Meth, method, and methodology:
The application of a Deleuzian ontology to addiction

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Abstract

This thesis describes a Deleuzian ontology and applies this to our current understanding of addiction. Recent decades of study in addiction have seen a wide proliferation of theories seeking to provide comprehensive aetiologies to explain the origin of addiction, yet all have limitations, and a complete theory is currently not available.

By reviewing the current major theories and the evidence supporting them, this thesis firstly argues that the reason for this inability to explain addiction is due to our assumptions of what addiction is. It postulates that the ontology of Gilles Deleuze may offer a view of the essence of things that is able to explain addiction.

It does this by examining and explaining Deleuzian ontology, describing its salient features and how they work together, and then uses these features to construct a methodology by which this philosophy of essence can be applied to addiction.

These features are then applied in a case study which serves as a small test case of what happens when this methodology is applied to an example of what has been written about addiction, with the intention of expanding the application.

This work finds that this methodology based on a Deleuzian ontology is capable of discovering new ways of looking at addiction and uncovering hitherto invisible confounding factors that exist with our current definitions and understanding of addiction. It points towards fundamental problems with our ontological construction of addiction, and promises further insights should this methodology be applied to more aspects of the apparatuses we have constructed around addiction.

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Attestation of Authorship

I hereby declare that this submission is my own work and that, to the best of my knowledge and belief, it contains no material previously published or written by another person (except where explicitly defined in the acknowledgements), nor material which to a substantial extent has been submitted for the award of any other degree or diploma of a university or other institution of higher learning.

11/07/2023

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Signature **Date**

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Introduction

Gilles Deleuze offers us a unique ontology where every single entity is also a process, and in a Deleuzian ontology, addiction is no different. It is an ontology in which addiction is not only modifying itself, but also modifying the other entities it encounters. In this ontology, addiction is a process that can occur like burning, cutting, freezing, joining, melting, and breaking, and yet is utterly unique to all of them, with the ability to introduce utterly unique possibilities.

The question of what addiction *is* has filled many pages over the years, with no clearly defined consensus. There has been a proliferation of theories from many different authors, offering numerous, sometimes complementary, often mutually exclusive, accounts of what is occurring in order to define addiction. This thesis will first argue that the failure to produce a consensus does not lie in a lack of trying or insight, but rather in the fact that, according to Deleuze, addiction is not a *thing*, but rather a unique interaction between three bodies in such a way that it allows the possibilities or powers of an object or objects to be altered in such a way that would not have been possible otherwise.

If addiction is to be reimagined in this way, there will need to be a methodology in order to apply it as such, so that addiction as a process rather than a thing, can be evaluated. This thesis will define a methodology based on the ontological understanding of addiction as a process that is capable of uniquely modifying other entities developed earlier.

What is being searched for here is an appropriate methodology that can be used to apply Deleuze's ontology, and in this case inform our understanding of addiction. "Our 'ontology' is the set of (kinds of) things that must exist if our beliefs are true." (Sussman & Sussman, 2011, p. 4032). This thesis is not an attempt to make a new model of addiction, but rather tries to establish methodologically whether it is possible to explore a different ontology that can be applied in a health context. Due to my own background as an addiction counsellor, I will be using addiction as an example of how this ontology may be methodologically applied in a way that does not rely on a *normal*, it does not

describe addiction as some kind of aberrant state, but rather just another possibility of alteration in an almost infinite sea of possibilities.

The purpose of this thesis is to take a deterritorialised approach, in order to attempt to define a methodology to deterritorialise addictions, in the hope that potential new islands of exploration may open up to us, with new lands of possibility to explore.

In 1966, Miriam Siegler and Humphry Osmond began their influential review of the prevailing models of schizophrenia, with the memorable line: "Schizophrenia is disputed territory" (p. 1193). The same could be said of our contemporary understanding of addiction. The proliferation of theories of addiction, many with mutually contradictory features, and ongoing disputes between researchers is indicative that what addiction *is* has not yet been completely described.

Nearly sixty years later, this can still be said about not only schizophrenia or addiction, but also a multitude of proliferating mental health diagnoses, as the application of fundamental models of disorders continue to be discussed (Huda, 2021). Of these, addiction seems to occupy a unique position in arresting the attention of society, and somewhat terrorising the imagination. It is easy for the public at large if they are not personally affected by mental health disorders to imagine that mental health diagnoses will not affect them. However, the thought that drugs and alcohol might be out there, waiting to grab them, or perhaps their loved ones, or even their children, means that there exists a constant pressure by the population at large to force governments and health professionals to *fix* addiction. Health professionals are not only motivated by this pressure, but also a very human desire to help. Seeing someone in the grips of addiction is no fun, listening to someone ask "why can't I stop doing this?! I'm destroying everyone and everything I love!" activates a very human response to provide relief.

And yet addiction seems to have a life of its own, twisting, writhing, and squirming out of any final definition we may seek to bestow upon it. In a century marked by public health measures

conquering ever smaller foes—the bacteria, the germ, all manner of microbes—addiction continues to slip away. Vast resources have been marshalled, a war on drugs has been declared, and yet the problem remains. It may sting to admit it, but drugs are winning the war on drugs.

There are also the epiphanies. Occasionally, and seemingly at random, someone might simply stop using a substance that only days ago they had been seemingly powerless to control. The stories are never the same, their reasons and contexts for doing so are never identical. As Doug Sellman (2010) says, they are "hard to manufacture", so why do they happen at all? Why are they seemingly unrepeatable?

These multiple, contradictory, and proliferating theories all point to a vague sense that something else might be happening, something that we don't yet understand (Sussman & Sussman, 2011, p. 4036). It is here that a Deleuzian ontology may offer a way out of this seemingly perpetual quandary, and it is the process of exploring how that might be that will concern this thesis.

The structure of the thesis

Chapter 1: Current theories

In order to understand the breadth of contemporary addiction theories, it is necessary to undertake a survey of the major contemporary theories of addiction, both in the scientific literature and in the prevailing cultural context in which addiction occurs. Using a combination of survey methods covering both professional and cultural perspectives, Chapter 1 will describe each model both in how it understands addiction and the ontological assumptions it makes in order to construct its understanding of addiction.

This will be done by applying both Siegler and Osmond's (1966) divisions, as it is a broad survey of cultural and scientific categories pertaining to mental health. In 2013, The European Monitoring Centre for Drugs and Drug Addiction published a resource which contains a more modern survey of

prevailing theories of addiction, and has been selected for further differentiating theories in the medical and social fields.

Chapter 2: Deleuzian approaches to addiction

The proliferation of theories of addiction, the lack of consensus as to their explanatory power, and their limitations have led others to apply Deleuzian ideas to addiction. In this chapter, these past attempts will be analysed to see how they are both similar and different to other approaches, including both their understanding of what a Deleuzian approach ought to be, and how they have been applied.

Chapter 3: Ontology

If a Deleuzian ontology is to be applied to addiction, this ontology must be described systematically, and as completely as possible. This chapter will describe a Deleuzian ontology, highlighting where it intersects with and contradicts alternative ontologies that inform theories of addiction.

This will be done by systematically understanding and applying Arjen Kleinherenbrink's interpretation of Deleuze's ontology, as described in *Against Continuity* (2019). This text is used as it is a coherent explanation of the entire ontological system Deleuze develops over his career. By the time Deleuze gets to *A Thousand Plateaus*, with Guattari, he is applying his ontology to various fields of human endeavour, yet he never systematically lays out his understanding of what makes up the details of his ontology. Kleinherenbrink's systematic explanation of Deleuze's ontology allows for a framework that can then be applied to addictions, allowing for unique insights.

This chapter will describe how entities are conceived, what they are, and how they can relate to other entities. It will describe machinic ontology; everything is a machine or assemblage. It will describe entities as univocal—there is only one sort of material—and that entities can never

encounter one another directly, but only interact through flows. It will show how Deleuze asserts that all entities have their own unique perspective that relies on nothing else and is not a representation of anything else, and all are ontologically equivalent.

Chapter 4: Methodology

Having described the salient features of a Deleuzian ontology at the beginning of this chapter, it must then be applied to the world, describing how they work in the world, and how they work with addiction. The ontology describes how addiction is perceived from the perspectives of each of the three bodies that are required for addiction to exist as an entity, and then gives a definition of addiction based on the application of Deleuzian ontology, with the generation of this definition giving this form of addiction its own unique perspective.

With this definition in place, the chapter then describes how addiction can form and how it can be affected, from its perspective. It will also describe examples of what addiction can do, how it can affect other entities, and how its unique powers can allow for unique possibilities. This forms the basis by which this perspective can view other theories of addiction, such as the disease model, and repeatedly compare itself in order to understand both its differences and similarities.

These other theories of addiction can be viewed as entities within a Deleuzian frame; they are not wrong or right, but rather perspectives and entities that can allow certain processes to occur, but may interfere with others.

The chapter finishes with a concise summary of how the various entities can form a coherent methodology for reinterpreting various aspects of addiction.

Chapter 5: Case study

This methodology is now tested by being applied to a case study, to see whether it can tell us anything new about addiction. This is done by applying this methodology to an institutions' attempt to create a definition, in this case of recovery. While it can be applied to any aspect of addiction, assumptions, treatment, societal discourses, funding, architecture, programme facilitation, etc., the choice of a definitional statement as a place for a case study is made because it involves uncovering foundational assumptions about what is behind addiction. This allows for the testing of whether approaching addiction from this perspective, and with this methodology, may uncover any new insights that were previously unavailable.

Chapter 6: Conclusion and limitations

This chapter will cover the aspects of the entities highlighted in the case study that have remained unexamined. The implications of Deleuzian ontology are far-reaching and profound, and the previous chapter is an introduction to what is possible. Here will be listed some of the ways the methodology could be applied in future, and what a future large-scale study may look like. In addition, this will contain a reflection on the contributions this work has made to the application of Deleuze's work.

Chapter 1—Current theories

Definition of addiction

In order to discuss alternative constructions of addiction, it must first be explored from current perspectives. In order to be able to talk about addiction, we need to have some idea of what it is. Although we may disagree on exactly where the borders are drawn, it needs to have some kind of definition. Even if we wish to argue, as Szasz (1960) does, that mental disorders do not exist, nevertheless when we say "addiction" something in particular must come to mind or we would not be able to have a coherent idea of what it is.

The Merriam-Webster dictionary's definition of addiction is "a compulsive, chronic, physiological or psychological need for a habit-forming substance, behaviour, or activity having harmful physical, psychological, or social effects and typically causing well-defined symptoms (such as anxiety, irritability, tremors, or nausea) upon withdrawal or abstinence" (n.d.). This describes the symptoms of addiction, but not what it *is*. Addiction must be discussed not only as a cluster of symptoms, but also the state of being that is required in order for the state of addiction to come about.

The *Diagnostic and Statistical Manual of Mental Disorders* (5th ed.) (DSM) defines addiction (which it calls "Substance Use Disorder") as "the essential feature of a substance use disorder is a cluster of cognitive, behavioural, and physiological symptoms indicating that the individual continues using the substance despite significant substance-related problems." (American Psychiatric Association, 2013, p. 483).

Sinott-Armstrong and Pickard take issue with a wide variety of aetiologies that can be covered by this definition, before offering "Addiction is a strong and habitual want that significantly reduces control and leads to significant harm." (2013, p. 862), while noting that control and harm come in varying degrees.

The American Society of Addiction Medicine (ASAM) defines addictions as "a treatable, chronic medical disease involving complex interactions among brain circuits, genetics, the environment, and an individual's life experiences. People with addiction use substances or engage in behaviours that become compulsive and often continue despite harmful consequences." (ASAM, 2019, para. 1).

Foddy and Savelescu define it as "addiction is a strong appetite" (2010a, p. 35), while also defining an appetite as "a disposition that generates desires that are urgent, oriented towards some rewarding behaviour, periodically recurring, often in predictable circumstances, satiated temporarily by their fulfilment, and oriented toward pleasure" (p. 35).

All of the definitions seek to put bounds on what addiction is, and yet leave many questions open. The DSM diagnosis fails to account for why someone may return to a substance decades after they last used it, with the same enthusiasm they had many years before. Both Sinott-Armstrong and the ASAM use phrases such as "complex interactions", "control", or "harm" in their definitions, seeking to cover the wide range of behaviours and experiences seen in addiction, yet limiting their usefulness through use of somewhat vague terms. Foddy and Savelescu, in defining appetite, combine the concepts of liking and wanting. These do not necessarily have to be combined, as we can want something without liking it (Robinson & Berridge, 1993).

