-service tributes to) diversity? This is a question that may not be answerable without looking at the web of practices and pressures within which these scientists are embedded and through which their work is refracted.

A compelling metaphor appears in the book’s final chapter. It has stayed in my mind in the time since I’ve read and re-read it, as a powerful evocation of the way autism science shifts between levels and perspectives in the constitution of its object(s). There is a tapestry. Woven into the tapestry is the figure of a unicorn, emerging through the interweaving of many different threads. The tapestry is concealed behind a sheet of black plastic, into which the scientist-protagonists are gradually making hole after tiny hole. In doing so, they create a “combination of ongoing accounts of blue, red and gold” (167). Is autism the unicorn? Is autism a few spots of color? Is autism a bunch of holes? What if it is all of these, simultaneously or intermittently, emerging in the movement between frames? The stakes of these questions change dramatically when we look not only at the process of looking, but at the process of *doing* something about the object of that gaze – the decision to sew up the unsightly holes, perhaps, or to ameliorate those few multicolored spots of difference, to take aim at the hidden target or to hold our fire in the faith that behind that torn up trash bag might be something worth preserving. *Tracing Autism* elucidates some of the movement between these modes, opening up new ways of occupying such in-between, indeterminate, generative spaces. It is a project well worth expanding into broader arenas of neuroscientific practice.

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What Can We Do With Uncertainty

MATTHEW WOLF-MEYER

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I always seem to be having lunch with neuroscientists. I'm not entirely sure why – maybe it's simply because it fits into our shared professional, adult schedules that make a noontime meeting particularly convenient. And this time Dr. Gibson and I are talking about his lab's most recent experiments, attempts to measure the emotional experiences individuals have as they are exposed to a variety of stimuli. As he explains to me, the individual test subject sits in what looks a bit like a sound recording booth – small, soundproof, painted black, with a one-way mirror so that the subject can be observed without feeling explicitly watched. The subject is hooked up to a variety of equipment to record their physiological responses – blood pressure, heart rate, brain waves, etc. It seems simple enough. The goal is to get a sense of what affective states – happiness, sadness, and boredom, especially – look like neurophysiologically. Or, rather, numerically, since the observation of the individual test subject's emotional response is left to the machines, not the graduate students and postdoctoral researchers overseeing the experiment. Gibson tells me, plainly, "I know this isn't really telling me what I need to know. You can't really remove a person from their social environment and measure these things meaningfully. But this is the way that science is done, and this is what we have funding for." We talk for a while – what would a neuroscience that makes the world its laboratory look like? What kinds of interdisciplinary explorations might be possible if the National Institutes of Health took an interest in really experimental research? – but we have no answers to these questions. What we do have, what we share, is a sense that neuroscience is not really living up to its potential; it could be doing so much more, and yet, the political economy of scientific knowledge production in the U.S. has led to a neuroscience that is sadly reductionist, in search of simple answers to complex, deeply human problems. Certainty seems to be what everyone is after, at least those people who dole out scientific funding, but certainty is hard to come by, especially in the lonely laboratory.

Des Fitzgerald points our attention to the "uncertainty" of participants in contemporary neuroscience – Ph.D. students, postdoctoral researchers, research and teaching faculty, all in the U.K., all unsure that neuroscience as it is developing at the turn of the 21st century is able to capture the diverse phenomena that comprise autism. Nor are they sure what autism even is; is it merely a convenient diagnostic category to motivate clinical action and laboratory

research, or some deeper, biological thing as yet undiscovered in its entirety? But they seem sure that it is some combination of the two, something informed by social necessity and convenience and based in human physiology. I have been thinking about something similar for a while, which I referred to as "doubt" (see Chapter 3 in Wolf-Meyer 2012), generally in clinical practice, and which found its roots in Murray Last's discussion of the "importance of knowing about not knowing" (Last 1992). There is something generative about doubt; doubt and uncertainty keep the wheels of science and medicine spinning, yet they also make everyone at least a little anxious about what they're doing. So, there is something dialectical here: physicians, scientists, patients, their families, funding agencies, everyone, really, living between the drive toward certainty, hoping for some kinds of liberation – maybe a cure – in knowing. Yet, they all live in a landscape of ongoing uncertainty, doubt about whether this diagnostic category – "autism," at least, but so many more as well – captures what it is intended to capture, wondering if it is sufficient to motivate sensible inquiry. A little uncertainty, a little doubt, is sufficient; too much and the whole project starts to come into question. If you can accept the neuroscientific pursuit of autism's etiology at face value, you should be fine, but if you squint too hard – if you think too critically – things start to fray, and something unsettling starts to happen.

