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5. *Reconceptualizing College Impact Studies Through a Fractal Assemblage Theory*

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Abstract: College impact studies have formed the common sense of understanding institutional relationships to student growth and change for decades. In this time, they have become entangled with the production of the neoliberal university. This paper¹ presents an alternative theorization of student change on campus, a fractal assemblage theory. Assemblage theory is discussed through a single common language of major assemblage theory concepts across four authors. After exploring these concepts in depth, this paper returns to the stakes of assemblage theory: higher education research not to channel student to predetermined outcomes, but to create student futures in excess of our imaginations.

Keywords: college impact, assemblage theory, power, outcomes, becoming

In American higher education, impact studies form the “truth” of how researchers and practitioners understand the effects of college on students.² College impact studies make explicit or implicit use of Alexander Astin’s

¹ A version of this paper was presented at the 2018 Association for the Study of Higher Education Annual Conference. Sections of this paper are adapted from my dissertation.

² Bowman, *Four Critical Years*; Feldman and Newcomb, *Impact of College*; Mayhew et al., *How College Affects Students*; Ozaki, “College Impact Theories”; Renn and Reason, *College Students*.

Input-Environment-Output, or I-E-O, conceptual framework.³ Impact studies have moved from groundbreaking in the 1970s to quotidian today; I-E-O is now a common sense across the higher education literature.⁴ College impact studies brought the truth of the student experience into a regime of calculation whereby students and all components of the university are known as and through data points. In this work, college impact studies have rendered higher education intelligible to neoliberalism, or data-driven control, and contributed to the formation and acceleration of academic capitalism.⁵ Whereas critiques of neoliberalism in higher education are far from uncommon, critiques of impact studies are scarce. Higher education researchers, practitioners, and publics lack the alternative conceptual frameworks from which to question the common sense of I-E-O. In this paper, I offer a fractal assemblage theory as a starting point through which to reconceptualize the impacts of college.

The stakes of developing alternatives to college impact studies are evident in discussions of student outcomes. Our age of accountability demands that all institutional actors be held individually responsible for predetermined individual student outcomes, or outputs (O).⁶ These actors should assess and reform university environments (E) accordingly not because they have to, but because they *want* to.⁷ Scientifically engineering attainment of predetermined outcomes using increasingly vast and proprietary means of digital surveillance may be ascendant,⁸ but this is not the only way in which university

³ Astin, “Methodology of Impact One”; Astin, “Methodology of Impact Two”; Astin, “Student Involvement.” College impact here includes studies in slightly derivative formats as identified by Ozaki, “College Impact Theories” and Pascarella, “College Environmental Influences.”

⁴ See Astin, *Four Critical Years*; Tinto, “Dropout from Higher Education”; Pascarella, “How College Affects Students”; Mayhew et al., *How College Affects Students*.

⁵ Brown, *Undoing the Demos*; Slaughter and Rhoades, *Academic Capitalism*; Smithers and Eaton, “Reordering Student Affairs”.

⁶ U.S. Department of Education, *New Focus on Outcomes*.

⁷ Kuh et al., “Beyond Compliance.”

⁸ This statement stands on the work of many studies in the last two decades. For primers on the problems with the early aughts’ gold standard of education research, see St. Pierre, “‘Science’ Rejects Postmodernism” as well as the articles in the back-to-back special issues of *Qualitative Inquiry* devoted to this topic; Lincoln and Cannella, “Dangerous Discourses”; Cannella and Lincoln, “Dangerous Discourses II.” To explore the logics that sustain the gold standard as well as impact studies, see Aaron Kuntz’s work on logics of extraction as related to neoliberalism and control societies; Kuntz, *Responsible Methodologist*. For explorations of these logics as they are practiced in higher education, see the citations in footnote 5 as well as Giroux, *Neoliberalism’s War*, Lorenz, “If You’re So Smart,” Pasque, Carducci, Gildersleeve, and Kuntz,

communities can be responsible for producing positive student outcomes. Universities must also be a place where outcomes that students, administrators, families, and the world would never dream of become possible. College impact studies have no way to engineer this, and an over-reliance on them in university life narrows the paths by which universities can “make [student worlds] available for alternative ordinaries.”⁹ A fractal assemblage theory provides an alternative means through which we can come to understand both the production of university life and how we can create student futures in excess of outcomes we can presently imagine.

Assemblage theory, as presented through a single author or set of co-authors, would itself bring helpful tools to the study of higher education. This could be done through an application of a single work in this space, or a single author, to higher education. Instead, a fractal assemblage theory has two aims. First, a fractal assemblage theory places multiple works of multiple authors in conversation with each other to thwart any linear, fully rational understanding of assemblage theory. A fractal assemblage theory is a theory brimming with authors both cited and haunting,¹⁰ riddled through with interstices, bringing myriad points of resonance and symmetry to authors, disciplines, and conceptual frameworks. A fractal assemblage theory permits the bridging of theoretical traditions without loss or contradiction. In this paper, it brings Continental philosophy within feminist science studies and it brings feminist science studies within Continental philosophy, creating a promiscuous unity that keeps distinctions without breaking the whole.¹¹ This promiscuity produces an un/recognizable assemblage theory, one paradoxically faithful to our theorists and a creation (and creature) all its own.¹² Second, a fractal assemblage theory performs the diagram of relations specific to our historical moment, a point I explore further below and in the

Qualitative Inquiry for Equity, and what I find to be one of the most interesting reads on this, given the authors’ work for the National Institute for Learning Outcomes and Assessment, Jankowski and Provezis, “Neoliberal Ideologies.” For a few of many recent explorations of digital surveillance and control in education, see Gildersleeve, “Lazy Academic”; Gulson and Sellar, “Emerging Data Infrastructures”; Williamson, “Datafication of Education.”