All of these definitions of addiction do not actually define what addiction is; they describe relationships between other things, which is then given the label of addiction. This may be why addiction is so hard to pin down, as it changes as the relationships between objects change. Addiction relies on transcendent relationships such as *problems* or *harm*, but those descriptions are in themselves subjective, and rely on outside judgements as to what those things mean. The definitions of addiction that are given are other entities' perspectives on addiction, while addiction itself does not get described.

Ontology of addiction

The question of what mental disorders are has remained problematic, as any attempt to connect experience to categories of disorder runs into what has been described as "the hard problem of consciousness" (Chalmers, 1996, p. xii). Sussman and Sussman (2011) explore the process of defining a theory of addiction, finally reaching the point of concluding that "much work remains to be done to fine-tune the definition of addiction, which will entail theoretical modeling" (p. 4035). As part of their exploration, they touch on the subject of ontology, noting that when using standard scientific categories to define addiction they often appear to be frustrated, and state that "It is possible that, at some point in the evolution of our scientific arena, 'addiction' per se may have to be eliminated from our scientific ontology. Of course, it would not follow that when we speak of addiction, we are speaking of nothing, just that we do not yet know what we really are talking about." (p. 4032).

Patil and Giordano (2010) are also interested in the foundational ontologies on which our medical categories are based. They write that the four main ontological assumptions of psychiatry are : Realism—the claim that these mental experiences are actually real, and not the effects of socio-cultural norms; Naturalism—changes in neural structures are part of the reason that these mental disorders form and continue; Reductionism—that these disturbances are required to account for mental disorders; and Essentialism—that these disorders have underlying essences that allow us to distinguish one type from another. While they accept the first three assumptions, they have issues with Essentialism, specifically with the validity of their underlying diagnostic criteria. Haslam (2007) argues that psychiatric categories correspond more to practical considerations rather than any underlying essences.

Volkow et al. (2016) declare that addiction is a brain disease, and that changes in the brain due to addiction are "distinct and profound" (p. 368). Marc Lewis (2015) claims that addiction is not a disease, but rather "from the motivated repetition of the same thoughts and behaviours until they become habitual" (p. ix). Johann Hari (2015) has memorably reduced the complexity of the field to the pithy "The opposite of addiction is connection" (p. 311). Meanwhile, Fraser et al. (2014) claim

that addiction cannot be understood by isolating addictive substances from the environments in which they are accessed and consumed, and that the entire assemblage of both substances and the contexts in which they are consumed need to be taken into account if one is to properly understand what is occurring (Fraser et al., 2014). Even typing "addiction is" into Google yields the first two autocomplete suggestions as "a disease" and "not a disease".

Since these competing theories are arguing over what addiction *is*, they are arguing over the ontological foundations of addiction. Each of the authors seeks to define what addiction is but also what it is not. Each of these authors begin their books or papers with a literature review similar to this one, highlighting the fractured state of the current landscape, and the ongoing differences in perspectives and opinion. However, after decades of proliferating theories, we are still in the situation where some theories appear to explain some features of addiction better than others, yet none seem to have a complete picture.

Theories of addiction

The ultimate point of these theories is to provide a basis for effective positive intervention in the lives of people experiencing addiction, and it is these theories that indicate what is more or less likely to be effective. If one subscribes to a theory that addiction is a brain disease, one is likely to focus on therapies that work in this arena, such as pharmacological interventions. If one subscribes to a theory that addiction is a response to social inequality, one is far less likely to see such interventions as effective.

Yet for addiction to even be a thing that then requires assessment, definition, monitoring, and treatment, it needs to be understood both as a separate entity in its own right, but also as a *not ideal thing*, as that is implicit in the construction of the word addiction. This *not ideal* is a perspective from what it is being beheld from. A common societal viewpoint is that it is okay to drink some

alcohol, but as the frequency and amount of alcohol consumed increases, the viewpoint that this is a problem also increases. Yet for activities, a comparable amount of consumption (say, a person's dedication to a sports team), may be seen as unproblematic. The extent to which various activities are seen as problematic vary with the contexts from which they are viewed, and are highly subjective, yet both what makes addiction a thing, and what makes it not ideal, need to be present in order for the theory to be complete.

In the same way that interventions proceed from theories, so do theories proceed from ontologies. In order to subscribe to a theory that addiction is a brain disease, one has to subscribe to certain ontological assumptions as to what the brain is, and how the meanings of how and why the brain can be modified. For example, Reductionism presupposes that certain changes in the brain are required to explain the existence of the symptoms of addiction (Patil & Giordano, 2010). If that ontological assumption were not present, it would allow for other possible theories, such as demons causing the addiction. At the same time, this Reductionism also needs to explain why addiction is not ideal. It needs to show that the changes in the brain are not only solely caused by addictive substances, but there is some sort of definite reduction in function of the brain that is experienced as not ideal.

It is this experience of addiction being not ideal, wherever it is located, that introduces a subjectivity into any definition of addiction. It also implies that a whole system of ideal and not ideal lies behind it, and these categories proceed from an assumed ontology lying beneath it. It is by this mechanism that ontology informs our theories, through supplying our understanding of the nature of reality, that addiction then proceeds to subvert. For example, if our ontology does not include a notion of God, rather focusing on the primacy of individual human beings and their actions, this then provides a whole system of what is ideal and not ideal.

> Individualism is not simply a matter of divorcing oneself from the inherence in a cosmological role; it is also a divorce from the status conferred upon one inhabiting that

> role… it does not matter what the whole of a life looks like; it matters whether one is acting in the right way, whether one is fulfilling one's obligations. I no longer have to seek my rightful place in the order of things. Instead, I must ask what my proper actions are, those that, as a member of society and as an individual before God, I am required to perform. (May, 2005, pp. 5–6)

In this example, a definition of addiction proceeds from an ontological understanding of what proper actions are, and the meaning of fulfilling them or not. Re-introducing a cosmological role then alters understandings of proper roles, the meaning of fulfilment, and thus the meaning of addiction.

It follows then, that if our current understanding of addiction is incomplete, and if our understanding proceeds from our theories, and our theories proceed from ontology, it stands to reason that there may be value in exploring a potentially unifying ontology that may allow progress in the ongoing quest to describe addiction.

Over the past fifty years, through the use of a variety of ontologies, categories, and approaches, we have seen a proliferation of theories seeking to explain what addiction is, where it is, and therefore how we can develop therapies and interventions that may support people addressing the addiction. By examining these theories and how they choose to view addiction, and where they see it located, we can get an idea of prevailing theories of addiction and how they define the problem. In order to define addiction, all of these definitions must make a judgement of where addiction is, and therefore where they see the problem as being located. For each of these theories I will summarise where each theory sees that as occurring.

To fully survey all theories of addiction would require a specific publication in itself, therefore, a more concise survey of current popular theoretical constructions is appropriate. In choosing which theories of addiction to examine, Siegler and Osmond's (1966) categories are a well-known, well-rounded, and wide-ranging group of categories. Although they were writing about schizophrenia, the concerns and observed contradictions behind the fundamental assumptions that lay behind the

various theories of schizophrenia apply just as equally to many more categories of mental illness, including addiction. Addiction is, just like schizophrenia, disputed territory.

Since 1966, there have been a large number of advances in technology, which have facilitated new understandings and consequently new theoretical developments, especially in the medical field and social sciences. Consequently, this brief survey will use Siegler and Osmond's (1966) categories of medical, social, and psychotherapeutic theories, augmented by a modern survey. In 2013, The European Monitoring Centre for Drugs and Drug Addiction (EMCDDA) published a resource which contains a more modern survey of prevailing theories of addiction, and has been selected for further differentiating theories in the medical and social fields.

The categories will be presented in the order that Siegler and Osmond presented them in their 1966 text, "Models of madness, models of medicine", and where these categories have been augmented with further modern refinements, these will be listed as subheadings within the larger categories, also presented in the order listed by the EMCDDA. These are:

The medical model

- Reflective choice theories
- Automatic processing theories
- Biological theories
- Integrative theories

The moral model

- Process of change theories

The psychoanalytic model

The family interaction model

The conspiratorial model

Social theories

- Social network theories
- Economic theories
- Communication/marketing theories

Organisational systems theory

This will be followed by a brief reflection on some of the problems this survey highlights, before the next chapter describes how previous writers have turned to Deleuze for further perspectives.

The medical model

Of all the models that seek to describe addiction, the medical model has been dominant in terms of its influence in describing what is occurring, and shaping the ongoing debate as to what ought to be done. It has been so dominant that it is sometimes referred to as the "standard model" (Schiepek, 2009).

Medical models of addiction place addiction in the brain. "Addiction is a primary, chronic disease of brain reward, motivation, memory and related circuitry" (EMCDDA, 2013, p. 22). There are multiple differing theories on how this occurs, but they all share the same ontological assumptions that this dysfunction in the brain's reward circuitry occurs within reality, it is not a cultural experience, and that it is a modification of brain reward and motivation circuitry that is the cause of addiction. It follows that where one sees this particular mode of brain circuitry one *sees* addiction. All the cravings, desiring, bargaining, getting clean, and then relapsing is all a result of the unhelpfully modified reward and motivation pathways in the brain, resulting in an overwhelming craving for more of the substance. This is then defined as addiction and can only be addiction, nothing else.

Within medical theories, the main differences lie in the etiological components of the model. If a theory is going to postulate that there is some sort of an imbalance or dysfunction, it is implying that this is some sort of unnatural state, a non-normal that needs to be addressed and attended to. There are many different theories as to how this might occur, some of the major ones are: reflective choice theories, goal focused theories, and automatic processing theories.

Reflective choice theories. These theories postulate that people experiencing addiction choose to do so, and that there is always a cost/benefit analysis behind them, e.g., the benefit of feeling good when we get high over the physical and social costs to do so. It states that people who are addicted to drugs have found that the benefits of temporary euphoria outweigh any of the potential benefits of not having this experience, and over time they have so tipped the balance in favour of using substances that it is always preferable to not doing so. As their body learns to metabolise, integrate, and further anticipate future doses of the drug, the cost/benefit analysis now includes the discomfort of withdrawal and having to reorient their lives around something other than the drug, and consequently the choice is usually made to continue. The choice to enter recovery is also a rational choice. The person has to decide that the drug has made their lives so unbearable, that the temporary pleasure of the next high is no longer worth the vast negative consequences that have built up as a result of using, and consequently they are able to resist the temporary discomfort, as the value of a greater further comfort in the future is seen as preferable. There is evidence to support this, in that incentives and disincentives can be effective in modifying addictive behaviours; for instance, providing vouchers that allow access to goods and services in return for not using substances appears to decrease the frequency of using, at least in the short term (Lussier et al., 2006). On the other hand, educational interventions aimed at informing addicts or potential addicts of the consequences of their actions, which should reduce the incentive to use substances, as it changes the underlying rationale behind using, often have little or no effect (Flay, 2009).

Postulating that the aetiology of addiction lies in the choices we make implies that the person experiencing addiction is in some way to blame for what is occurring. Addiction is in the dopaminergic reward system that always chooses the immediate, more powerful reward of another dose of drugs. It assumes a singular, integrated self which, to a certain degree, always acts rationally, even if the long-term implications of those acts are ultimately not in that self's best interest. It can also form a component of moral theories of addiction, where the addiction is ultimately seen as the person's own fault. These theories locate addiction in the action potentials of the brain, with people activating excitatory or inhibitory systems, with implications unfolding accordingly. It sees the problem of addiction as occurring because of a mis-wired brain, which needs to be then rewired by the use of various punishments or incentives.

Goal focused theories. Instead of focusing on choices and our behaviours surrounding them, goal focused theories instead concentrate on stimuli and our attraction or aversion to or from them. For example, the positive reward theory acknowledges the intensely euphoric experience of the high from a substance that is incredibly attractive, beyond all other rewards (and especially the somewhat smaller, more mundane, rewards of "ordinary life") (Wise & Bozarth, 1987). Conversely, it can also be theorised that the intense discomfort of physical withdrawal forms a strong motivation to continue using the substance, and avoid the unpleasant symptoms. Many medical interventions have been developed based on this theory. Smoking cessation medication such as varenicline, or alcohol cessation medication such as Antabuse, work on the principle of removing the reward for consuming the substance, thereby removing the positive stimuli for doing so. Benzodiazepines and opioid substitution therapies, on the other hand, remove some of the unpleasant symptoms related to withdrawal. This initially appears to be an enticing idea to explain addiction, as the pattern of learning how to become addicted to a substance, and continuing the behaviour based on positive feedback appears to closely follow the pattern of learning to acquire other pleasure-based rewards (Koob & Le Moal, 2005). However, there doesn't seem to be any evidence linking the intensity of

pleasure to the degree of addictiveness (Volkow et al., 1999), nor does it predict the success of attempts to decrease substance use (Fidler & West, 2011).