I couldn't help but think of Jacques Derrida's discussions of the "trace" (Derrida 1980, 1998) throughout *Tracing Autism*, but I doubt that the neuroscientist that inspires Fitzgerald to use the phrase in the title and throughout the book was haunted by the same discussion of semiotics. Derrida's "trace" is the underside of every symbol, those spectral inferences and suppressions that lie beneath or beyond the language used in a text or in speech; language is full of traces that point to other possibilities, to other histories, other audiences. Fitzgerald explains his use of "tracing" as "the act of pursuing, enacting, and enabling a firm neuroscience of autism precisely *through* forms of difference, ambiguity, and entanglement...It describes a conviction that you don't have to carefully pull things apart if you want to establish some kind of scientific singularity or separateness" (29). He goes on to explain that tracing "...describes the difficult connecting, marking, and diagramming work of the neuroscientists" that he works with, "cling[ing] onto an idea of *something being traced* all the same" (75). Moreover, tracing as Fitzgerald sees it, is a process (167), it is something that is constantly being elaborated from something and moving towards being articulated in something else; moving between material "facts" – however contingent they may be – and towards some social need. Or, finding motivation in socially-motivated curiosities and desires, researchers place their focus on finding some scientific support for understanding autism as a

biological thing. Tracing moves back and forth for Fitzgerald and his neuroscientists, not unlike traces work for Derrida, unsettling reading practices that move back and forth between the text and the world.

Maybe it's my 21st century use of the Retrospectivator, but deconstruction as a practice was too roundly dismissed as needlessly critical, as too nihilistic in its approach to the absence of meaning in texts. What deconstruction always seemed to me to be arguing for was the *contingent* meaning of texts, how, despite all of the tensions between signs and their traces, texts are still readable, they still conjure some – at least temporary – meaning for audiences. It seems to me that such is the case with the contemporary neurosciences too – and, likely, all scientific practice, laboratory-based or not. Science is able to proceed, despite all of its uncertainties and doubts, precisely in the face of those uncertainties and doubts. Dr. Gibson, my neuroscience interlocutor, can tell me about his doubts about laboratory practice, his surety that how he is designing an experiment is insufficient, because those doubts are integral to his experience of the science that he does – and because I'm not a representative of any agency he is seeking funds from.

The relationship that I have with Dr. Gibson, akin to the interview relationships that Fitzgerald develops with his subjects in *Tracing Autism*, is indebted to the confessional relationship that Michel Foucault identified as operating in psychoanalysis and which lays the basis for talk therapy of all sorts (Foucault 1990); although I might out Gibson for his doubts, this is a risk that is ameliorated by anonymity. More importantly, I'm a sympathetic listener, not unlike Fitzgerald. Confessing one's doubts to a non-expert, to someone not even in one's field, lacks any real risks, and might have the benefit of unburdening with a like-minded peer who already is seen as a representative of a critical cognate field – but one that lacks any real power to change how neuroscience is funded or done. Consider what George Marcus and Doug Holmes have talked about as “para-ethnography” in this context (Holmes and Marcus 2005); “para-ethnography” depends upon a reciprocal relationship between ethnographers and their interlocutors, experts in their own rights, with each finding in the other a resource for thinking through their practices and reconceptualizing what each is invested in knowing about the world. In the para-ethnographic relationship, like the psychoanalytic relationship, changes are possible in both participants, their practices, and the worlds they represent. Gibson opens up to me like Fitzgerald's interlocutors open up to him because it is relatively safe – there's no potential loss of funding, no knee-jerk critique that is existentially debilitating – and because, together, there might be a way forward, a way to rethink what the

neurosciences are doing as much as we might rethink what the social studies of science, technology, and medicine are doing and can do.