⁹ Berlant, *Cruel Optimism*, 6.

¹⁰ Barad, “Quantum Entanglements.”

¹¹ On this count, this paper works both with Buchanan’s call for works on assemblage theory to engage the primary texts of Deleuze and Guattari while also contesting his assertion that assemblage theory and genealogy are incompatible. Buchanan, “Assemblage Theory.”

¹² Childers, Rhee, and Daza, “Promiscuous Feminist Methodologies.”

final sections of this manuscript regarding datafication and control societies. A fractal assemblage theory re/presents different approaches to the study of college impact in higher education and student affairs, opening different questions and presenting different methodological imperatives.

Below I form a fractal assemblage theory through the works of several theorists. Readers familiar with the work of any one of these authors may find some of what follows to be novel. This reading of assemblage theory conforms exactly to none of the individual works of these authors, and many of the authors do not refer to themselves as assemblage theorists. A fractal assemblage theory pursues several goals. First, it conceptualizes assemblage theories as a fractal monadology.¹³ As a fractal monadology, assemblage theory is not composed of in group and out group theorists, as there is no outside. It is also not composed of separable concepts across theorists, as there is no separability. Instead, assemblage theory becomes saturated with folds, and individual concepts and theorists are differentiable but not separable. In this way, “a fold is never final, never a definitive cut, and thus the mechanism of creation is invagination, pleating, further folding and twisting, rather than unfolding or cutting.”¹⁴ Invagination. A fractal fold is a combinatorial repetition of a fold, a fold for the digital and calculable world where separability occurs through dividuation, or datafication. Neoliberalism or data-driven control is the overlay of “rigid overarching structures”¹⁵ on dividuation, rendering the world static and calculable and thus placing algorithms in the role of building truth.¹⁶ This is the innovation of the I-E-O algorithm in college impact studies: it is a rigid overarching structure for college environments (E) that places its dividuated components (I, E, O) into continuous algorithmic variation.¹⁷ College impact studies: an invagination for the dividual age.

I begin with a basic re/presentation of the assemblage in the works of our theorists: Karen Barad, Gilles Deleuze, Michel Foucault, and Felix Guattari.¹⁸ While the methods proffered by these theorists do not have traction in

¹³ de Freitas, “Rethinking Monadology.”

¹⁴ Ibid., 227.

¹⁵ Ibid., 222.

¹⁶ Deleuze, *Foucault*; Deleuze, “Postscript”; de Freitas, “Rethinking Monadology”; Ferguson, *Reorder of Things*; Galloway, *Protocol*; Raunig, *Dividuum*. See also neoliberal multiculturalism; Melamed, *Represent and Destroy*.

¹⁷ Smithers, “Liberal Education”.

¹⁸ From this point forward, I’ll refer to this grouping of theorists as *our theorists*. I do briefly mingle in Massumi’s fantastic secondary text, evocative and *deviant* enough that it in many ways it stands as its own primary text. Massumi, *User’s Guide*.

mainstream higher education research,¹⁹ the use of these theorists (and those with resonant concepts in the fields of queer theory, Black studies, affect theory, and others) in education research has a long and intensifying history.²⁰ From this monad, I “produce a map of convolutions and folds”²¹ associated with assemblage theory along three concepts repeated through the works of our theorists: knowledge, power, and subjects. Focusing on these three concepts to explore their patterns of difference is a cut I make here that leaves out important concepts from our authors. Sticking with these terms over others is another cut that smooths over jagged conceptual edges²² present among our theorists. In important ways, these cuts are incommensurate with Deleuze and Guattari’s deliberate moves to “stretch tensors through all of language, even within language, and draw from it cries, shouts, pitches, durations, timbres, accents, intensities.”²³ Here, I stretch tensors not through multiplying these terms, but in re/creating multifaceted concepts ready to be stretched through different empirical sites as well as through different theoretical and activist traditions, and in doing so, draw from them the cries and intensities of assemblages-to-come. Our single common language of knowledge, power, and subjects does not flatten concepts into universals, but rather resingularizes, creating patterns of difference and/through repetition. Knowledge, power, and subjects become singularities not “opposing the universal but any element that can be extended to the proximity of another such that it may obtain a connection: a singularity in the mathematical sense.”²⁴ I include tables where helpful in order to collect the concepts in proximity to the singular term under discussion. With our fractal assemblage theory mapped, I re/in/corporate impact studies. In this final invagination I map possibilities for thinking-making-doing²⁵ the study of college impact differently.

¹⁹ Wells et al., “How We Know.”

²⁰ See Abes, “Theoretical Borderlands”; Carlson and Koro-Ljungberg, “Remixing Foucault and Deleuze”; Clark/Keefe, “Becoming Undone”; Dache, “Ferguson’s Black Radical Imagination”; Eaton, “Competency-Based Movement”; Flint, “Healing a Divided Nation”; Lather, “Fertile Obsession”; MacLure, “Researching Without Representation”; Mayo, “The Uses of Foucault”; Mazzei, “Silent Listeners”; Pasque et al., *Qualitative Inquiry*; St. Pierre, “Poststructural Feminism”; St. Pierre, Jackson, and Mazzei, “New Empiricisms.”

²¹ de Freitas, “Rethinking Monadology,” 231.

²² JE, yall. See Jagged Edge, “Let’s Get Married.”

²³ Deleuze and Guattari, *A Thousand Plateaus*, 104.

²⁴ Deleuze, *Two Regimes*, 354.

²⁵ Springgay and Truman, “Methods Beyond Proceduralism.”