Closely related to the goal focused theories are acquired need theories where people who may have experienced traumatic upbringings or mental disorders (whether diagnosed or undiagnosed), use substances to account for disturbed homeostasis in the brain. In this case, rather than the physical discomfort of withdrawal that is being avoided, it is the emotional discomfort of a particular mental state. This is often described as "self-medicating", where the experiential effects of a substance are seen as desirable and preferable to what can be found in any other area. So, a person with a traumatic upbringing may be living with long-term chronic anxiety, and they find that the best thing for them to manage their symptoms is to smoke cannabis (Douglas et al., 2010).

Once again, the evidence to support this in theory, is that providing medication that relieves these needs and alters our underlying drive states improves the chances of achieving and maintaining abstinence (Lingford-Hughes et al., 2004). However, it struggles to explain why relapse into substance use is frequent, often long after the acute withdrawal phase is over, and the initial unpleasant symptoms have long been discontinued (Weiss et al., 2001). It also struggles to account for behavioural addictions, or the sudden reappearance of cravings "out of nothing" that are frequently reported by those in recovery.

Both the reflective choice and goal focused theories assert that by altering the positive or negative stimuli related to substance use they will re-balance the equation closer in favour of ceasing substance use. These ideas come from a similar theoretical background of an integrated self that behaves rationally at all times. In this case, the addiction can again easily be seen as the person's choice; it can be seen as their fault, although it is able to be helped to change through various means. In this case, the addiction is still *in* the brain chemistry, in which the brain is seeking to re-balance its chemistry to a more neutral homeostatic state, which will presumably lead to more

neutral behaviour. The problem is seen as an excessively heightened brain that may well lead to unhealthy behaviour, as the brain seeks to force itself artificially into a desired state.

Automatic processing theories. These theories state that addictions are formed by altered brain formations acquired by mechanisms that shape human behaviour often outside of our consciousness or control. These state that our choices are largely due to vast amounts of cues and exposures that shape our wants and desires, bending our proclivities in certain directions. Addiction is developed by presenting potential rewards, and then reinforcements that strengthen those rewards, along with cues that trigger a repetition and desire to continue seeking those stronger rewards, above and beyond all others in life. Therefore, "Addiction involves learning associations between cues, responses and powerful positive or negative reinforcers (pleasant or noxious stimuli)." (EMCDDA, 2013, p. 35).

Classical conditioning is a well-known example of such a theory. In classical conditioning there is a powerful association formed between the stimulus event and reflex or feeling responses due to the stimuli being immediately predictive of other motivationally or emotionally significant stimuli (Carey et al., 2014). So, the intensity of a nicotine hit of a cigarette is made far more powerful by the associated stimuli of taking the cigarette out of the packet and lighting it. There are many slight variants on this theory, but they include many of the various rewards and punishments surrounding substance use. For instance, if a young person is associating with other people they look up to, and they smoke a cigarette with them and feel a sense of belonging and attaining a new sense of development, these rewarding stimuli are associated with the nicotine hit, making it much more powerful. These powerful associations lead to neuroadaptation where it is far more likely that the person will associate taking substances with other desirable states, due to the close relationship between the cue and the stimuli.

Another well-known (arguably the most well-known) model of addiction that falls into this category is the disease model. In this model, addiction involves pathological changes in the brain's reward and

motivation circuitry that result in an overwhelming, irresistible urge to engage in ongoing harmful substance use. This theory has been very successful at placing addiction within the medical field, and also seeking to withdraw the moral component from addiction. The addict may well express a desire to stop using the substance but experience a loss of control, in which they are unable to stop. The central idea of this theory is the idea of 'craving' (Jellinek, 1960), where the desire to use the substance grows until it becomes overwhelming, all-consuming, and all-pervading, until it is impossible to resist.

There is much evidence that has been produced for seeing addiction as a disease. Plenty of studies have produced various evidence that long-term chronic drug use leads to specific functional and molecular changes to neuroplasticity in the brain. Brain activity in reward and pleasure centres of the brain is fundamentally altered, and these align with long-term drug use (Volkow et al., 1999; Wiers et al., 2021). However, this does not always appear to be the case, as not all addictions appear to follow a pattern suggestive of need for homeostasis, and even addictions that suggest a homeostatic drive mechanism also show evidence of other important influences (Koob & Le Moal, 2008).

These theories also see the self as integrated, but far less in control of our experiences and actions. Rather, we are subjected to a stream of cues and stimuli, all which have effects on our neurocircuitry, which is constantly trying to return to a type of homeostasis. With enough strong stimuli and associated cues, we can fundamentally change this homeostasis to something either more or less helpful depending on what the change is. Our DNA can aid or hinder this process, making it more or less likely. In this case, addiction is in the dopaminergic system, which if it has been altered enough to desire drugs and only drugs, will subject us to incredibly powerful, almost irresistible cravings, and to satiate the craving by repeating the drug-using behaviour. The problem is identified as a loss of control, brought on by irresistible craving, that then lead us to do all sorts of

things, mostly seen as unhelpful, that our strongly altered brain chemistry is powerless to help us stop.

Biological theories. As part of the drive to categorise and further understand the "addiction as a disease" concept, brain studies have sought to identify and describe exactly where and how addiction works in the brain. So, for example, Brewer and Potenza (2008) describe a model where appetitive conditioning begins in the hippocampus, transitions to reinforcement in the basolateral amygdala and prefrontal cortex, finally moving to habit forming in the dopaminergic-rich striatum.

These theories tend to be extremely specific in their description of a mechanism to describe what is occurring, but struggle to explain why one person will experience addiction but another person won't. They describe the activation of the reward pathways in the brain (especially around stimulants), and the reinforcement that leads to these pathways becoming able to overwhelm all others, forming powerful habits and leading to loss of control.

It is theorised that these theories will lead to direct neurological interventions for addiction that can rewire the brain to no longer send these powerful, overwhelming habit signals and therefore break the addiction. An example of this is deep brain stimulation, where electrical pulses are triggered within the nucleus accumbens, in order to interrupt and rewire the neurologic electrical patterns that drive the desire to use substances (Wang et al., 2018).

Integrative theories. Over the last few decades, due to pivotal technological advances, brain science has seen an incredible growth in its ability to investigate phenomena, and make and evaluate scientific hypotheses. It is no surprise that there has been a great deal of excitement around applying new technologies towards investigation of the brain with the hope that this will lead to comprehensive understandings of mental phenomena and the subsequent development of effective treatments. It is partially in reaction to the inability of the previously described theories so far to fully explain all observed phenomena that a number of recent researchers have attempted to account for some of these shortcomings by expanding the reach of their theories. This category,

integrative theories, seeks to be able to more effectively account for the wide range of experiences that can and can't be explained by certain theories, by seeking to fold theories together. By combining multiple theories, while at the same time defining when one theory applies or another, they seek to create a more well-rounded model of addiction.

An example of an integrative theory is PRIME (Plans, Responses, Impulses, Motives, Evaluations) theory (West, 2006), which attempted to bring together the main features of some of the most popular models of addiction into a single model, which is focused on motivation, what causes it, and how it guides us. At a basic level, the theory states that wants and needs at each moment drive our behaviour. Our intentions and beliefs about what things are good or bad only influence our actions if they create these sufficiently strong wants and needs at the relevant moment. Our image of ourselves and how we feel about that (our identity) is a potentially very strong source of these wants and needs which can be enough to overcome ones arising from biological drives such as hunger.

PRIME theory states that in order to engage in recovery we need to focus on what modifies our motivations and drives, and that this can occur both with individual interventions, but also with social and environmental cues. By changing who we associate with and how we associate with people and other entities in our environment, we interrupt the series of cues and responses that enable us to decrease the likelihood of remaining using substances. It claims that recovery "should begin with a focus on changing the moment-to-moment balance of wants and needs involving the addictive behaviour and that self-regulation arising from a strong, coherent identity with an emotional attachment to a set of personal rules is fundamental to deliberate behaviour change." (EMCDDA, 2013, p. 69).

In integrative theories, addiction is still in the brain circuitry, but it is acknowledged that the surrounding environment of the individual is an ongoing aspect in the formation and ongoing development and plasticity of that circuitry. These theories seek to trace all the various aspects of the environment that heighten the intensity of the addiction experienced in the brain.

The moral model

Siegler and Osmond described this as one of the major categories of theories of mental illness. Although it is uncommon in the scientific literature, it is nevertheless a common public discourse. In the moral theory of addiction, it is largely the subject's own fault that they are addicted, perhaps due to "lack of moral fibre", or some other way of describing moral weakness (Stafford & Petway, 1977). The person themselves is "bad" and addiction is in the "badness" of the behaviour. The concept of bad comes from a transcendent code of conduct, generally given by God, that the addict is in contravention of by their conduct. The subsequent health and economic problems that an addict may face is commonly rationalised as "the wages of sin" or something to this effect. There can be variations within this theory. From the perspective of the moral theory, it is not the addiction itself that is bad, but rather the person themselves is and always was, inherently bad, and it was the addiction that gave the person the opportunity to express this. The bad person is an addict because of course they are, they're an addict. This theory has its roots in Calvinism and predestination.

Despite largely no longer holding to these ideas as formal theological positions, this still appears in society around harm reduction discourses, as ideas around certain harm reduction initiatives being opposed on ground that will only encourage undesirables in the community and their bad behaviour. This is what Melley has described as "agency panic" (2002, p. 39), in which our autonomy and free will is "under threat" by substances and those who use them. In this model, the problem is the person themselves, who is asserted to contain some kind of inherent flaw that leads them to engage in immoral behaviours, and is a signifier to their internal, degenerate life. The only solution to this is to remove the person, and strive to keep those of a better moral character well away. Eugenics theories will often have their basis, or seek evidence for their hypotheses, in these areas. While scientific theories and public strategies generally don't have their basis in this theory, it nevertheless remains present in informal public discourse. A partner, driven to exasperation by seemingly

contradictory and destructive behaviours, may make sweeping moral declarations in an angry moment. Frequently, a person experiencing addiction may make similar pronunciations about themselves. Likewise, the behaviours necessary to continue gathering the resources required to keep using substances (such as theft or prostitution) may be seen as further evidence of the inherent badness of the person. Some people attempting to stop using an addictive substance struggle with the guilt of their past using and actions undertaken to support that using, and the feeling of being somehow inherently defective as a result. This ongoing experience of shame can be part of a continuing desire to use to escape the negative reinforcement.

The moral theory typically does not only apply to the person, but can also assert that the badness is in the substance itself. This can be expressed by stating that both the person and the substance are evil, or that the addict themselves is merely an unfortunate wretch, caught in the clutches of an evil substance ("the demon drink") that they are unable to resist. Remove access to the substance and the person will be set free. This was the theory behind prohibition, the temperance movement, six o'clock closing, and ongoing possession and manufacturing laws. According to this theory, certain substances are good and certain substances are to varying degrees bad, and an attempt is made, usually through codifying in law, to classify and regulate these substances as such. Therefore, it is okay to drink coffee, as the mild stimulant effect of caffeine is fine, but smoking methamphetamine, with its much greater stimulant effect, is very bad. Accordingly, it is regulated as such and banished to the margins of society. Anyone wishing to engage in using methamphetamine knows that they are doing something wrong, which the moral theory then interprets as evidence of their fundamental badness.

This moral model has become such a foundational assumption of our view of substances that its language occurs even within our scientific discourse around drugs. Scientific papers reporting on investigations of biological foundations of drug addiction will refer to substances as "hijacking" the reward system of the brain (Kunas et al., 2022). Good substances will affect the brain (Ransohoff et

al., 2015), but bad substances hijack it. This sets up a transcendent standard of differing types of substance that are seen to affect us in different ways. It is okay to be affected by good substances, but it is a problem to be affected by bad ones. When we find we are addicted and unable to stop using methamphetamine it is because it was bad.

In this model, the problem is in the substance itself. Addiction is in the substance as part of its potential power, and if we are just able to remove the substance (or to very heavily restrict its access), people will no longer experience addiction. This does have some evidence to support it, and there is a correlation between access to a substance and how likely people are to use it (Adamson et. al, 2009). There are also many cases of people ceasing to use a substance when access is restricted (such as in prison), only to resume using once those restrictions are no longer in place (Calabria et. al, 2010).