Fitzgerald's impulse in *Tracing Autism* is to find a "reparative" engagement between science studies and the neurosciences (168-169); can we treat the neurosciences kindly, sincerely, as equal in their critical capacity, and together think about ways forward? I share that impulse; I too am a child of critique, long seeking some kind of rapprochement between what happens in the laboratory, the clinic, and society at large. It is in that spirit that I coined "multibiologism" as a way to think about the emergent, necessary politics of non-pathologization (see the Conclusion in Wolf-Meyer 2012); it's in that spirit that in a new book about neurological disorders that I make the suggestion that we "rewild" the neurosciences. [Rewild](#) is a term that environmental activists – and more recently [life style pioneers](#) – have used to think about restoring landscapes (and bodies) to some kind of pre-developed state. Yes, there might be some nature/culture problems to critique there, but what is enticing to me about rewilding the neurosciences is that – as Nikolas Rose and Joelle Abi-Rached have argued (2013) – up until very recently, the neurosciences were not a unitary neuroscience, but a set of diverse practices in search of an epistemic object. That object – the brain – has solidified to the detriment of the neurosciences, but to the benefit of neuroscience in the singular. Neuroscience is not so far from its more wild past; rewilding it, because of all of the traces embedded in what neuroscience is and does, should be recoverable. What we as STS scholars might take seriously in our para-ethnographic relationships with the scientists that we work with, in the neurosciences and beyond, is helping to rewild their practice, to help move them back to a more capacious, less certain way of working.

The paradox of rewilding is that it depends upon stewardship. Those near-extinct plant and animal species aren't going to resettle themselves in their pre-development territories, after all; they depend on humans to assist them in breeding, in survival in environments that they have been driven from. Likewise, neuroscientists might need some stewardship in rewilding themselves; they know that something has gone wrong, that something is wrong, but due to the exigencies of education, training, funding, and professionalization, they may be unable to think outside of the worlds that they have built for themselves. Fitzgerald is interested in the kinds of collaborations that might develop out of interactions between STS scholars and the scientists they study, but our tools may be too rarified to help our interlocutors; instead, we might think about how we can help them to rewild their discipline and their practices. What can we give to them that they have lost, what can our methods and theories help us to recover

that will enable those we are engaged with to conceptualize their practice, their science, to think less about there being some resolute material fact in need of discovery and focus instead on the processual shared inventions that move us beyond the brain as a discrete material object and towards the neuroscientific as a supple, humane science?

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Social Science vs. Neuroscience? Epistemologies and Stereotypes

M. ARIEL CASCIO

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It just seems so much at odds with the idea of the coldly reductive neurobiological imperialist, marching unblinking toward her epistemological destiny – at least as we have come to imagine the prototypical neuroscientists in the social sciences. Obviously I caricature here. But still, what happened to our single-minded, all-conquering neuroeducer? (96-97)

Tracing Autism

What, indeed, happened to the coldly reductive hard scientists? Perhaps nothing, perhaps they never existed. In *Tracing Autism*, Des Fitzgerald presents and analyzes the reflections of autism neuroscientists on, fittingly, autism and neuroscience. As a social scientist studying neuroscientists, he grapples throughout the book with stereotypes about and differences between these two different types of researchers. To some extent this is an admonishment against certain reductivist perspectives on the natural sciences within the social sciences, but I think it is also a meta-exploration of tensions (real or imagined) between the two types of sciences. In this brief comment, I will explore two key contrasts between natural and social sciences: epistemology and stereotypes about affect.

Epistemology

In my classes,[\[1\]](#) I teach about the tension between positivism versus interpretivism as a key concept in order to understand medical anthropology. In short, positivists aim to uncover universal truths that exist “out there” in nature by maximizing reliability and reducing the role of the researcher, whereas interpretivists aim to explore the many different truths that are constructed through interaction and discourse by maximizing validity and reflecting upon the role of the researcher. But I also try to show that it’s not a strict opposition. This is especially the case when it comes to the interpretivist turn and interpretivist criticisms of the positive approach as reductive, detached from lived experience, and somewhat naïve about the feasibility of removing the influence of the researcher on the collection and interpretation of

data. Often, positivists in fact share some of these concerns. While there are strong differences between the two epistemologies, both share a certain skepticism. This is no surprise to many *Somatosphere* readers, but Fitzgerald's work gives some nice concrete examples. Autism neuroscientists are skeptical about autism – balancing the ways in which they saw autism as both “biologically true” and “an umbrella of convenience.” They are also skeptical about neuroscience, and readily discuss the limits of brain imaging and the ways on which it rests on assumptions and interpretations.