Assemblage

Assemblage and assemblage theory are used throughout as a single common referent for related and translated terms: *dispositif*,²⁶ apparatus,²⁷ assemblage,²⁸ and *agencement*.²⁹ An assemblage is the organization of indeterminate molecularities, or singularities, that form the conditions of possibility of measurable realities. Assemblages are not formed by determinate beings, persons, or objects; assemblages form (or assemble) determinate beings, persons, and objects. Assemblage is the English translation of *agencement* in Deleuze and Guattari's work. The definition of the French word *agencement* "does not simply entail heterogenous composition, but entails a constructive process that lays out a specific kind of arrangement."³⁰ Also writing in French, Foucault uses the term *dispositif*, which translates to apparatus.³¹ Barad, writing in English, uses the term apparatus and is careful to note the ways in which she both borrows and diverges from her reading of the Foucauldian apparatus.³² In collapsing all of these terms here into assemblage, there is loss. There is also much to be gained—an analysis of the "differences that matter"³³ placed in a single common language accessible to a range of readers. For readers familiar with assemblage theory, this is an elementary starting point. However, starting here becomes indispensable as this work becomes fractal.

What again are the contours of our assemblage? Foucault provides a productive place to start. For Foucault, a *dispositif* (here translated as apparatus) is:

a thoroughly heterogenous ensemble consisting of discourses, institutions, architectural forms, regulatory decisions, laws, administrative measures, scientific statements, philosophical, moral and philanthropic propositions—in short, the said as much as the unsaid. ... The apparatus itself is the system of relations that can be established between these elements.³⁴

More than a set of relations, an assemblage is the act of bringing into relation. An assemblage is "... what keeps very heterogenous elements together: e.g. a sound, a gesture, a position, etc., both natural and artificial elements. The

²⁶ Foucault, *Le Pouvoir Psychiatrique*.

²⁷ Barad, *Meeting the Universe Halfway*; Foucault, "Confession of the Flesh."

²⁸ Deleuze, *Two Regimes*; Deleuze and Guattari, *A Thousand Plateaus*

²⁹ Deleuze and Guattari, *Kafka*

³⁰ Nail, "Assemblage," 24.

³¹ Foucault, *Le Pouvoir Psychiatrique*.

³² Barad, *Meeting the Universe Halfway*.

³³ *Ibid.*, 72.

³⁴ Foucault, "Confession of the Flesh," 194.

problem is one of ‘consistency’ or ‘coherence’. ... How do things take on consistency? How do they cohere?”³⁵ Assemblage theory emphasizes that preindividual singularities are the ‘stuff’ an assemblage assembles,³⁶ and assemblages actively maintain a consistency among related elements that brings that which we take to be “preexisting separately determinate individuals.”³⁷ (e.g. an input [I], a person, a grimace, Grimace, ADHD, a SAT score) into being.³⁸

Empirical studies utilizing assemblage theory thus study intra-actions of entangled subjects rather than taken-for-granted individuals. As assemblages are compositions of preindividual singularities, individuals are products of assemblages, not the constituent components. Assemblages are relations of creation that map the world as an immanent unfolding rather than a series of static constants.³⁹ Assemblage theory provides a social theory of the production of measurable, individuated realities. This presents alternative possibilities for considering college impact in ways I explore later.

With this conceptualization of an assemblage in hand, I move to explore our three main concepts of assemblage theory: knowledge, power, and subjects. In doing so fractally, I produce an assemblage theory that is resonant with the work of all of our authors but faithful to none. Instead of a faithful literature review of assemblage (and adjacent) theories, what follows a mapping, or act of creation, of a profaned, fractal assemblage theory. To begin, Table 1 maps the resonance across various texts of our theorists of our three main concepts.

³⁵ Deleuze, *Two Regimes*, 179.

³⁶ See Barad, *Meeting the Universe Halfway*, 451

³⁷ *Ibid.*, 451.

³⁸ My thanks to a reviewer here for noting that this description of an assemblage could be read as another way to also describe a factor analysis. While there is some resonance, assemblage theory and factor analysis rely on very different ontological assumptions. In our terms here, these differences can be highlighted through understanding an assemblage as an act of bringing into relation, not simply a matrix of relations. In this action, an assemblage brings into relation real elements that are both individuated as well as indeterminate. A factor analysis presumes a latent variable that can be approximated by a matrix of x individuated factors. The indeterminate real components of the latent variable remain *unaccounted* for. For extended treatments of this difference in logic, see Parisi, “Automated Thinking” and Parisi, *Contagious Architecture*. For still more detail on how big data can be read as a data assemblage instead of a data matrix, see Kitchin and Lauriault, “Critical Data Studies.”

³⁹ See *ibid.*, 234.

Table 1. Concepts resonant with knowledge, power, and subjects in the works of Barad, Deleuze, Foucault, and Guattari

Text	Knowledge	Power	Subjects
Deleuze and Guattari (1987)	Concrete assemblage composed of strata (p. 144)	Abstract machine (p. 144)	Body (p. 80)
		Diagram (p. 92)	Haecceities (p. 261)
Deleuze (1988)	Concrete assemblage (p. 37)	Abstract machine (p. 37)	Subjectivation (p. 104)
	Knowledge (p. 51)	Diagram (p. 34)	
	Historical formation (p. 51)	Power (p. 39)	
Foucault (1990)	Knowledge (p. 98)	Power (pp. 84–85)	Subject (pp. 66, 70, 84–85)
	Truth (pp. 69–70)		
Barad (2007)	Relations-within-Phenomena (p. 140)	Spacetime-matter manifold (p. 246)	Bodies (p. 177)
			Material-discursive phenomena (p. 153)
			Exteriority-within-phenomena (p. 140)
Deleuze and Guattari (1994)	Concrete assemblage (p. 36)	Abstract machine (p. 36)	Conceptual personae (pp. 69–73)
	Concepts (p. 36)		

Knowledge

Within this fractal assemblage theory, knowledge is comprised of contents and expressions in discontinuous relation. Knowledge—or what we take to be true, false, betwixt, or between—is produced by assemblages. *Content* and *expression* are two additional single common terms central to this fractal assemblage theory. Stated in different ways, knowledge relates words and things,⁴⁰ or knowing-in-being,⁴¹ or nature and culture,⁴² or the material and discursive.⁴³

⁴⁰ Deleuze, *Foucault*.