One of the limitations of the moral model is that it lacks any sort of concrete categories to define it. The changing, cultural nature of what is seen as good and bad, and the close relationship between those categories and *good* and *bad* communities that are seen to be engaging in it. Numerous studies have described the particular stigma that certain communities face in regard to drug use (Kuleza et. al, 2016), with people from minority ethnicities being less likely to be believed about their contexts, and less likely to be offered treatment (Jegede, 2020).

Process of change theories. Rather than focusing on the aetiology and maintenance of addiction, the processes of change theories concentrate on the methods and stages involved in changing our opinions and motivations about a particular entity or context in our lives. This occurs both in development and elimination of an addiction, and within addiction treatment it is used to map and make sense of the process of reducing or eliminating substance use. The process of change can be marked by success or failure in any of these steps, and by use of interventions developed by these theories we can influence this process.

The various theories that exist in space will often borrow from various concepts in other theories in order to illustrate their understanding of the process of change. For instance, in acceptance and commitment theory (Hayes et al., 1999), clarifying values is an important step in the therapy, with the intention of this step being to reinforce the long-term benefit in the substance user's mind of the greater value of living according to their values, in order to outweigh the short-term benefit granted to them by experiencing a drug high. This calls on similar ideas to those behind rational-choice theories within the medical model.

There does appear to be a large body of evidence that emotional and cognitive processes are involved in making decisions to change (Yukalov & Sornette, 2014); however, theories that have sought to identify these different stages, and tailor interventions for each, have struggled to find evidence to support that particular order. With various schemes coming with particular processes of change, different orders of the process, and different processes have been implicated at different stage transitions (DiClemente et al., 1991; Lippke et al., 2010; Remme et al., 2008).

In process of change models, the addiction is in the natural comfort granted by the status quo, and repetitions that maintain this comfort. The problem is seen as our natural preference for remaining within a local minima, that may be uncomfortable in some ways, but not as uncomfortable as going through an immediate, time-limited process of change. If we can be supported to overcome this reticence and go through it anyway, staying with the process and not going back to our original state, we can reach a new, even more comfortable state than where we started from.

The psychoanalytic model

The psychoanalytic model states that addiction is not really a problem in itself, but rather is a reaction to past trauma, usually in childhood. Drugs are seen as ways to cope with the negative ongoing effects of the trauma, by either numbing some of the stronger negative feelings, or getting so high that troubles are forgotten, if only for a moment. All the negative effects of addiction are

seen as either unfortunate physical side effects, or societal impositions on someone trying to self-medicate. For supporting evidence, this model points to the high incidence of emotional and physical trauma observed in people seeking treatment for addiction (Dore et. al, 2012).

In this model, the problem is seen not in the person or their behaviour, but rather in the addicts' past trauma, which has not been resolved and contextualised into the present day and appropriate present behaviour. Current addictive substance behaviour is seen as indicative of an ongoing attempt to protect the self from past traumatic memories resurfacing. Here, addiction is in the trauma. This model hypothesises that medical interventions are not enough, as the moment the medication is stopped, the negative effects of the trauma come back, and the subject relapses. Further evidence for this model is seen in the lack of decrease in drug relapse rates of long-term treatment programmes, long after physical withdrawals have ceased (Welsh, 2007).

There appears to be evidence that, from the perspective of Bowlby's attachment theory, people who do not develop healthy attachment patterns early in life have higher rates of addiction in adulthood, with greater incidences of related drug harms. Attachment theory proponents see drug use in this context as "self-medicating", and using substances to help assuage the discomfort felt by the lack of healthy attachment and subsequent feelings of unsafety. There appears to be links between white matter impairment and negative affective states (Unterrainer et al., 2017). A number of longitudinal studies have shown links between attachment disorders, addiction, and other comorbid mental health disorders, indicating that there is likely to be some sort of causal explanation (Schindler, 2019).

Family interaction model

In the family interaction model, it is the whole family who is not well, and the addiction is merely a symptom, whether displayed in one family member or many, of the underlying dysfunction in the family. This dysfunction has often been passed down from generation to generation, and can express itself in a variety of mental health symptoms, not just addiction, which may or may not be

expressed as comorbidities with addiction. In this model, these mental health diagnoses are seen as being caused by, and a protective reaction to, "the double-binds, ploys, gambits, manoeuvres, scripts, etc., of other family members." (Siegler & Osmond, 1966, p. 1199). Proponents of this theory point to the much higher rates of mental health diagnoses both in the population of identified addicts, but also in their close family members (Halpin et al., 2019). Families and wider families tend to have higher rates of mental health diagnoses which don't seem to be accounted for solely by heredity.

In this case, addiction is in the family, although specifically within a strategy to deal with the family, whether it is one of escape, or of taking on a "sick role" (Shilling, 2002), so that one can be looked after, take the blame, or any one of a number of individual strategies. For the family interaction model, the problem is seen as both desirable and undesirable at the same time. For the addiction to be properly functional within the family system it must be experienced as undesirable, yet it is desirable for the family to have it continue. The family interaction model sees this double meaning as being the engine behind addiction, recovery, and relapse, as the family system requires the subject to stay in the role the system has designated for them (Humphreys, 1996). In order to be treated, the whole family needs to be involved in re-evaluating their ways of interacting, and bringing the whole system of manipulative tactics out in the open, to reinterpret each other's actions and their own, forgiving others for their mistakes, and resolving not to continue their own (Humphreys, 1996).

The conspiratorial model

The conspiratorial model sees addiction as being entirely artificially constructed. There are a number of different ideas about how and why this may have come about. Some see addiction as being a convenient story for the government to restrict certain substances in order to control the population (Szasz, 1960). Others see addiction (and other mental health conditions) as a way to create new

markets for pharmaceutical companies to sell drugs to more people. So, certain medical treatments, such as opioid substitution therapy, are seen as being ways for pharmaceutical companies to make money from addiction, and keep addicts in the "sick role" (Shilling, 2002).

In this model, addiction is an idea that has been deemed useful for physical or economic control. Proponents of this idea point to examples such as women who immediately give up their substance of choice the moment they learn they are pregnant, or people simply giving up their substance of choice at a certain age when they feel like they want to (Conde et al., 2016). If the majority of people who are defined as addicts simply give up using when they want to (Laudet & Hill, 2015), can it really be said they were ever addicts? In this case, the problem is moved from the addict themselves to the agent of control, whether the government or the pharmaceutical companies (or the two of them working in tandem), and the problem is not the addiction but rather the existence of these entities who create non-existent conditions for the purpose of exerting control over the population. Proponents of this theory, whether drug users themselves or not, can sometimes advocate for more drug use, either as a way of representing their freedom, or for the purported benefits these substances can contain.

Social theories

Social theories are somewhat related to the conspiratorial model, in that they both claim that addiction is constructed at a societal level rather than located in the individual. Like theories based on the medical model, these have proliferated in the previous few decades.

Social network theory. In social network theory, people make decisions and engage in certain behaviours as a member of a population. It focuses on the strength and number of connections within a population as indicative of the likelihood of drug use beginning and developing. The theory states that "The rates of transition into and out of addiction on the part of individuals within a group or population are a function of the social connections between individuals who are and are not

promoters of addiction or non-addiction, and the nature of those connections." (EMCDDA, 2013, p. 80). Addictive behaviours can frequently occur in groups at multiple hierarchical levels (Rosenquist et al., 2010; Valente et al., 2003). Likewise, there appear to be patterns similar to contagion in infectious diseases in the spread and intensity of addictive behaviours (Christakis & Fowler, 2008).

Certain drugs will be more popular at certain times than others: drugs can become "cool", "cooler", and "less cool" over time, a phenomenon which is difficult to explain from a biological perspective. Researchers can identify groups of people forming an identity around certain substances, such as "weed culture" (Holm et al., 2014); the spread and intensity of substance use then waxes and wanes depending on the fortunes of the greater culture within which it is located, rather than due to the effect of the drug itself. To change the addiction, theories based in social networks advocate for weakening the current social structures and promoting non-using structures instead (Best & Laudet, 2010).

In this theory, addiction is in the culture, specifically within a behaviour that makes up a culture. It is seen as a problem as it can lead to both medical problems within that culture, and it can be seen as a bad culture that may infect the surrounding other good cultures. Just the use of such words as contagion, and the seeming lack of reticence to use such words as disease when comparing drug use to an observed phenomenon, points to the underlying presence of a moral lens when evaluating patterns of drug use.

Economic models. These models use classical economics to model the prevalence and salience of drug use in society, and advocate the use of economic models, which are already used to regulate and control the movement and usage of other goods in society, to do the same for illicit substances. As evidence for this idea, there are a number of studies that have linked higher use of substances to lower cost and increased availability (Cretzmeyer et. al, 2003). Proponents of this idea advocate for increasing the "cost" of substance use, not only monetarily, but also other social costs, such as availability, societal acceptance, etc. This will drive down the overall demand for the product, and

hence the associated harms with the products. Simultaneously, this theory also advocates for reducing the costs of alternative, less harmful behaviours. So, if heroin is expensive, economic models would advocate for making opioid substitution therapy very cheap (not only monetarily, but also in terms of availability and societal cost), in order to increase the perceived desirability of the alternative product.

These theories do struggle to account for other factors not directly related to economic theory, such as those who use substances reacting to instruments such as increased financial costs, by engaging in ingestion methods that increase the amount of the drug delivered into their systems, such as smokers taking deeper drags on their cigarettes, or heroin users engaging in more risky behaviour to experience a greater high from a smaller dose of the drug (Roddy et al., 2011).

In this case, the addiction is in the opportunity cost of the behaviour. If it is somewhat cheap and easy to get high, we might decide to do it all the time, whereas if it is expensive and difficult to get, it may not be seen as worth it, or perhaps only worth it to do occasionally. Economic models see the problem as being the economic conditions providing too great an individual incentive, motivating individual behaviour that overall has a negative effect on societal macroeconomic conditions, necessitating economic price controls for the overall good of the economy.

Communication/marketing theories. Somewhat related to the economic model are theories that focus on the nature of marketing within our society. Broadly, this theory states that "The development of and recovery from addiction is influenced by the persuasive communications and marketing activities of those promoting or seeking to combat the behaviours concerned." (EMCDDA, 2013, p. 84). It has long been noted that advertising campaigns have been extremely effective in increasing people's likelihood to use a particular substance. Smoking campaigns have been effective for decades, and gambling has also been effectively promoted for a long time. Even illicit substances are able to be effectively advertised within certain subcultures (Gordon et al., 2011).

These theories advocate using our knowledge of effective marketing, both of products and social marketing to do the opposite, and advertise not using, or taking up an alternative behaviour or substance. This involves concepts such as branding—associating a product with certain identities or ideas, and market segmentation—identifying certain subsets of the population and marketing to them directly. Despite the failures of some attempts (DeJong et al., 2009), there also appear to have been some cases of long-term culture change in which marketing is thought to have had some effect on population level use (Wakefield et. al, 2003).

In this case, the addiction is in the culture, certain ideas held at a population level include using an illicit substance repeatedly, and in this case the problem is that this is seen as an unhelpful idea that has a negative effect on the greater culture at large. It is necessary to use large, population-scale levers such as marketing campaigns to shift some aspects of the culture to prefer other ideas.

Organisational systems theory. As theories of addiction are examined and their structural components are compared and contrasted, it becomes apparent that many of these theories are related in some way. Theories of marketing need to designate a desired outcome, to define a good and a bad product in ways that call to mind the moral theory. Economic theories, with their focus on cost/benefit ratios, contain a population-level echo of the goal focused medical theories that state that a similar calculation occurs simultaneously in our individual brains.

Interest in organisational systems theory, as a potential site of insight into addiction, has been growing recently as the number of theories and their commensurate strengths and weaknesses become apparent. This theory states that "addictive behaviours can be understood in terms of systems of mutually interacting components at a societal level (e.g., government, tobacco industry, public). The effects of innovation introduced into the system can be nullified by compensatory

changes in another or can propagate through the system or even be amplified." (EMCDDA, 2013, p. 85). It seeks to acknowledge the large numbers of constantly shifting contexts within which we live, experience motivations, and make decisions, and sees addiction as an outcome of all of these mutually interacting environments.

From a systems theory perspective, the biological imperative to use a drug, and a strong, seemingly irrational craving to continue using a drug despite large and continually growing drawbacks to doing so, can only lie at the end of a long chain of mutually overlapping and reinforcing motivations. These occur individually, within families, subcultures, and the greater culture at large, with all of its emotional, physical, and economic aspects.