Affect

This book also explores some stereotypes about neuroscientists and social scientists as people. Fitzgerald explores the affect and emotion that comes through in interviews with neuroscientists. The neuroscientists talked about interpersonal love for their research participants and their families. They talk about empathy, heartbreak, and gut feelings. Scientific detachment has been praised as a virtue for generating unbiased and objective results. Fitzgerald raises the possibility that scientific detachment can be a language by which researchers distance themselves from the inevitably affective and emotional entanglements involved in research with human participants – an inherently relational endeavor – but quickly squashes it. In contrast to what we might expect, “the specific, dry, and technical issues about the objective make-up of autism that skate endlessly across the top of these accounts are *not* simply a way to avoid talking about love; they are there, in fact, precisely to explain it” (110). The “dry” and the “visceral” aspects of research are entangled, and researchers need not banish the latter in favor of the former. I imagine this is not a surprise to many bench scientists or those of us who know and work with them. But it is an aspect of scientific work often left out of the popular imagination, and worth re-asserting; and Fitzgerald goes beyond simply stating that neuroscientists have affective and emotional lives too, into exploring how those lives are integrating into scientific inquiry itself.

These issues might not be limited to autism research, but autism is a compelling topic through which to explore these issues. Fitzgerald uses the organizing metaphor of tracing to describe how autism neuroscientists talk about their work in a way that encompasses both the “objective” and “constructive” views of autism. Tracing is a type of drawing (constructing, created), but only on the basis of some previously existing thing (in this case, the notion of a biological thing called autism). This metaphor demonstrates how autism scientists balance the idea that autism is an objective biological entity “out there” to be discovered, but also a

socially constructed category. This ambiguity makes autism especially rich for exploring tensions between interpretivist and positivist epistemologies. Autism research is also a heavily relational endeavor. It often involves human participants, sometimes entire families. Even when it doesn't, implications of autism research are heavily discussed and enmeshed in social networks. This relational aspect makes autism especially rich for exploring stereotypes about the affective and emotional aspects of research.

Notes

[1] Hello to past, present, or future students!

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Feeling Autism Neuroscience

MICHAEL ORSINI

University of Ottawa

Des Fitzgerald's new book, *Tracing Autism*, has a little something for everyone. Readers in the fields of Science and Technology Studies (STS), sociology of science, feminist theory, neuroscience, not to mention the social study of autism, will find much to incite further reflection and debate.

Indeed, one of the strengths of *Tracing Autism* is its ability to speak to a range of audiences in a manner that is both engaging and provocative. Departing from the trend toward ethnographic accounts of the laboratory, this book draws on more conventional qualitative interviews with autism neuroscientists, two thirds of them women. The presentation of these data nonetheless reveals a rich, narrative tapestry of voices from the field of autism neuroscience.

But this post is not intended to provide a comprehensive review of the book. Instead, I want to move on to what I would really like to discuss.

One of the most compelling discussions in the book is Chapter 3's focus on scientists as so-called feeling actors. Neuroscientists, we are reminded, are people, too. And they are complicated, messy beings just like the rest of us. In the pages of *Tracing Autism*, they cry, they love, they feel and express a range of emotional ups and downs. This is hardly news, of course, but what Fitzgerald does successfully is force the reader to confront the reality of neuroscientific research itself as an "emotional landscape" (see Orsini and Wiebe 2014). The "work", then, of autism neuroscience involves a series of affective commitments and labour, as well.

While acknowledging what Gould terms an "affective curve in the emotional turn" (2009, 23) in the social science and humanities, Fitzgerald is less interested in rehashing some of the debates animating this ever-expanding field. At the same time, however, it is curious that he steers clear of thinking the distinctions between affects and emotions, while nodding to the work of well-known affect theorists such as Brian Massumi. Indeed, there is some slippage in Fitzgerald's own account. As Gould writes (2009, 20) in her masterful history of the radical AIDS movement, even if such slippage is difficult to avoid, some distinction between the two

terms is useful: “I use the idea of an emotion or emotions to describe what of affect - what of the potential of bodily intensities - gets actualized or concretized in the flow of living... Where affect is unfixed, unstructured, noncoherent, and nonlinguistic, an emotion is one’s personal expression of what one is feeling in a given moment, an expression that is structured by social convention, by culture.”