⁴¹ “Knowing is a matter of intra-action,” Barad, *Meeting the Universe Halfway*, 149.

⁴² “... with respect to the idea of assemblage, the nature-culture distinction no longer matters” Deleuze, *Two Regimes*, 179.

⁴³ Barad, *Meeting the Universe Halfway*, 148; Foucault, *History of Sexuality I*, 155–156.

Deleuze describes the relationship between these as “two irreducible forms of knowledge.”⁴⁴ Content takes both a form and a substance, as does expression. Table 2 maps these terms across various texts of our theorists.

Table 2. Concepts resonant with content and expression in the works of Barad, Deleuze, Deleuze and Guattari, and Foucault

Text	Content	Expression
Deleuze and Guattari (1987)	Content (p. 44)	Expression (p. 44)
	Machinic assemblage (that which machines content; p. 88)	Collective assemblage of enunciation (that which enunciates expression; p. 88)
Deleuze (1988)	Content (p. 47)	Expression (p. 47)
	Words (p. 52)	Things (p. 52)
	Non-discursive formations (p. 49)	Discursive formations (p. 49)
	System of light (p. 32)	System of language (p. 32)
	Visibility (p. 51)	Sayability (p. 47), or statements (p. 51)
Foucault (1990)	Materiality (p. 155)	Discourse (p. 156)
Barad (2007)	Matter (p. 148)	Discursive practices (p. 148)

Barad describes the material and discursive but makes clear that this split in terminology does not reflect any separability of these terms in subjects. For Barad, assemblages:

... are material (re)configuring or discursive practices that produce (and are part of) material phenomena in their becoming. Discursive practices [expression] and material phenomena [content] do not stand in a relationship of externality to each other...⁴⁵

On this point, Deleuze and Guattari and Foucault agree.⁴⁶ Equivalent to Barad, Deleuze and Guattari find the separable individuals of simple empiricisms to be inseparable compositions of both content and expression.⁴⁷

In simple empiricisms, forms and substances are starting points for analysis instead of contents and expressions. Forms here can be understood as “modes of code and decoding,” whereas substances refers to “nothing other than

⁴⁴ Deleuze, *Foucault*, 121.

⁴⁵ Barad, *Meeting the Universe Halfway*, 184.

⁴⁶ Deleuze and Guattari, *A Thousand Plateaus*; Foucault, *History of Sexuality I*.

⁴⁷ Deleuze and Guattari, *A Thousand Plateaus*.

formed matter.”⁴⁸ In assemblage theory, codes (for example, a major map) and formed matter (for example, students) are not primary. A method utilizing assemblage theory cannot measure the world as it appears and create, for example, “the continuous means to gauge students’ progress toward attaining a quality degree.”⁴⁹ Simple empirical evidence—form and substance—is never pure form and pure substance in assemblage theory, as expression has “just as much substance as content and just as much form as expression.”⁵⁰ Knowledge in the simple empirical world is always a composition, or entanglement,⁵¹ of content and expression. Experimentations with assemblage theory study the simple empirical in search of contents and expressions.⁵²

Content

Content loosely names the material: “it is a *machinic assemblage* of bodies, of actions and passions, an intermingling of bodies reacting to one another.”⁵³ Content is not simply another way to refer to the material world. This is the mistake made in simple empiricisms, including college impact studies.⁵⁴ To re/conceptualize the world through assemblage theory, we must look in the interstices of what at first glance might be known as a simple separable material substance such as an ‘individual’ student or forms such as degree programs or institutions. Knowledge is reconceptualized as compositions of content and expression in relation to power that constructs students, programs, interventions, and institutions as such. Content “*is substance in its intra-active becoming—not a thing but a doing, a congealing of agency ... a dynamic articulation/configuration of the world.*”⁵⁵ In order to assess content, we must “*open up qualities, things and objects ... extract from things and sight the visibilities and ‘self-evidences’ unique to each stratum.*”⁵⁶ Contents are:

invisible so long as we consider only objects, things, or perceptible qualities, and not the conditions which open them up. And if things close up again afterwards, visibilities become hazy or blurred to the point where ‘self-evident’ phenomena cannot be grasped by another age.⁵⁷

⁴⁸ Ibid., 41.

⁴⁹ Maki, *Real-Time Student Assessment*, 7.

⁵⁰ Deleuze and Guattari, *A Thousand Plateaus*, 44.

⁵¹ Barad, *Meeting the Universe Halfway*

⁵² Deleuze, *Pure Immanence*.

⁵³ Deleuze and Guattari, *A Thousand Plateaus*, 88.

⁵⁴ Ibid.

⁵⁵ Barad, *Meeting the Universe Halfway*, 151, emphasis in original.

⁵⁶ Deleuze, *Foucault*, 53.

⁵⁷ Ibid., 57.

An assemblage theory analysis of impact in part studies the conditions that make various inputs (I), environments (E), and outputs (O) self-evidently separable.