In this case, the addiction is not necessarily in anything, but is rather seen as coming out of the interactions of a large number of various interacting processes. The "problem" is not necessarily within any one aspect of the overall system, but rather in the fact that the underlying system that gives rise to this behaviour is capable of accepting a certain pattern of inputs that results in this apparently unhelpful output. The existence of addictions indicates that there is clearly a flaw somewhere in the organisational system, which will consequently need to be identified and corrected.

This has been seen as an attractive theory for those who believe there exists a comprehensive theory of addiction. The EMCDDA report, from which some of the categories listed above are taken, sees this comprehensive listing as leading "towards a comprehensive theory of addiction" (2013, p. 88). It states that "a comprehensive theory of addiction would ideally encompass all the relevant concepts and link them together in a way that accords with the evidence and provides a coherent account that can be used to develop effective interventions." (EMCDDA, 2013, p. 88).

Simultaneously, however, as the sheer scale of inputs, aspects, and confounding factors increase, it becomes more and more daunting a task to properly account for the various aspects of public, economic, and individual health that need to be scientifically assessed and understood for these

comprehensive theories to have sufficient predictive power and therapeutic generativity (Ahn et al., 2006).

Reflection

It is striking in reviewing the proliferation of theories of addiction how generative it is. It seems to almost be a life cycle of addiction researchers to enter the field, learn a great deal about a certain theory, identify its shortcomings and blind spots, and either extend or revise a theory to try to cover and explain a previously baffling occurrence, only for addiction to slip away from that too, which invites later researchers to do the same, and so the cycle continues.

This brings up a number of questions. Why has addiction proved so hard to define? Why does it seem that no matter how many possible theories we devise none of them seem to cover everything? What evidence were these people seeing that led them to devise these theories in the first place? These people were not lazy, uncaring, or stupid. There was clearly some evidence that led them to pursue these lines of enquiry, and clearly some positive results that encouraged them to publish their results and compel others to repeat their methods. Alongside the question of why does this theory sometimes fail to explain what is occurring, is the equal and opposite question, why does it sometimes explain exactly what is occurring? Why do theories that completely disagree with each other as to what addiction even is, and what its aetiology is, sometimes provide useful results, and why do they sometimes fail, if they are both purportedly to be about the same thing?

Marketing campaigns sometimes show clear and positive results. Sometimes rational choices can be introduced that disincentivise drug taking, sometimes long-term rehabilitation provides people with the time to change their contexts and thought patterns, sometimes helping people get a job is enough, sometimes joining non-using social groups works, sometimes scare tactics do it, sometimes people just stop. Sometimes. But why sometimes and not others? It seems currently that all of these things are part of the picture, but that overall, no one really knows. We come back to Sussman and

Sussman (2011), “Of course, it would not follow that when we speak of addiction, we are speaking of nothing, just that we do not yet know what we really are talking about.” (p. 4032).

Faced with this well-trodden territory, and knowing that we are unlikely to be able to significantly out-think those who have gone before us, others have taken a different approach to addiction. Rather than beginning with the same ontological assumptions as the previous theories, it has been hypothesised that an alternative ontology may allow for unique insights and further progress than would have otherwise been possible. In order to find an alternative ontology, people have turned to philosophy, looking for alternative concepts from that field to apply to addiction and perhaps new avenues of inquiry.

Chapter 2—Deleuzian approaches to addiction

Oksanen (2013) also notes the lack of coherency between the various theories of addiction, and the seeming contradictions between biomedical, social, and psychological theories which seems to explain some factors but has trouble with others. He turns to Deleuzian theory, not to contradict current theories, but to add a new perspective to theories of addiction. He focuses on Deleuze and Guattari's (1987) idea of the desiring-machine: "desire is something that intersects people, bodies and sociocultural realities. Desire is produced and present everywhere in life as an active life force." (p. 60). From this perspective, addictions alter the desiring-production and set up a loop that intersects many other desiring-machines. Cultural, social, physical, and other contexts are all part of the desiring production of which the addiction participates.

For Deleuze, philosophy was a way of answering questions that established an "art of living" (May, 2005, p. 11). Foucault described *Anti-Oedipus* as "a book of ethics". Goodchild (2010), when discussing Deleuze, states,

> "Instead of subjecting the body to conscious ideas represented in the mind, the life of the body and the mind escapes representation. Ethics is a matter of experimentation rather than representation in an attempt to discover what the mind and the body can do." (p. 25).

If knowledge seeks to answer the question, "What can we know that we did not know before?", philosophy is motivated by a different query: "How can we see what we did not see before?" (May, 2005, p. 22). Deleuze does not seek to account for identities as we experience them, but to explore the question of how might we live. "We do not yet know of what a body is capable" (Deleuze, 1988b, p. 127).

Within the scientific literature on addiction, it is rare for writers to define an ontological foundation that seeks to incorporate rather than exclude. Somewhat more common is an accession that differing theories contain a useful description of certain epiphenomena of addiction, but leaves the

real site of addiction untouched. Volkow et al. (2016) agree that other factors increase vulnerability to addiction, but it is the neurobiological changes within the brain that need to occur for addiction to exist.

Oksanen (2013) states that a "Deleuzian theory of addiction opens up the possibility of thinking in terms of multiplicities and becomings rather than identities." (p. 65). He notes the various ways of "being an alcoholic", and that many people can prefer to use substances than not, and that many people simply stop on their own without any support to do so at all (p. 64). In this view it would be wrong to see addiction as only one thing that needs to be defined or categorised, but rather as a relationship with a substance (or substances) that will subtly change and morph over time, becoming closer and then further away.

From this perspective, addiction is a problem because it narrows down the options in life. It is not bad or wrong to have an addiction, but it does have physical and social effects that decrease possibilities. Oksanen (2013) brings to mind Deleuze's concept of the "great health" (p. 64), where health describes what the body can do, rather than a negative conceptualisation of health as being the absence of disease. Through identifying where and how addiction has decreased possibilities for the person, and seeking instead to increase options and possibilities, this can define how we problematise and treat addiction. Oksanen does mention that this does not need to contradict our current methods of treatment, but can instead add a new perspective to them, although he stops short of saying how this might actually occur.

In *Transpositions*, Braidotti discusses addiction from a Deleuzian perspective, stating that (when talking about drug addiction), "by de-pathologizing these allegedly 'extreme' clinical cases, we can approach them not so much as indicators of disorder, but as markers of a standard condition, namely the human subjects' enfleshed exposure to the irrepressible and at times vitality of life (zoe)" (Braidotti, 2006, p. 204). She states that "the ethical position with relation to alcoholism, as in other similar states of self-destruction, is to take equal distance from two related pitfalls. One is the

moralistic condemnation in the name of a belief in the intrinsic value of life. The other is the altruistic compassion for what is perceived as the alcoholic's inability to make something of him- or herself." (p. 213). Rather, she states that both are modes of living, and also invokes Deleuze's idea of the great health, which is focused on possibilities, rather than mere survival. Ethics for her is about expanding what we can sustain, without overdoing it. She defines this as *potentia*.

So, in Braidotti's understanding, ethics is about "making these processes of becoming into productive, life-enlarging events." (2006, p. 215), where life is defined as "bios/zoe combined in flows of becoming." (p. 215). Drugs from this perspective become modifiers of intensities, which can assist or interfere with certain becomings. Dosages, rhythms, repetition, and resonances are part of the experience, or experiences, but are not good or bad in themselves. Rather, a person "has to pursue or actively create the kind of encounters that are likely to favour an increase in active becomings and avoid those that diminish one's potentia." (p. 217). Similarly, to Oksanen, psychoactive substances are not bad or wrong, but rather have a powerful ability to mediate intense experiences. These experiences can open up new possibilities, but taken too far can lead to addiction. Here, the definition of "too far" describes when substance use starts to decrease possibilities rather than increase them.

Other writings on addiction from a Deleuzian perspective also talk about these opposite poles of disease and moral failing, and critique them both. Coonfield (2008) points out that both disease and moral models are limited by their assumptions of "a similarly bounded, similarly coherent and intentional self" (p. 99). McCoy (2010) speaks of these as (borrowing from Foucault) technologies of domination, and asks "What opens up if we recognize the intertwining and co-dependence of these two ways of thinking about addiction? What other ways of thinking might be of some use?" (p. 629).

As stated earlier, these works make important steps towards imagining a Deleuzian approach to addiction, however they remain theoretical. Due to the somewhat esoteric nature of many of Deleuze's concepts, the difficulty in applying Deleuze can be seen as a drawback. Both Braidotti and

Oksanen give great sweeping descriptions of the great health, but we could ask what use these are without some sort of concrete steps in place to achieve it? As it stands, it could be seen as removed from the economic and intellectual limitations within which people actually live.

To be able conceive of, and embody, an alternative form of ethics is a privilege, deterritorialising is a privilege, to first be given the education to even do this is not something on offer to everyone. Likewise, within the economic and capitalist systems we live in, the ability to take nomadic lines of flight as leaps into the unknown is much easier to do if there is something to fall back on. If we are not careful, we risk replacing the moralising of drug use as being bad with a different form of moralising that treats disinterest in possibilities as being similarly bad. Dominant discourses have long been identified as part of the milieu that designates certain drugs as being bad, which some theoretical approaches see as being part of the construction of addiction. The application of the idea of possibility could become a similar driver of addiction if something that permanently and irreversibly limits possibility (such as losing a leg) is now reinterpreted as a sin against possibility and therefore a potential source of future guilt and subsequent demotivation.

This is an example of what Deleuze and Guattari call Oedipal desire. In *Anti-Oedipus*, Deleuze and Guattari argue that Oedipal desire is a transcendent way of thinking, where we enslave desire to a transcendent value, and restrict the possibilities that can come from desire in all its manifestations. Desire itself, then, is positive and immanent. Life is desire (Colebrook, 2002). The danger in creating a concept to represent a Deleuzian idea (such as possibility) is that we immediately create transcendent concepts and cease thinking in a Deleuzian way.

Cameron Duff also takes on the dominant discursive landscape of addiction and addiction treatment. He claims that much of the failure to define a coherent account of addiction "can be attributed to the habit of framing drug problems in conventional ontological terms, reifying an ostensibly autonomous subject, along with the equally discrete objects that comprise its social context" (Duff, 2014, p. 126). For him, the context of drug use is vital, and therefore the problem is how to connect

the individual and society, the drug use and context of doing so. He looks to start with the connection, rather than the subject as the basic unit of analysis. This leads him to look at the drug assemblage rather than the various identities involved.

Through his and others' research, Duff describes how the spaces in which people achieve intoxication are active conditions of taking the drug, and that these conditions have a significant effect on the experience. Other important parts of the experience are the social interactions people have with the drug: "drugs like cocaine and alcohol transform the experience of social interaction in bars, clubs and private parties." (Duff, 2014, p. 155). Duff states that "drugs ought to be regarded as nonhuman bodies, inorganic life—packets of affects and relations—active in the formation of the drug assemblage" (p. 155).

He describes drugs, and the using of them, as all being assemblages, concatenations of not only drugs but the spaces in which they are consumed, who they are consumed with, why they are being consumed, how they were bought, and many more aspects that are all aspects of the experience. It is the assemblage that determines drug experience, rather than simply neurobiology or any other singular aspect to drug use. Understanding of the assemblage is vital if any sort of modification of these experiences is going to be undertaken in a meaningful and directional way. Otherwise "public health and harm reduction initiatives alike persist with the subject as the focus of health care interventions, either in terms of the prevention or treatment of AOD [alcohol and other drug] related problems" (p. 143).

As a result of his research, Duff calls for "focusing on the machinations of the assemblage and the specific means by which forces distal and proximate encounter one another in context." (pp. 144–145). He asserts that simply acting on the subject itself is not sufficient, and that assemblages, in all their multifaceted natures, must be understood as best as possible, and worked upon. He works up to the final claim that "The model of social context developed above would suggest that as much of

the assemblage must be understood as possible if effective interventions are to be described for transforming contexts in ways that limit the expression of harm." (p. 148).

Duff does even more important work of laying the theoretical groundwork for a Deleuzian understanding of addiction, providing substantial qualitative research showing the contexts around drug use are a vitally important aspect of understanding why and how people use substances. However, he also stops short of describing what taking account of this might actually look like. He states that "Focus should shift instead to specific consumption contexts or drug assemblages. This move may well facilitate the identification of the various forces involved in AOD use, and the development of tailored strategies to modify or reterritorialize these forces in local AOD interventions." (Duff, 2014, p. 146), without actually describing what these tailored strategies might be, or what they would be based on.

He states that "Rather than identifying the relative responsibility of individual spaces, bodies or forces, the goal ought to be to understand the range of affects and relations active in the production of harm" (p. 148), but who gets to define what "harm" means? And what do we do when these meanings disagree? Also, might process of change theories, such as acceptance and commitment therapy, claim they also approach addiction in this manner and they already provide the necessary interventions required?