In some of the interviews excerpted in *Tracing Autism*, the feelings expressed by interviewees can be read differently, depending upon whether one views some of these expressions as non-conscious or deliberate adaptations to particular environments or interactions, such as that between interviewer and subject. The literature on “feeling rules”, for instance, has been useful in helping to sort through questions of whether these emotional outbursts are structured by what people think they should feel or express in a given environment. Unlike other rules, feeling rules “do not apply to action but to what is often taken as a precursor to action” (Hochschild 1979, 566). What might be appropriately felt in one context may not be in another. Hochschild distinguishes between a feeling rule “as it is known by our sense of what we can expect to feel in a given situation, and a rule as it is known by our sense of what we should feel in that situation” (1979, 564). One might, for instance, expect to feel something even when one is aware that ideally they should be feeling something else.

Does the appropriate expression of emotion serve to communicate the sense that scientists who care and feel can otherwise get back to the business of doing science, secure in the comfort that they have shaken any image that they lack empathy? Not necessarily. And their neat relations between the capacity to emote and the ability to gain legitimacy and standing as an autism neuroscientist? Not sure, either. One thing is clear: many of Fitzgerald’s interview participants reflected on past experiences, which they inevitably interpreted retrospectively through the act of telling? Of course, interviews involve, as Fitzgerald appreciates, intersubjective communication between the teller and the listener.

There is the added feature here of how neuroscientists understand the receptivity of the interviewer to their own emotional-laden stories. This is not to cast doubt on the authenticity of these narrative encounters, but to explore further how the world of neuroscience is shifting as it interacts with a world beyond the “neuro”. We do not need to reify terms such as “neuro” or “social” or “biological” to appreciate that discovering that neuroscientists have feelings too is made possible – and knowable - by the rigid boundaries that demarcate the “hard” sciences from the softer sciences in the service of the rapidly disappearing “social”.

Finally, given the author's interest in the subjectivity of neuroscientists working in the field of autism, the perspectives of actually autistic people who engage with researchers are strikingly absent. The author is clearly familiar with broader debates about neurodiversity that are rooted in a positive autistic identity versus approaches that position autism as a deficit or disorder requiring intervention. What does it mean to focus on how prominent scientists and researchers reflect on autism from their perspective, and from interactions with autistic adults or children?

Although Fitzgerald acknowledges the tensions between medical and social models of disability, there is an untapped potential here to frame some of his insights through the lens of critical disability studies perspectives. For all of its nuance, ambiguity and indeterminacy, the author's discussion at the end of this chapter is framed in fairly stark terms: either you accept the claims of embodied difference embraced by autistic neurodiversity advocates or you acknowledge a deficit model of autism as lack.

At the end of the book, I was left to wonder how to characterize this book, which is actually a good problem. *Tracing Autism* defies our attempts to categorize it. While it is not a book about autism *per se*, but the narratives that unfolds in these pages are intimately connected to ways of thinking about (but not always *with*) autism. For this reason, it stands out as critical interdisciplinary scholarship in the best sense of the term: not a sloppy grab bag of related concepts throw into a pot and stirred vigorously. Rather, Fitzgerald's careful engagement with literary theory, cultural studies, and science and technology studies, reveals a need to think boldly about what emerges from these complex interactions. In tracing narratives of autism research and science, Fitzgerald has given us reason to disrupt conventional social science accounts of neuroscience that reproduce problematic, disembodied accounts of scientific practice and of the individuals who inhabit these worlds.