Content is comprised of both form and substance. The form of content “defines a space of visibility,”⁵⁸ whereas the substance of content is the “formed matter” specific to content.⁵⁹ In higher education, the form of content is the university, and the substance of content includes students, staff, and faculty.⁶⁰ The difference here between the assumptions of college impact studies and assemblage theorizations is clear. Content, one of two units of knowledge, is never an individual student. Content is a student indivisible from the institution. There can be no measure of a student alone, including as a collection of inputs (I) or outputs (O). There can also be no measurement of environment (E) alone without the conditions under which material, measurable environments are possible. Content in assemblage theory provides for an entangled materiality that exceeds the grasp of measurement.

Expression

Expression names the discursive: “it is a *collective assemblage of enunciation*, of acts and statements, of incorporeal transformations attributed to bodies.”⁶¹ Expression is not the sum of utterances; we cannot come to know what is expressed by aggregating quotations. Expression is “not speech acts, linguistic representations, or even linguistic performances, bearing some unspecified relationship to material practices.”⁶² We must “*open up* words, phrases, and propositions”⁶³ to analyze an expression. Expressions “become readable or sayable only in relation to the conditions which make them so ...”⁶⁴ In an analysis making use of assemblage theory, statements are not simply processions of quotations or data.⁶⁵ An analysis of an empirical site using assemblage theory extracts its expressions from the words, phrases, and propositions in which it sits.

⁵⁸ Deleuze, *Foucault*, 47.

⁵⁹ Massumi, *User's Guide*, 25.

⁶⁰ cf. Deleuze, *Foucault*, 47; Massumi, *User's Guide*, 25.

⁶¹ Deleuze and Guattari, *A Thousand Plateaus*, 88.

⁶² Barad, *Meeting the Universe Halfway*, 149.

⁶³ Deleuze, *Foucault*, 53.

⁶⁴ *Ibid.*, 54.

⁶⁵ “... the statement does remain hidden, but only if we do not rise to its extractive conditions; on the contrary, it is there and says everything as soon as we reach these conditions.” Deleuze, *Foucault*, 54.

Expression is also comprised of both form and substance. The form of expression is “the complex of administrative rules, laws, and traditions that determine how a school is laid out and what it does,”⁶⁶ and the substance of expression is the “the phonemes and letters embodying” these.⁶⁷ Whereas the substance of expression is the letters and words that generally stand in for expression in impact research, expression also includes its form, e.g. the complexes of university policy, historical violence, and community traditions. Words cannot be extracted from students (through any manner, including interviews, surveys, tests, and responses) and analyzed without consideration of form. This denies an algorithmic (I-E-O) conceptualization of both content and expression—of knowledge.

Power

Power produces the conditions of possibility for knowledge. This fractal assemblage theory follows Deleuze’s and Barad’s capacious reading of power as that which both forms us according to knowledge and opens us to the possibility of becoming otherwise.⁶⁸ For all of our theorists, power is not possessed, power is exercised, it is “less a property than a strategy.”⁶⁹ Power relations are “*relations between force and force*,” relations that establish themselves “wherever included features, however tiny, are to be found: relations between forces such as ‘boundary disputes, quarrels between parents and children, domestic tiffs, drunkenness and debauchery, public squabbles and a load of secret affairs.’”⁷⁰ Thus, analyses of power begin “with the techniques and tactics of domination.”⁷¹

Power is an aspect of an assemblage that is in relationship with, but irreducible to, knowledge.⁷² Power and knowledge exist in a relationship of discontinuity, and their intra-actions immanently re/form an assemblage. In this fractal assemblage theory, power both gives form to knowledge as it is and creates paths for the formation of new territories of knowledge. Foucault claims power:

⁶⁶ Massumi, *User’s Guide*, 25.

⁶⁷ Massumi, *User’s Guide*, 25.

⁶⁸ Barad, *Meeting the Universe Halfway*; Deleuze, *Two Regimes*. This is in tension with Deleuze’s reading of Foucault, cf. Deleuze, *Two Regimes*, 122–123.

⁶⁹ Deleuze, *Foucault*, 25.

⁷⁰ Deleuze, *Foucault*, 28, emphasis in original.

⁷¹ Foucault, “*Society Must be Defended*,” 34.

⁷² “Between techniques of knowledge and strategies of power, there is no exteriority, even if they have specific roles and are linked together on the basis of their difference.” Foucault, *History of Sexuality I*, 98.

must be understood in the first instance as the multiplicity of force relations immanent in the sphere in which they operate and which constitute their own organization; as the process which, through ceaseless struggles and confrontations, transforms, strengthens, or reverses them; as the support which these force relations find in one another, thus forming a chain or system, or on the contrary, the disjunctions and contradictions which isolate them from one another; and lastly, as the strategies in which they take effect, whose general design or institutional crystallization is embodied in the state apparatus, in the formulation of the law, in the various social hegemonies.⁷³

Through this articulation of power, the potential of assemblage theory to intervene in the political takes shape. Power is not an item some persons hold and others must take. Power runs through all of us, constituting our being in the world. Through our actions, we generally sustain present configurations of power. Through a fractal assemblage theorization, *impacting* college students requires shifting knowledge and power, both of which constitute us, both of which we constitute. In what follows, I play with a few of the jagged edges of power as described by our theorists: power is abstract, power shapes knowledge, and power defines the boundary between the assemblage and chaos.