So perhaps ontology is not the right place to look? The concept of badness or harm has consistently come up throughout this analysis, and even the very idea of addiction is connected to some sort of harm. Merely repeating an action every day (say, going to work) is not seen as an addiction unless one does it too often, and then they are said to be "addicted to work". This might imply that it is our values of good and bad that cast the deciding vote on what is and isn't said to be an addiction. If this was the case, the field of axiology—the study of values—would be the most fruitful philosophical field for finding a new approach to a theory of addiction.

Axiological philosophers argue that something is good if it has intrinsic value, that is, that it is good in itself. This is contrasted with things that have extrinsic value, which are things that have value for something else (Orsi, 2015). An axiological approach to drug harm is to describe the drug as having a negative extrinsic value, because it can negatively affect the health of the organism taking the drug, but the drug itself would have a neutral intrinsic value.

So, the identification of the problem, the consequent formulation of its parameters, and subsequent development of effective and correctional therapies, all assume a coherent systematic set of intrinsic and extrinsic values to inform the process. "Loss of control" cannot be conceived of as a diagnostic criterion of disease if control is not assumed to hold some kind of intrinsic value. But why is control assumed to hold intrinsic value? What is the value of control, and what is its being? Axiologists have a number of different theories that give many different answers to this question. Some contend that values are ontologically real, and others contend that they aren't (van Roojen, 2018). The differences between intrinsic and extrinsic values aren't always clear; things can sometimes be both, and others argue for further distinctions, such as the difference between intrinsic and final values, with intrinsic values having value by nature of their pleasantness, whereas final values are valuable in themselves (Orsi, 2015).

We can easily find ourselves defining values not on the basis of objective external criteria (assuming such a thing was even possible), but rather by cultural or economic criteria which are then attempted to be mapped onto biology. Any failure for this to be reflected accurately in the world is then projected onto the subject, who is then defined as to be acting in accordance with negative intrinsic values. So, these questions of values, which are negative, which are positive, and which should be prioritised in the conception and treatment of addiction, are all questions which are informed by our ontological construction of reality. Any reinvestigation and readjustment of ontological considerations will necessarily readjust intrinsic and extrinsic values also.

Previously, we have investigated a number of works attempting to apply Deleuze to addiction, all of which described in theoretical terms new ways in which we might think of various aspects of addiction. None of them described what we might do. How might we not only conceive of addiction, but also produce interventions, treatments, and criteria for failure or success?

Is it even possible to apply Deleuze in this way? Elizabeth Kaufman (2012), on page 1 of her work of Deleuze, states the dark precursor "though I couldn't be more opposed in principle to the idea of 'applying Deleuze' (and perpetually caution students, with little success, against such an endeavour)", indicating an understanding of Deleuze as being "not designed to be applied, but to be *an attack on applicability*" (p. 1). This reading of Deleuze insists that any attempts to apply Deleuze will automatically conform to the norms of the world they are applied to, falling into the same trap of creating identities that then become striated spaces, constraints on the virtual space of possibilities. It is the claim that the moment of applying Deleuze is the moment of anti-Deleuzianism.

Up to this point in this thesis, Kaufman's assertion can be correctly applied to the previous works cited, which have indeed used a Deleuzian approach to escape current transcendent categories placed on drugs by other approaches. They have sought to force drugs to conform to their own perception of the world, and then immediately used the territory they have escaped to, to apply their own transcendent categories, such as possibility or harm. This is a potent warning of the potential traps ahead.

In Peter Hallward's 2007 work on Deleuze, he claims that "Deleuze's project… far from engaging in a description or transformation of the world, instead seeks to escape it." (p. 7). He claims that "Deleuze is most appropriately read as a spiritual, redemptive or subtractive thinker, a thinker preoccupied with the mechanics of dis-embodiment and dematerialisation. Deleuze's philosophy is oriented by lines of flight that lead out of the world; though not other-worldly, it is *extra*-worldly." (p. 3). This ultimately leads him to claim that Deleuze's philosophy is "little more than utopian

distraction" (p. 162), and it "inhibits any consequential engagement with the constraints of our actual world" (p. 161).

Yet for Deleuze, nothing could be further from the truth. In his mind, he was writing about ontology—what is. If ontology is not about what is, then what use is it? (May, 2005). And if it is about what is, then we should be able to detect it, to measure it, to see its effects, and measure those as well. Deleuze's insistence on being as univocity, if it is accurate, would need to be seen throughout everything, not only within the human mind but everywhere. Žižek pours scorn on those who see in Deleuze's thought fuel for leftist political ideas: "The ontology of productive Becoming clearly leads to the Leftist topic of the self-organization of the multitude of molecular groups that resist and undermine the molar, totalizing systems of power... The problem is that this is the only model of the politicization of Deleuze's thought available." (Žižek, 2004, p. 32). But this cannot be the case if it is a complete ontology. That it may map onto particular arbitrary categories as we have developed them is one thing, but it doesn't claim anything other than that our categories happen to fall as they do onto the underlying ontology. Our definitions of political categories just happen to be what they are, including the system of having a right and a left.

It would be a contradiction to approach using Deleuze as ammunition to overthrow anything, or seek to replace what is currently occurring in addiction research and treatment. Rather, an ontological formulation needs to describe and explain what is occurring, the things that appear to fit with certain understandings, and the things that don't. It is not subservient to our current subjective orders of things, nor does it need to be endorsed by them.

If we have multiple, proliferating theories of addiction, propelled by contradicting ontologies, contradicting value systems, and contradicting ideas of what ought to be done about it, perhaps Deleuze's thought may be a place to go to make further progress. While this has been explored by others, it hasn't seemed to have moved beyond a theoretical place.

Chapter 3—Ontology

The differing theories analysed so far have sought to locate where addiction is in order to address it, in whatever way is deemed appropriate. This has important implications, not only for how we address individual addictions, but also how we structure our systems surrounding addiction. If addiction is a disease, perhaps we don't need to worry about the structures in society (beyond thinking about which ones might exacerbate the symptoms of the disease). If addiction is not a disease, and perhaps we believe it does not even exist, we need to look very carefully at the structures of society surrounding the addicted person, but can happily ignore most individual treatments (beyond learning to put up with what the individual cannot change). Even those theories that seek to combine multiple theories and integrate the various facets and aspects of both, necessarily must engage in a comparative endeavour to do so. Some aspects of some theories will make the cut, and others won't.

The decisions made around the admission or rejection of evidence, and which pieces of which theories to integrate or not, are often driven by ontological concerns. If addiction is a disease, then we will go searching for the evidence within bodies, and especially brains. Where else could we look? Societal factors can exacerbate addiction like air pollution can exacerbate asthma, but in each case, they can only affect the thing that is already present inside the body. This puts every theory of addiction into the situation where they must not only prove their own position, but also prove their rejection of others (or argue that they are but an epiphenomenon, or a supporting aspect of the "real" location of addiction) (Hall et al., 2015; Volkow et al., 2016).

Those who have used Deleuze's ontology as a point of departure from more mainstream understandings of addiction have done so in a similar manner. Deleuzian ontology is used in opposition to current prevailing theories, sometimes acknowledged and sometimes not. Oksanen asserts that "a Deleuzian approach does not necessarily contradict the existing theories in the field,

but adds a new perspective to addictive desires as not only subjective, but also as situational and interactional phenomena." (2013, p. 58). But social and process of change theories already do that, without using Deleuze to do it. Insights from Deleuze have been used as ways to step outside of what is currently thought of in order to reinterpret addiction, to declare that drugs are something other than what has been said before, and can be done so in radically new ways in order to conceive of new possibilities in this realm (Buchanan, 1997, p. 75).

To a certain extent, it is not surprising that Deleuze tends to be used in this way. His books are famously opaque, and it is typically a considerable intellectual challenge to grapple with his unique perspectives (and style of writing), and an even greater challenge to understand it in such a way that it is capable of being applied. It is no wonder that the motivation to do so should come from a profound sense of discomfort with present discourses and structures as currently experienced. It is therefore also understandable that those applying Deleuze should come at it with a sense of being "armed" to throw off the shackles of what has come before. From the same place of motivation, to tackle Deleuze in the first place comes the motivation to "reinterpret" what drugs and addiction "are", and "where" they are. "By de-pathologizing these allegedly 'extreme' clinical cases, we can approach them not so much as indicators of disorder, but as markers of a standard condition, namely human subjects' enfleshed exposure to the irrepressible and at times hurtful vitality of life (zoe)" (Braidotti, 2006, p. 209).

For anyone seeking to overthrow the current prevailing theories of addiction, they must not only prove it is where they say it is, they must also prove that all those other theories were wrong, or subordinate to their own. They must show why these theories got it wrong and why all these people were mistaken.

If we are going to introduce Deleuze into the conversation, it is not enough to ignore this challenge. We can't simply say that Deleuze doesn't contradict other views but also adds this complementary view that we may find to be a helpful new perspective, to add to our bag of knowledge on the

subject. It is also not enough to state that these theories are manifestations of a paradigm that sought to control others, and that Deleuze allows us to make a radical break and think differently — because Deleuze constructed an ontology, a complete theory of being, of all that there is. If Deleuze's claim that his ontology accounts for reality as it really is, then a Deleuzian perspective on addiction needs to account for *everything*. It needs to explain not only what addiction is and why it occurs, but also why all of the theories postulated have seemed, at least to some people at some times, to be explanations for what is going on. It also needs to explain why sometimes these theories do not describe what is occurring. It needs to account for the ongoing proliferation of theories, the lack of consensus, the disagreements as to the causes, and so on. If it is going to conclude, say, that addiction is not a disease, it then needs to explain why so many people think it is.

If a Deleuzian ontology may find a way through this, then Deleuze cannot be approached as a liberator from what is currently known, but rather as an aggregator, or maybe a descriptor, acting as a tour guide, pointing out what we see and why. If our theories of addiction struggle to fully explain what we see, and they lack ontological consistency, then perhaps a different ontology, a more fundamental one, may be able to describe what is going on with all of them, where they agree, disagree, and why that is. Perhaps there is a way this ontology can allow for addiction to *be* where all these theories say it is, despite their contradictions.

This requires approaching Deleuze's ontology first, and systematically reviewing its features in its entirety. It is not sufficient to pick aspects here and there and leave out others; rather, Deleuze insisted that his ontology was to be understood as a whole. It is only through understanding the features of the ontology that they can be applied to the relevant theories in addiction studies and then interpreted through a Deleuzian lens.

Deleuze's fundamental insight that underpins his whole philosophy is the statement: "Relations are external to terms" (1991a, p. 66). It posits that a term, or an entity, is entirely separate to its relations. A term can be anything, a bee, a song, the city of New Orleans, a thought, joy, 2:52 pm.

Relations can be any way that a machine interacts with another; seeing, yelling, thinking, and so on. For Deleuze, this is such a deep, utterly fundamental insight, he described it as "a thunderclap in philosophy!" (Kleinherenbrink, 2019, p. 51). He returns to this insight over and over, reiterating it throughout his career (1991a, p. 98). *A Thousand Plateaus* repeats this on the very first page when it says, "To attribute the book to a subject is to overlook this working of matters, and the exteriority of their relations" (Deleuze & Guattari, 1987, p. 3). This has pivotal implications for how entities are understood, and how they relate to each other. "If relations are external to terms, entities must therefore have a private, internal reality. It follows that an entity, the entities which are in it, and the entities in which it is, never fully touch." (Kleinherenbrink, 2019, p. 51).

Deleuze doesn't simply posit this, but rather sees this as the necessary outcome of certain lines of evidence.

In *Letters and Other Texts*, Deleuze describes seeing a cube, but not being able to see the whole thing, so not being able to fully enter a relation with it. However, he can still grab it and manipulate it. So, he states that it is "totally objective", it cannot be reduced to its relations. Where it is sitting before he does so, is a "ground constituted by an ensemble of other objects" (2020, p. 294), but by removing it he removes the situation in which it exists, yet it is still a cube. From this, Deleuze states that it must have its own internal private ground itself, which allows it to remain this particular cube no matter its current setting. It cannot change due to its current relations, nor to where it was before he picked it up. Deleuze asserts that there is no difference between this interaction and any other interaction, and therefore entities must have a private reality that is its own and completely separate from its relations (pp. 294–295).