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Beyond "Paranoia" and "Reparation": Tracing Autism Neuroscience

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Des Fitzgerald's excellent *Tracing Autism: Uncertainty, Ambiguity, and the Affective Labor of Neuroscience* is not strictly a book about autism. It is, rather, as the author observes, more about neurosciences than it is about autism (171); or drawing on the title, it is more about the activity of "tracing" than about "autism." Tracing describes the "act of pursuing, enacting and enabling" autism neuroscience research "through forms of difference, ambiguity and entanglement" (29). And the book does a good job of carefully examining the activity of "tracing" autism, and its implications not just for autism research, but also for the social studies of neurosciences, which is the main interest of the author. In this sense, the sociologist Fitzgerald admits that when he started his investigation he "went looking for the monolith" (177); but after interviewing the neuroscientists he was surprised to find uncertainty, ambiguity and affect where he expected certainty, exactness and rationality. And this is the main claim of the book. Neuroscience research is not defined by "neurobiological chauvinism" (25) or hardcore neuroreductionism, as the standard social science account state. Instead, it is defined by disappointments, tensions, uncertainties, very low expectations, ambiguities and self-criticism.

Therefore there is no point in fueling social science anxieties and "paranoid" readings of neuroscientists's discourses and practices. Instead the time is ripe for "reparatory" attitudes (Fitzgerald draws on Eve Kosofsky Sedgwick's distinction between "paranoid" and "reparative" readings) and interdisciplinary collaborations that embrace ambiguity and contradictions in an experimental setting as indicators of nuance and care and not of epistemological naivety or of the constrain of social and cultural factors. Fitzgerald goes so far as to declare the "sheer redundancy of the critical theorist's wagging finger" (82) that he locates in critical neuroscience and other paranoid versions of social science analysis of the neurosciences. Such critique is no longer needed since the neurosciences are sufficiently (self-) critical and capable of recognizing entanglement and context, to reject naïve objectivity and "to produce a much richer, less settled, and much more entangled account of the crossing bodies, affects and politics" (82). Moreover, neuroscientists always think about "the social," and the social at stake in neuroscience and epigenetic research is sometimes "the social as most sociologists would

understand the term” (133). Reading Fitzgerald one wonders whether sociology and anthropology of science have not become superfluous disciplines given that neuroscientists’ critical attitudes display “a much deeper and richer form of entanglement than most sociological and anthropological accounts are themselves capable of” (82).

Tracing Autism is a terrific book, original and elegantly written, and opens new paths to think about neuroscience research and more specifically research on autism, as well as to encourage a “postcritical mood” (183) and promote interdisciplinary collaborations. I favor interdisciplinary collaborations and nonparanoid readings of the neurosciences and agree that this attitude does not turn us into “vacuous cheerleaders for the new brain sciences” (168). However, at the risk of being labeled “paranoid” and “in danger of totally missing a moment of striking openness in the practice of neuropsychology” (143), I believe some caution is needed before embracing fully Fitzgerald’s enthusiastic account of autism neuroscience research. In the interest of dialoguing with the author, I offer three observations.

First, *Tracing Autism* provides a moving and heroic account of autism neuroscientists, pursuing their research amidst disappointment, low expectations, selflessness, uncertainty and ambivalence. It is touching to see that the scientists engaged in autism research are haunted by negative expectations and yet still enthusiastically follow their research. It is also moving to read the frankness of some of Fitzgerald’s interviewees, who acknowledge that neuroscience doesn’t necessarily “add value” to what we already know, and that after two decades of scanning brains it is not clear that the field has dramatically moved forward (74). This raises broader ethical and epistemological questions. How can we justify spending billions of dollars in genetic and neurobiological autism research when much of this knowledge has very limited value for people living with autism, who are largely more concerned with navigating daily social interactions and communication barriers (Singh 2016)? The needs of people living with autism are not at the forefront of research priorities. In the U.S., for instance, only 10% of public and privately funded projects related to autism research between 2008 and 2010 were dedicated to the needs of adults living with autism, while 90 per cent related to some aspect of genetic research (Singh 2016, 154). Fitzgerald tangentially mentions this issue when he admits that “from a research strategy point of view, there is perhaps room to be more circumspect about the role that neurobiological (and genetic) research is likely to play in improving the day-to-day lives of autistic people” (174). Moreover, *Tracing Autism* lacks a convincing examination of the economic, academic and other compensations that explain the pursuit of neuroimaging research despite their limited results. As Jennifer Singh (2016, 105) observes

regarding genomic research, “it makes no sense for the future of research labs and scientific careers to jump off the autism genetics research bandwagon”, which results in peer review articles, scientific prestige and enormous amounts of research funds.