Power Is Abstract

The first aspect of power as understood in assemblage theory is that it is abstract—we must surmise it or palpate it, as it does not appear in a measurable form.⁷⁴ This is the direct utility of the word *abstract* in Deleuze and Guattari's naming of power, the abstract machine. Unlike knowledge, the concrete machine that shapes words and things, power shapes knowledge, which shapes words and things; "... power is rethought in its overall materializing potential."⁷⁵ Power contains nothing concrete of its own, it is the "... aspect or moment at which nothing but functions or matters remain. A diagram [of power] has neither substance nor form, neither content nor expression."⁷⁶ In this definition, the differentiation of power and knowledge (content plus expression, each containing both form and substance) is clear.⁷⁷ Not only is power abstract, power is nonrepresentational, as it does not

⁷³ Foucault, *History of Sexuality I*, 92–93.

⁷⁴ See Mol, *The Body Multiple*.

⁷⁵ Barad, *Meeting the Universe Halfway*, 230.

⁷⁶ Deleuze and Guattari, *A Thousand Plateaus*, 141.

⁷⁷ See Deleuze, *Foucault*, 72.

⁷⁸ cf. Deleuze and Guattari, *A Thousand Plateaus*, 142.

represent or mirror knowledge. Instead, power is productive. Power actively produces knowledge relations.⁷⁸ It is this relationship of power to knowledge—power linked to but not a mirror of knowledge—that makes it productive of the forms and substances of content and expression: “But precisely because it does not itself speak and see, it makes us see and speak.”⁷⁹ From this perspective, research that addresses issues of justice through inputs (I) takes a self-limiting starting point:

I want to emphasize in the strongest terms possible that it would be a mistake to think that the main point is simply a question of whether or not gender, race, sexuality, and other social variables are included in one’s analysis. The issue is not simply a matter of inclusion. The main point has to do with power. How is power understood? How are the social and political theorized?⁸⁰

In other words, how does power shape the ways in which these social variables come to be and be known as such? Assemblage theory asks how these variables came to exist as such, and from this conceptualization, how they may be produced differently. Empirical research utilizing assemblage theory does not begin from an arithmetic of simple empirical difference, but from the forces that produce differences we take as evident to count.

Power Shapes Knowledge

If power is not a mirror of knowledge, what is the nature of their relation? As content is yoked to expression, each shaping each other without fully determining each other, so power is yoked to knowledge.⁸¹ Power shapes knowledge without determining it, and past this, there is no possible equation or algorithm⁸² of their relationship.⁸³ To understand their relationship, we must enter into a continuous experimentation and exploration of their contours.⁸⁴ This is another way in which an assemblage theory take on impact research might operate. Just as power shapes knowledge, knowledge shapes power. For Deleuze, “this is the essential point: if power relations imply relations

⁷⁹ Deleuze, *Foucault*, 82.

⁸⁰ Barad, *Meeting the Universe Halfway*; see also Puar, 2012.

⁸¹ Buchanan, “Assemblage Theory.”

⁸² An intriguing definition of algorithm to think with in relation to college impact studies comes from media studies: “. . . in the broadest sense, [algorithms] are encoded procedures for transforming input [I] data into a desired output [O], based on specified calculations” (Gillespie, “The Relevance of Algorithms,” 167).

⁸³ See Barad, *Meeting the Universe Halfway*, 246.

⁸⁴ See *ibid.*, 390.

of knowledge, the latter also presuppose the former.”⁸⁵ There is no input, environment, or output data point that gives knowledge about a student or environment separate from its co-constituting power, be that neoliberalism, control, neoliberal multiculturalism, or another social force.⁸⁶ A map of an assemblage, or a dynamic experimentation with/in an assemblage, consists of the particular relations between power and knowledge.

Power Defines the Boundary Between the Assemblage and Chaos

Power operates on knowledge to open it to something other than itself. Power creates difference within knowledge, power opens knowledge to “assemblages of another type, the molecular, the cosmic; they constitute becomings.”⁸⁷ Power relates to knowledge as well as to an unreachable absolute outside of all assemblages,⁸⁸ or chaos.⁸⁹ Assemblage theory enables not just the study of the current constitution of the world (relations of power and knowledge), but experimentations of how we might constitute the world differently (relations of power and chaos).⁹⁰

Our theorists name several forms of power that have existed over time.⁹¹ These forms of power differ not “on a quantitative scale measuring how close or far they are from [chaos],”⁹² but rather in their qualities as shaped in relation to knowledge and chaos. These categories of power, such as disciplinary power,⁹³ biopower,⁹⁴ and societies of control,⁹⁵ are the products of assemblage analysis, not as tenets of assemblage theory.⁹⁶

Chaos adds the potential for difference. Whereas impact studies locate the potential to make higher education differently in environmental (E) manipulations, assemblage theories point to the work of chaos in opening up present power relations so that they might become differently. Whereas power marks

⁸⁵ Deleuze, *Foucault*, 83.

⁸⁶ See footnote 17 and related text.

⁸⁷ *Ibid.*, 510.

⁸⁸ *Ibid.*

⁸⁹ Deleuze and Guattari, *What Is Philosophy?*

⁹⁰ cf. Deleuze and Guattari, *A Thousand Plateaus*, 513.

⁹¹ Deleuze, “Postscript”; Deleuze and Guattari, *Anti-Oedipus*; Deleuze and Guattari, *A Thousand Plateaus*; Foucault, *Discipline and Punish*; Foucault, *History of Sexuality I*; Massumi, *Ontopower*.

⁹² Deleuze and Guattari, *A Thousand Plateaus*, 514.

⁹³ Foucault, *Discipline and Punish*.

⁹⁴ Foucault, *History of Sexuality I*.

⁹⁵ Deleuze, “Postscript.”