Deleuze also sees evidence for this hypothesis in the act of learning (Deleuze & Guattari, 1994, p. 22), for as we learn something new, the entity of which we learn is never fully known or revealed. We experience "signs", or manifestations of the entity, but never the entity in itself. We can always learn more about an entity, and this is done so by repeatedly varying relations with an entity in

order to familiarise ourselves with it. By approaching it in this way, and then that way, each approach uncovers another aspect or perspective of the entity. If it varied the entity itself, we could never learn anything about it. Rather, by positing that the entity remains whole, complete, internally coherent, and consistent, we are able to vary relations in order to learn.

Deleuze also insists that if externality were not the case, then "if a new present were required for the past to be constituted as past, then the former present would never pass and the new one would never arrive. No present would ever pass were it not past 'at the same time' as it is present; no past would ever be constituted unless it were constituted 'at the same time' as it was present." (1994, p. 82). Here, "present" describes entities in their relations, whereas "past" describes the aspect of entities that remains separate to relations. No entity would be able to release their current relations and form new ones. "Each entity must have an internal reality during each moment of its existence, an 'always already past' with which relations are forged." (Kleinherenbrink, 2019, p. 59).

As a result of the externality thesis, Deleuze proposes a fundamental understanding of everything in the universe based on a single concept: "Everything is a machine" (1983, p. 12) he declares. Deleuze asserts that all entities are ontologically equal, nothing is fundamental to anything else. A tree, a galaxy, The Beatles, the European Union, Tuesday, happiness, a proton, and the Treaty of Westphalia are all ontologically identical. Deleuze and Guattari are adamant that they are not speaking metaphorically when speaking of machines ("we are not using a metaphor… when we speak of machines"; Guattari, 2009, p. 91), nor are they talking about "gadgets, or little homemade inventions" (p. 90); rather, all entities "are" machines.

Not only is every entity a machine, but machines combine to form more machines. "For example, there is a full body of the steppe which engineers man-horse-bow, a full body of the Greek city-state which engineers men and weapons, a full body of the factory which engineers men and machines" (Guattari, 2009, p. 110). Machines are entities of every possible domain, and all are ontologically identical and irreducible to anything else. Four-thirty in the afternoon is a machine like a chemist is a

machine. The machine thesis describes everything, everywhere, all of the time, which gives Deleuze the basis to claim that "there is no biosphere or noosphere, but everywhere the same Mechanosphere" (Deleuze & Guattari, 1987, p. 69).

In other places in his writings, Deleuze describes all things as rhizomes or assemblages. These words are other ways of referring to machines, and Deleuze is clear to point out that multiplicities are assemblages. "What is an assemblage? It is a multiplicity which is made up of many heterogeneous terms and which establishes liaisons, relations between them, across ages sexes and reigns — different natures" (Deleuze & Parnet, 1987, p. 69); that a rhizome "is a multiplicity and an assemblage" (Deleuze & Guattari, 1986, p. 37); and that a machine is a multiplicity and an assemblage (Deleuze & Guattari, 1987, p. 34). Deleuze commonly uses different terms to describe the same thing, without necessarily alerting us to the fact that he is doing so. All the concepts Deleuze creates are multifaceted and complex, and by using various synonyms with varying connotations, this helps to get across the esoteric concepts he is seeking to describe.

What's more, the machines that make up machines are themselves machines, which are made up of more machines. "Each segment is a machine or a piece of the machine, but the machine cannot be dismantled without each of its contiguous pieces forming a machine in turn, taking up more and more place" (Deleuze & Guattari, 1986, p. 56). It is machines all the way up, and all the way down.

This assertion of ontological equivalency and externality already challenges certain medical ideas of drugs "hijacking" the brain. If this were to be true, it would imply that the relationship of a drug to the brain was somehow able to change its fundamental nature by engaging in a certain type of relationship with it. If all are machines and all are ontologically equal, it would not make sense to speak of some brain processes as "natural" and others as "hijacking", as this introduces a dualism into certain types of relationships based on the entities involved. Addictive motivation would need to be seen as biologically abnormal from other types of addiction (Foddy & Savelescu, 2010b). One entity would need to be composed of a different type of essence, capable of changing the internal

ground of another substance. If relations are external to terms, then nothing is different to anything else, and nothing is based anywhere. To see things in this way requires us to "see things from the middle, rather than looking down on them from above or up at them from below" (Deleuze & Guattari, 1987, p. 23). This means that "to learn about a machine or assemblage is to grow acquainted with its manifestations in various relations, with its descriptions, with its parts, with its uses, and so on, but never to know it in itself" (Kleinherenbrink, 2019, p. 65).

This challenges not only notions of "hijacking", but also moral theories of addiction. If addiction is "wrong" or "bad", it proposes that this is only so because of some kind of transcendent law that is being broken. In this case, everything (or at least in this case, a human being) is accounted for by transcendental laws. Terms are therefore internal with these laws. When addiction takes place, the moral theory may base the transgression in the act of consuming the substance itself or in the transgressive actions that may take place because of the ingestion of the substance. Either way, the moral theory states that the being of the person is a representation of these moral laws. This is what Deleuze called "functionalism" (Deleuze & Guattari, 1983, p. 210) or "generality" (Deleuze & Guattari, 1994, p. 1). It makes an entity equivalent with a relation that makes it function in that particular way. "Law unites the change of the water and the permanence of the river" (p. 2). Functionalism and mechanism cannot account for this entity, which at some point started to function. It is hampered by a "fundamental inability to account for [a machine's] formations" (Deleuze & Guattari, 1983, p. 323). By taking into account only the surface experience of things, it does not take into account the inner state of the things themselves. It cannot account for how things begin or end, or how things pass from one state to another. If the person is an addict, how did this start? Why is one person an addict and another not? It can only describe a relation (they are an addict because they are from a bad family/suburb/etc.), or posits a transcendent description that is taken to be internal, such as a Calvinistic view of the divine elect.

Deleuze's ontology sees each assemblage, or machine, as twofold, having an "actual" and "virtual" nature (1994, pp. 279–280). The actual is the machine as experienced by other machines, whereas the virtual is the machine's internal private reality. In addition, both of these actual and virtual natures are also twofold, in that they are both one and multiple simultaneously; "one in order to be something rather than nothing or everything, and multiple in order to be this rather than that." (Kleinherenbrink, 2019, p. 86). In order for a horse to be a horse, it must be just one horse, but at the same time it must be part of the multiple "horses" in order for it to be a horse.

This internal private reality, Deleuze calls the "body". "A body can be anything; it can be an animal, a body of sounds, a mind or an idea; it can be a linguistic corpus, a social body, a collectivity (1988b, p. 127). The body is "what remains when you take everything away", which is why Deleuze calls it "the body without organs" (Deleuze & Guattari, 1987, p. 151). This is not necessarily a corporeal entity, nor a volume of space. It means that if everything is a machine and everything has a body, all entities have a private internal nature, in which when all relations are taken away, only the body without organs remains, which "is that which guarantees that no machine can ever become fully integrated in any relation." (Kleinherenbrink, 2019, p. 87). The body without organs is the part of the machine which is entirely withdrawn from external relations, and "is that aspect of each machine which enters into nothing and into which nothing enters." (p. 88).

Hence, nothing ever fully enters into anything, or fundamentally changes anything without exercising some kind of force. All change to all machines must come through relations, and no relations are fundamentally part of any machines because they remain external to the body without organs itself. "Each machine has a body that comes into view only after abstracting from all relationality: power, language, experiences, histories, structures, components, texts, dialogues, materials and so on. Only then do we find 'the simple Thing, the Entity'" (Deleuze & Guattari, 1987, p. 151).

As entities are created, they each have their own body without organs created simultaneously. They can only be fully described by describing the relations that they create or modify, and none of these relations can be expected or ascribed to their body without organs. So, while the addict is an entity, so is methamphetamine, so are the social contexts, so are the ingredients, so is the treatment centre, so is "treatment", so is "addiction". When a new entity is created, it becomes a third body, which "interrupts" the machine that generated it and that which the machine generates. "But is it third because it arrives third? Certainly not. It is even the first. But it is third because it works in the shadow, in the unconscious. It is primary. What there is at the beginning, well that would be the third." (Deleuze, 2015, p. 23).

These private bodies are enveloped by relations with other bodies; some will be intense and exist for the life of the body, others will come and go. Some will modify it, others will barely leave any trace, but none will ever pierce the private virtual interior. This means that nothing ever does anything by itself but always requires effort exerted by another body, to make it do anything. This means that reality is inherently problematic. There is no "neutral state" to which we would like to (or ought to) return, there is no "normal" waiting for us if we could only stop self-sabotaging, or if we could just stop being bad, but that the problematic is inherent. The person with an addiction doesn't have the urge to use imposed on them from on high, or as an inherent relation internal to themselves, but rather as a relation acting on another relation. Deleuze writes that "Being is the being of the problematic" (Deleuze & Guattari, 1994, p. 64).

This problematic state, which Deleuze insists is the basic state of the world (Deleuze & Guattari, 1994, p. 280), guarantees that all the parts of a machine remain separate even when they work together in conjunction. If relations were inherently part of entities, what relationships currently exist could be the only ones that could exist. If addiction were the determination of a mode of living that contradicted a white, male, heterosexual standard (Deleuze & Guattari, 1987), then those who lived outside this standard would have a relationship to it in their being, and no one could truly get

away from it, even if they were living in opposition to it. This is what Deleuze described as "arborescent" thought, disparagingly referring to them as "arborescent pseudo-multiplicities" (Deleuze & Guattari, 1987, p. 8), which appear as multiples but really all thought is connected through relations, like a tree, back to a basic "trunk" of thought (p. 212).

These insights challenge theories of addiction that postulate that addiction is a form of conditioning; that people with addiction have been conditioned to associate the stimuli of using drugs, or preparing to use drugs, with pleasure. This seeking after pleasure has therefore translated into the associated behaviour, as the subject uses drugs over and over because they have been conditioned to (Mook, 1995). The pursuit of pleasure or avoidance of the pain of withdrawal is then rendered "unproblematic" as it is continued to be pursued without reflection of personal goals or long-term welfare.

Deleuzian ontology would dispute this, denying that drug use, or indeed anything else, has been rendered unproblematic when everything is always problematic. If a drug addict becomes conditioned to use and does so truly without reflective thought, then the relation has become internal to the entity, which would violate the externality thesis. Rather, every time the addict goes to use, or contemplates using, the whole problematic nature of doing so starts all over again. If the puissance of the drug is powerful enough it may be relatively easy to actualise the particular contract of using, but it is not a given, and it is not unproblematic.

If all entities have an internal private nature, and nothing can ever go in or out of this nature, there must nevertheless be mechanisms by which machines can affect each other. Machines can create other machines, and machines can affect each other through their relations. "It is true that one might instead wonder how these conditions of dispersion, of real distinction, and of the absence of a link permit any machinic regime to exist—how the partial objects thus defined are able to form machines and arrangements of machines. The answer lies in the passive nature of the syntheses, or—what amounts to the same thing—in the indirect nature of the interactions under

consideration." (Deleuze & Guattari, 1983, p. 370). Deleuze accounts for this, explaining how this can occur through the means of three syntheses.

In *Difference and Repetition*, Deleuze calls these three syntheses the connective synthesis of the present, the disjunctive synthesis of the past, and the conjunctive synthesis of the future (1994, pp. 93–94). In *Anti-Oedipus*, he refers to them as the synthesis of production, registration, and consumption (Deleuze & Guattari, 1983, pp. 1, 4). Deleuze asserts that whenever machines encounter each other it is through these syntheses that they do so, and that these syntheses account for all the relations between machines that occur.

The synthesis of production, or the connective synthesis of the present, describes the relation as it occurs; the synthesis of registration, or the disjunctive synthesis of the past, is what grounds the relation and is the condition for which must exist for the relation to occur in; and the synthesis of consumption, or the conjunctive synthesis of the future, describes how the registration creates a new machine (Kleinherenbrink, 2019, p. 112). These are not necessarily products of consciousness (although they can be), but humans and human activity is simply one instance of these things occurring (Deleuze, 1994, p. 75), but everywhere this happens and happens automatically, they simply are, which is why they are passive syntheses (p. 71).

To describe how machines relate, Deleuze asserts that each machine, or body, has its own perspective and that all perspectives are ontologically equal to one another. This body is between machines generating and what it itself generates. The person uses methamphetamine. The person gets high, the person gets paranoid, and craves more methamphetamine. Yes, it acts on the brain, and yes, other machines are involved in acquiring and administering the drug, but it is the person who uses it. It is the body that relates. "Each point of view must itself be the object, or the object must belong to the point of view." (Deleuze, 1994, p. 56). "The body is a point of view. Each machine can only have relations according to its own capacities." (Kleinherenbrink, 2019, p. 115).