The second observation is closely associated with the previous one. Fitzgerald convincingly argues that neuroscience research is characterized by disappointments, tensions, uncertainty, negative expectations, ambiguities and selflessness. But this is only one side of the story. Something else happens, however, when these same scientists go public, write grant applications, or speak with funders or science journalists. Then we frequently see a triumphalist discourse embedded with high expectations, hype, certainties, neuroreductionism and self-confidence. Of course, a lot is at stake (prestige, research funds, publications) and funders don't appreciate ambiguity or low expectations. Fitzgerald does not follow his interviewees beyond the lab to observe whether they maintain the same disposition toward their work. Therefore, perhaps it is premature to call for reparation, even if we are “in danger of totally missing a moment of striking openness in the practice of neuropsychology” (143).

Finally, despite Fitzgerald's claim that neuroscientists are capable of recognizing entanglement and social and cultural contexts, and are inclined to see a symmetrical interplay between the "social" and the "natural" (82-3), we find recurrently in neuroscience research a non-explicit epistemic hierarchy in which, since the neurosciences ultimately account for psychological, social, and cultural phenomena, the neurobiological approach ranks above other forms of inquiry and knowledge (Vidal and Ortega 2017). In *Being Brains* Fernando Vidal and I illustrate this epistemic hierarchy through the burgeoning field of cultural neuroscience. In spite of an emphasis on the two-way processes that turn brain into culture and culture into brain, a common feature of the neurodisciplines of culture is their belief in the ontological primacy of the brain that reduces culture to an external factor that “shapes,” “influences” and “impacts on” neural activity, function and processes.

Merriam-Webster defines reparation as “the act of making amends, offering expiation, or giving satisfaction for a wrong or injury.” Fitzgerald's plea for a reparative attitude induces us to think that social scientists should apologize for the harm done to the neurosciences with their paranoid readings. This claim is overstated, and my observation is that the author's enthusiastic claims about the neurosciences should be tempered somewhat.

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Bad Surprises

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One of the hallmarks of the paranoid style, in Eve Sedgwick's formulation, is its anticipatory nature. Paranoid reading, says Sedgwick, is defined by an aversion, above all things, to the unexpected. It is marked by a "knowing, anxious... determination that no horror, however apparently unthinkable, shall ever come to the reader *as new*" (2003, 146). The basis of this determination is a commitment to avoiding, at all costs, the bad surprise. And so, against such a possibility, an "unresting vigilance" is warranted—which is to say, the analyst takes a stance of unwavering and hyper-pessimistic awareness, situating herself squarely within a view of the world that *always saw it coming*. Thus does an aversion to the bad surprise produce a way of seeing that—in its insistence that all has always been awfulness, and always will be—remains stubbornly blind to anything that might, perhaps, be other than awful (*ibid.*, 130-131). Better to know that things have always been terrible than risk being caught unawares. Better to remain wary than to risk being taken in.

Two things go missing in this effort, says Sedgwick. One is any possibility of a *good surprise*. The other is hope. I am grateful to these reviewers for helping me to see, with much greater clarity, that when I say there is a reparative gesture at the heart of *Tracing Autism*, I mean that it is a hopeful book about a good surprise. It is not a book about thinking that the neurosciences are invariably wonderful, or "heroic." Indeed, as Robyn Wiegman points out, quoting Ellis Hanson (2012), it is disillusion, "rather than infatuation," that undergirds the desire for repair (2014: 11). So *Tracing Autism*, as Elizabeth Fein puts it in her exceptionally acute reading of the text, is a book about "weirdness and fascination and love turning up in unexpected places" *nonetheless*. The good surprise is that, amid all its problems, its reductiveness and its crudeness, its epistemological imperialism, its enormous cost, its multiple affiliations with individualizing neoliberalism (I caricature, but I don't disagree all that much), there is still—maybe! sometimes!—more to neuroscience than we ("we") thought: more strangeness, more ambiguity, more subtlety, more modesty, more liveliness, more feeling, and so on. (In passing: I understand the critical impulse to insist that says this is "not news." But reportage seems like a poor idiom for getting a hold of what I'm arguing here). The hope is then that we ("we") might do something better together— that there "might be a way forward," as Matthew Wolf-Meyer puts it, much better than I do: "a way to re-think what the

neurosciences are doing as much as we might rethink what the social studies of science, technology, and medicine are doing and can do."