⁹⁶ See “biopower-hunting,” Koopman, *Genealogy as Critique*, 6–7.

a particular system of force relations, chaos overthrows this order. Power slows down chaos into the form of an assemblage, and chaos speeds up power relations until the assemblage dissolves.⁹⁷ When relations dissolve, they can reform differently. In that reformation, we become differently. This is the change assemblage theorizations bring to higher education research. For example, the focus of research on student success would shift from increasing success through increasing attainment rates of predetermined outcomes [O] such as graduation, time to graduation, grade point average, term credits earned, postgraduation salary, and so on. Outcomes in an assemblage can never be known as separable from persons, environments, and power, and all of these categories are open to radical change through contact with chaos. Instead, to impact student success within an assemblage theorization, researchers and practitioners would place success in contact with chaos, opening up categories like graduation, credits, and grades to produce becomings that change the operation of power and open future student possibilities in excess of our present imaginations.

Subjects: “Life Within the Folds”⁹⁸

This leads us back to questions of agency and of subjects, students in particular in relation to college impact studies. Again, for all of our theorists, there is no separability between subjects, only of content and expression, both of which are entangled within subjects.⁹⁹ This fundamental ontological inseparability includes bodies of all sorts, including human bodies, you and I. As such, assemblage theories leave us with no self-apparent individual human to measure. Our ontological inseparability in a fractal assemblage theory highlights a specific tension with college impact studies where individuated human bodies are of primary importance. This includes impact research that takes to heart the ethics of feminist, queer, Black, and of color theories that gendered, sexed, raced, and placed bodies are the site of differentiated violence and pleasure. This tension also applies to our activities within our larger politics, where individuated bodies are made to matter every day. Individuated bodies are also not made to matter every day, as in the example of the unintelligibility of systemic forms of oppression, such as systemic racism, when its effects are real but not quantifiable in any individuated relationship of cause and effect. The analysis of the role of subjects in assemblage theory that follows honors

⁹⁷ Deleuze and Guattari, *A Thousand Plateaus*; Grosz, 2017.

⁹⁸ Deleuze, *Foucault*, 123.

⁹⁹ See Barad, *Meeting the Universe Halfway*, 33.

and sidesteps the deep scientificity that Barad brings, but in its own way envelops one of Barad's central theses: it accounts for marks on bodies.¹⁰⁰ A fractal assemblage theory that responds to the material needs for change and justice in higher education, the very motor for college impact studies, asks: *In what ways do assemblages re/form subjects, human, nonhuman, and otherwise?*

A fractal assemblage theory accounts for subjects as intra-actively produced by, entangled in, and inseparable from assemblages. This is evident at the level of content and expression. Expression is never the action of a separable body.¹⁰¹ Directly put, "there is no expressing subject, i.e. subject of utterance, but only assemblages. This means that, in any assemblage, there exist 'processes of subjectivation' which assign various subjects: some are images, and some are signs."¹⁰² Just as there is no individual subject who speaks, there is no individual embodied subject. Separability again occurs between content and expression, not form and substance, as there is a substance (or subject) of both content and expression.¹⁰³ Thus, individuated "... human bodies, like all other bodies, are not entities with inherent boundaries and properties but phenomena that acquire specific boundaries and properties ..."¹⁰⁴ This is "life within the folds":¹⁰⁵ this is the production of subjects through the enfolding of the assemblage.¹⁰⁶ As subjects are not distinct in assemblage theory, neither is agency. There is no possibility of a radically responsible individual person, because no person can be individuated as such. It follows that "'distinct' agencies are only distinct in a relational, not an absolute, sense, that is, *agencies are only distinct in relation to their mutual entanglement; they don't exist as individual elements.*"¹⁰⁷ A life within the folds wherein persons are constituted in and through neoliberalism or data-driven control can be measured through college impact studies; this again is an invagination for the dividual age. A life within the folds wherein persons are constituted in and through a data-driven control held open to chaos can be known and produced through research using assemblage theories; this is an invagination for a new world. This brings us to our final fold of/with assemblage theory. With no individual

¹⁰⁰ Ibid.

¹⁰¹ "There is no individual enunciation. There is not even a subject of enunciation." Deleuze and Guattari, *A Thousand Plateaus*, 79.

¹⁰² Deleuze, *Two Regimes*, 201.

¹⁰³ Deleuze and Guattari, *A Thousand Plateaus*.

¹⁰⁴ Barad, *Meeting the Universe Halfway*, 172.

¹⁰⁵ Deleuze, *Foucault*, 123.

¹⁰⁶ Barad, *Meeting the Universe Halfway*, 175.

¹⁰⁷ Ibid., 33.

subjects independent of power/knowledge relations, in what ways can entangled subjects *impact* change?

Impact in the Assemblage

We end with a return to impact. Impact is a quantitative accounting of the measurable change in individuated students (I, O) produced by an individuated initiative (E).¹⁰⁸ This sentence, one with a common sense understanding in research and practice,¹⁰⁹ is non-sense¹¹⁰ in assemblage theory. Impact studies, the *lingua franca* of American higher education research, become possible within a specific structure of knowledge that individuates inputs (I), environments (E), and outputs (O) such that an algorithm can cohere.¹¹¹ In assemblage theory, the common sense of impact is not foundational, but rather produced by a neoliberal assemblage of power/knowledge, or data-driven control.

This begs the following question: what hope is there in assemblage theory if we ‘individuated’ humans cannot act separately to change the formations that matter (power and knowledge), as they are beyond words and things and outside of our immediate reach? Deleuze frames this question through the work of Foucault in the following way:

¹⁰⁸ Impact studies here include straightforward I-E-O studies as well as those that utilize various specifications of this model. Studies that modify I-E-O are far too numerous to comprehensively list. Beyond the categories of modifications noted by citations in footnote three, a few notable specifications include Harris and Wood’s Socio-Ecological Outcomes Model, in which inputs are split between identity factors and societal factors, and environments become four interrelated socio-ecological domains. Two other examples modify the time linearity of I-E-O. In Samuel Museus’s Culturally Engaging Campus Environments (CECE) model, individual inputs are accounted for both before exposure to the college environment as well as during. In addition, college environments are known specifically through their relation to cultural relevance and responsiveness; Museus, Zhang, and Kim, “CECE Scale.” Karen Inkelas has also brought the Bandura-informed Social Cognitive Career Theory (SCCT) to bear on I-E-O with the effect of introducing feedback loops between person (or input) and environment, e.g. Niehaus and Inkelas, “Exploring the Role.” In all of these specifications, the logic of knowing the impact of college through a dividuated accounting of inputs, environments, and outputs remains.

¹⁰⁹ cf. Astin, “Methodology of Impact One”; Astin, “Methodology of Impact Two”; Mayhew et al., *How College Affects Students*; Pascarella, “How College Affects Students”; Renn and Reason, *College Students*.

¹¹⁰ Deleuze, *Difference and Repetition*.

¹¹¹ Mayhew et al., *How College Affects Students*.

If power is constitutive of truth, how can we conceive of a “power of truth” which would no longer be the truth of power, a truth that would release transversal lines of resistance and not integral lines of power? How can we “cross the line”?¹¹²

How can we shift the orientation of power—how can we “tip the assemblage”¹¹³ toward power’s surface with chaos, and in doing so, open new possibilities of thought,¹¹⁴ or becomings?¹¹⁵ In a broader language of higher education as read through assemblage theory, how can we tip the assemblage of neoliberalism, or data-driven control, toward power’s surface with chaos, and in doing so, open possibilities for liberal education?¹¹⁶ Barad names this need as “... a politics of possibilities (Gilmore): ways of responsibly imagining and intervening in the configurations of power, that is, intra-actively reconfiguring spacetime-matter.”¹¹⁷ The political question of our current assemblage of power/knowledge in American higher education is *how do we account for impact?* The political question of a fractal assemblage theory is *given we lack traditional individuated agency, how can we facilitate our own becomings?* As we are determined in and through immanent re/compositions of power and knowledge, there is no formula for becoming. There is no arithmetic or analytic here that can provide a solution, there is no solution to be found in proprietary student risk assessments,¹¹⁸ or in a perfected impact metric; “the error we must guard against is to believe that there is a kind of logical order to this string, these crossings or transformations.”¹¹⁹ Whatever solution to be had comes in mapping the assemblage, as the only way to dismantle assemblages and create them anew is through mapping, or experimentation.¹²⁰ Agency here “is about changing [the] possibilities of change entailed.”¹²¹ As entangled subjects, we do not have the capacity for radically individuated agency that is common sense within data-driven control and college impact studies,

¹¹² Deleuze, *Foucault*, 94–95. As a reminder, *the line* referred to here is the surface between power and chaos. See *ibid.*, 120, for a graphical rendering of this line as well of all of the concepts noted in this fractal assemblage theory.

¹¹³ Deleuze and Guattari, *A Thousand Plateaus*, 161.

¹¹⁴ Deleuze, *Foucault*.

¹¹⁵ Deleuze and Guattari, *A Thousand Plateaus*.

¹¹⁶ Smithers, “Liberal Education”.

¹¹⁷ Barad, *Meeting the Universe Halfway*, 246.

¹¹⁸ Venit, “Scalable Risk Alerts.”

¹¹⁹ Deleuze and Guattari, *A Thousand Plateaus*, 250.

¹²⁰ Deleuze and Guattari, *Anti-Oedipus*; Deleuze and Guattari, *A Thousand Plateaus*.

¹²¹ Barad, *Meeting the Universe Halfway*, 178.

but we can work to change the conditions that produce our possibilities. These changes we participate in, agential cuts or folds:

matter. Indeed, ethics cannot be about responding to the other as if the other is the radical outside to the self. Ethics is not a geometrical calculation; “others” are never very far from “us”; “they” and “we” are co-constituted and entangled through the very cuts “we” help to enact. Intra-actions cut “things” together and apart. Cuts are not enacted from the outside, nor are they ever enacted once and for all.¹²²

If fractal folds are the invaginations that birth these dividual times, fractal folds also contain the potential to make college students differently. If the question motivating college impact studies is *how can we make a particular quality in a student, understood as a combination of dividual outputs [O]*, the question of a fractal assemblage theory is *how can we make students, two categories themselves inseparable, into more than we can imagine for them/us presently?* How can we re/make ourselves as subjects and the assemblages of power/knowledge that form us in more just formations? College impact in the assemblage, in losing its referents to dividuals associated with persons (I, O), environments (E), and time as separable and measurable entities, gains the capacity to create these concepts anew. This immanent and ongoing creation is the act of liberal education.¹²³ College impact studies aim to create discrete predictable (pasts, presents, and) futures. College impact in the assemblage aims to produce becomings.

Fractal Impact, Fractal Futurities

To summarize the theory re/created above, when reading the impact of college through a fractal assemblage theory, traditional notions of a separable student whom can be measured as a collection of inputs (I) and outputs (O) as influenced by a collection of environmental (E) factors falls apart. We are left with a series of negotiations in and through which students are created in each moment as subjects of a regime of power/knowledge, or an assemblage, that constitutes them as such. This fractal assemblage theory is one demonstration of the worldmaking capacities that feminist science studies and Continental philosophy, along with a whole host of resonant critical traditions, provide to future research and practice in higher education.

¹²² Ibid., 178–179.

¹²³ Smithers, “Liberal Education”.

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