I know of course that for others, even where they are generous and sympathetic to my own stance, vigilance remains essential—and for good reason. I think this is especially the view of Francisco Ortega, who points out, in spite of the claims in the book, that still "we find recurrently in neuroscience research a non-explicit epistemic hierarchy in which... the neurosciences ultimately account for psychological, social, and cultural phenomena." Michael Orsini, similarly, wonders whether my neuroscientist interviewees, have given me their emotive stories before "get[ting] back to the business of doing science, secure in the comfort they have shaken an image that they lack empathy." For both of these authors, if I can be forgiven this simplification, it seems to be the case that the neurosciences are either bad in ways that I am not acknowledging, or bad in ways that are not visible to (perhaps even made invisible by) my project. To be clear: Ortega and Orsini are astute readers, and I take this criticism seriously. But I also think that we are coming at this from two very different directions. For me, it's not so much that (as Francisco Ortega has it) I have failed to "follow [my] interviewees beyond the lab to observe whether they maintain the same [ambiguous, thoughtful] disposition toward their work." I mean, for what it's worth, I am certain that they do not invariably maintain this disposition. The point is that I don't find this analytically interesting. The ways in which the neurosciences are problematic, or unfortunate, or imperialistic, or instrumental, or just generally *lacking* in some indefinable way, seem to me to be so obvious, so much on the surface, so clearly available to any casual observer, that I can see neither a philosophical nor an empirical virtue in—I am again quoting Wiegman (2014) quoting Hanson (2012)—simply "repeat[ing] the bad news" (2014, 11). And not that anyone accuses me of this, but I am broadly okay with being thought a dupe in the service of thinking otherwise, and actually I think the "dupe" more generally—even the *patsy*^[1]—is perhaps an under-determined figure in the varied empirical and theoretical projects of STS, medical anthropology and medical sociology.

Elizabeth Fein poses a very different sort of critical question, asking how we should think about an ambiguous, uncertain, even loving attitude to particular kinds of difference, in the service of a practice or a science that has, at its heart, the exclusion of that difference—indeed, at moment when the work of uncertainty might also be the work of elimination. "What melancholies are invoked," Fein asks, "when one invests one's life energy in a project that is powered by fascination, appreciation and love for the very particularities it aims to

eliminate?" I've been turning this question over in my head since I first read it, and still don't have a good answer. But Fein puts her finger on a certain kind of atmosphere both in this interview and in the book at large—which is indeed, for me at least, much more a mournful than it is an heroic account. And some of this may well be traced back to the fact that, as M. Ariel Cascio rightly points out in their contribution, this is in significant part a book about the tensions, fissures, and (attempts at) relations across the social sciences and neurosciences—territory that I have explored in more detail, with other collaborators, elsewhere (see e.g. Callard and Fitzgerald 2015).

But the larger stakes of Fein's question are about what it would mean to pursue an autism science for which elimination—even amelioration—might form a more distant horizon. I am reminded here of Chloe Silverman's *Understanding Autism* (2012), which does a much better job than I ever will of ethnographically unpeeling the potent assemblage of reason, experience, desperation, and love, through which curative attitudes to autism, for all their problems, sometimes take place. But I want to take advantage of this space to place Fein's question in conversation with Matthew Wolf-Meyer's very welcome proposal for a "rewilded neuroscience"—which is to say, a commitment to recalling, and actively stewarding, a neuroscience that exceeds the highly cultivated practice that we know (and critique) today. Perhaps the collective work then, for all of us working on these topics (and here, maybe, we might put our capacity for vigilance to more productive ends), is the work of recalling and recovering different kinds of horizons for the neurosciences, through and with very different practices of sewing and stewarding among the social sciences, and thereby "opening up," as Fein has it, "new ways of occupying...in-between, indeterminate, generative spaces" in newly wild territories. In any event, I would be very happy to see this book recruited to such a project.

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Notes

^[1] I note in passing this term's etymological relationship to Irishness, and to my own given first name, Patrick.

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