This brings into question the value of simply scanning the brain, looking for how the brain is affected by substances, and devising a medical intervention to counteract the imbalance, while the brain is part of the machine that takes substances, but it is not the brain that does so, it is the person, and they do so from their own point of view. A medicine that alters the chemistry of the brain will affect that point of view but can never stand in for it. The person themselves may well find their capacity to use or not use drugs has changed as a result of the intervention, but it remains possible for the drug itself to find other ways to engage in relations with the drug taker.

The connective synthesis is then a contraction of how another machine is actualised within the constraints of what it can do. As machines relate, they are never brought into actual contact with each other, but rather it brings machines into an actuality based on what they can do. As machines frequently contract each other in a typical way, it becomes a habit. “A contractile power: like a sensitive plate, it retains one case when the other appears. It contracts cases, elements, agitations or homogeneous instants and grounds these in an internal qualitative impression endowed with a certain weight” (Deleuze, 1994, p. 70). The eye takes in many different machines, but contracts them all in the same way, based on its power to do so. The brain takes in many different machines, and contracts them all in particular ways also. “All relations are indirect contact with a contracted expression of a machine rather than with its body” (Kleinherenbrink, 2019, p. 116). “Habit is creative. The plant contemplates water, earth, nitrogen, carbon, chlorides, and sulphates, and it contracts them in order to acquire its own concept and fill itself (enjoyment) … We are all contemplations, and therefore habits.” (Deleuze, 1994, p. 105).

Therefore, a machine can never experience another machine on the other machine’s terms, but only on its own terms, and only within the ways it has the power to do so. The eye is unable to experience a sound, and the rock is unable to experience the ennui of a Tuesday afternoon, because it is simply not in their power to do so. This means that every machine is a machine that interrupts flows (Deleuze & Guattari, 1983, p. 19); the meth cook contracts the ingredients into meth, the meth

dealer contracts the meth and the buyer into someone with meth, the meth user contracts the meth and the syringe, then contracts the meth and syringe into their bloodstream, and so on. Each machine interrupts flows of other machines to make new machines; everything is multiplying. At all times, entities can only register becoming in the ways they are capable of doing so. My eye can see a rock, but it cannot see a sound. No machine can just connect with any other machine, it must be within its puissance, or power of doing so.

Therefore, the problem with enthusiastically "de-pathologizing" addiction is that we can only ever do so from our own perspective. It doesn't change other entities' abilities or desires to experience addiction in that way. We can insist all we like that addiction is not disease, but if someone is drinking themselves to death, and does not wish to continue doing so, but finds themselves unable to stop, they may well find the disease paradigm the most helpful in finding ways to alter their relationship with alcohol. Perhaps other perspectives might do the same thing, or even more effectively, but we cannot know so before the fact, and we cannot presume so either.

These relations are referred to by Deleuze using multiple different terms, such as sense-events or partial flows. These partial flows are not meant to be seen as general, but rather they have a specific organisation, and they are constrained by the "power" of what the particular machines can do. "This is why a body without organs is the 'raw material of the partial objects'" (Deleuze & Guattari, 1983, p. 372); "the former being that which expresses and the latter being what is expressed" (Kleinherenbrink, 2019, p. 132). Partial objects are the external aspects of machines that are encountered during relations. These aspects, or qualities themselves, is what Deleuze calls "flow". While the meth that sits on the table is a partial object, its flow is its colour, weight, texture, density, what it reminds us of, what we anticipate will happen when we ingest it, etc. So, while a machine only encounters partial objects, it also only encounters streams of flow, and only those that it is capable of encountering.

In addition, encounters only ever happen one way; they are asymmetric, since relations can only ever be experienced by a machine on its own terms. It would be absurd to say, "the smell of red"; the concept of red is only ever encountered by machines that do so on their own terms. In order to have two objects encounter each other, there must be two separate encounters. If meth encounters the brain, meth experiences it one way, the brain quite another. Meth is absorbed into the brain, the brain is not absorbed into meth (Deleuze, 1994, p. 234). This all takes place within a context, a third body, which is capable of holding it all.

A machine is never doing anything other than having continuous experiences, experiencing streams of flow, according to its ability to do so (Kleinherenbrink, 2019, p. 134). This is the basis of the third flow, which is necessary for the two flows to be comprehended, the context or ground in which they are comprehended in. "Why not make do with two fluxes, my duration and the flight of the bird, for example? Because the two fluxes could never be said to be coexistent or simultaneous if they were not contained in a third one… There is therefore a fundamental triplicity of flows" (Deleuze, 1991a, p. 80).

This is what is required to make up a milieu—"A milieu is made up of qualities, substances, powers, and events: the street, for example, with its materials (paving stones), its noises (the cries of merchants), its animals (harnessed horses) or its dramas (a horse slips, a horse falls down, a horse is beaten)" (Deleuze, 1997, p. 61). Deleuze also refers to this as a "series" (Deleuze & Guattari, 1983, p. 7). It is a context in which a number of flows can exist within a third flow. Deleuze writes that "what we term Libido is the connective 'labor' of desiring-production" (p. 24). Libido is the connective synthesis itself, and it is always happening. This is because, as we saw, bodies without organs must be produced. "Simply put, in order for a volume of water to continue existing, hydrogen and oxygen must continue to be comprehended in a specific, qualified way that has determinate effects." (Kleinherenbrink, 2019, p. 136).

Thus, addiction is a “milieu”, a continuous flow in which drugs, drug manufacture, drug using, withdrawal, relapse, treatment, and so on can all be apprehended and experienced from a single point of view, a single contraction that can take all the various happenings and comprehend it, but it can only do so from its own point of view, within its own power to comprehend it in its own way. Szasz (1960) would stop here and claim that this is all in a perspective which can be simply disagreed with; “the phenomena now called mental illnesses be looked at afresh and more simply, that they be removed from the category of illnesses, and that they be regarded as the expressions of man’s struggle with the problem of how he should live” (p. 117). However, Deleuze is adamant that “partial objects and flows are not fantasies or representations of human beings, but genuine productions of reality itself” (Deleuze & Guattari, 1983, p. 59). From a Deleuzian perspective, addiction is absolutely real, and part of the production of reality.

In order to account for where these relations come from, Deleuze must talk about the properties of the body, or the entity in its virtual state. Deleuze describes the properties of this body as being such that the body has a certain power or puissance to engage in certain relations with other entities. Deleuze calls this “desire”, although he sometimes uses terms like “idea”, “singularity”, or “powers” (Deleuze & Guattari, 1983, pp. 5, 18, 77). Desire is not used in the way the dictionary definition would describe it, but rather desire is the aspect of the virtual internal nature of a machine, generated from but never given in actual relations (Kleinherenbrink, 2019, p. 148). “That is why we treat the Body without Organs as the full egg before the extension of the organism and the organization of the organs, before the formation of the strata; as the intense egg defined by axes and vectors, gradients and thresholds, by dynamic tendencies involving energy transformation and kinematic movements involving group displacement, by migrations: all independent of accessory forms because the organs appear and function here only as pure intensities.” (Deleuze & Guattari, 1987, p. 153). Desire is what fuels relational contractions between machines.

While desire is what is a machine has (Deleuze & Guattari, 1987, p. 14), it cannot be experienced by any other machine; rather, it is part of what Deleuze called the unconscious of a machine, which should not be confused with the unconscious of a human brain, as it is "matter itself" (Deleuze & Guattari, 1983, p. 323). This is why Deleuze calls machines "desiring-machines", as desire is automatically intrinsic to a machine, and it is what gives them the power to do what they do. He states that "the objective being of desire is the Real in and of itself" (p. 39); it cannot be experienced by other machines—rather, it generates the relations by which it can be experienced. "Deleuze's transcendental desire is the condition for real encounters, meaning that desire is the internal, intensive matter of machines that comes to be translated into actuality." (Kleinherenbrink, 2019, p. 150). It is because of desire that things can relate to other things in different ways. Meth has an ability to contract certain things in a way that, say, chalk dust doesn't. But reduce meth down to its component atoms and while some of those abilities might be able to be deduced, its full suite of capabilities cannot be perceived; they belong to its private, internal world, which is entirely separate from our ability to contract.

Desire is why things are different. It explains why biological theories of addiction struggle to explain why people stop using drugs. If they are addicted, in a biological sense, and the brain has reoriented around constantly using a substance, how come people are able to stop? Why can people suddenly find a reason to quit, and do so despite numerous other failed attempts? (Hall et al., 2015). Deleuze's explanation of the concept of desire would say that the powers of one machine are always changing, and changing in relation to other machines, so their puissances constantly differ from one another in ever changing degrees, and it was in this difference that new relations, and therefore new desiring machines, were able to be created.

It explains why addiction seems to sometimes behave like a disease and sometimes doesn't. If disease is a disorder in structure or function in an organism, then addiction can be said to behave very much like a disease when it appears irresistible, when the puissance, or desire, of the substance

is capable of contracting certain relations repeatedly. But when other relations affect puissances, and change the balance of desire, it is less easy to explain. If the disorder in structure is said to be inherent—an internalised aspect to the diseased entity—then the entity should not be able to simply stop using a substance, yet sometimes it can.

Desire is also why addiction seems so hard to pin down. Why do some people continue using despite losing things of great importance to themselves? Why do some pregnant women cease as soon as they find out they are pregnant, but others cannot? Because not only is each addiction different, but each experience of each aspect of addiction is also different, with its own unique desire. It is simply not possible to put all addictions into one category and treat them equally or expect equal results.

Desire can be changed; Deleuze describes it as "a destratified, deterritorialized matter" (Deleuze & Guattari, 1987, p. 407). "All relations must have a 'shot' at altering a machine's desire." (Kleinherenbrink, 2019, p. 152). Therefore, things are changeable in the course of their existence. If I learn a new fact, I have changed my capabilities, my powers of acting, and have therefore changed my desire. For Deleuze, desire is not a statement of lack, of what I would like but not currently possess. Rather, "desiring-production has solely an actual existence; progressions and regressions are merely the effectuations of a virtually that is always fulfilled as perfectly as it can be by virtue of the states of desire" (Deleuze & Guattari, 1983, p. 130). "The sign of desire is never a sign of the law, it is a sign of strength (puissance)" (p. 111). This points to a definition of the body that Deleuze draws from Spinoza: a body is defined by what it can do (Deleuze & Guattari, 1987, pp. 260–261).

Puissance is the potential of the machine to affect and be affected, and altering the desire of a machine is altering its puissance, its ability to affect and be affected. This is really what all theories of addiction are attempting to do, to identify, and, to a certain extent, quantify the puissance of what it believes are the relevant entities involved in addiction. They seek to do so in the hopes that, if they have been sufficiently accurate, they will be able to develop processes that diminish the puissance of certain undesirable machines, and increase the puissance of other, more desirable ones.

In order to do this, theories cannot uncover the "in itself" of any of the machines with which they concern themselves; rather, they can only experience these machines relationally, by experiencing them and seeing what they do. Imagine a bag of meth on a table. This meth is, then, pure desire, puissance; but the potential of the meth, the table, the room, are not in what they are doing to each other. What they are doing are partial flows—flows of experience—but the wood, the molecular structure of the meth, the bag, are only part of what they can do. Being a reason to get together, getting injected, inspiring horror in a mother; these are just partial descriptions of what these machines can do. They are not powers, but contractions of power.

This may be why goal focused addiction theories based around the needs of subjects, and these needs being the motivation to use drugs, have limitations. In these theories, it is the positive internal experience produced by drugs, and the negative internal experience caused by withdrawals, that motivate the subject to keep using drugs, despite all the other negative consequences of doing so (Wise & Bozarth, 1987). In Deleuze's ontology, the use of the drug is not the power, but rather the contraction of the power. The flow between addict and substance was continual, and the puissance of the substance may have waxed and waned as the person engaged in relations with it (being tempted, making vows not to use), but it never disappeared, can never disappear, and its puissance was always inspiring contractions, even if those were to not use. Eventually its puissance, relative to other machines that were constantly modifying it, inspired a contraction, but it was not exhausted in this relation. It was modified again and will go on regardless.

"Potential or power is not a potential 'for something'. The power of wood is not dams, boats, trees, or desks. Instead, any given piece of wood has its irreducible, transcendental, internal desire contracted from connections with its parts. Wood can be put to work in producing dams, boats, trees, or desks, but that will never make its internal reality 'boatish' or 'deskish'. If that were the case, no piece of wood could ever survive the annihilation of a ship or the destruction of a table."

(Kleinherenbrink, 2019, p. 156). So, “my desire is not the encounter with others, but the condition of the encounter.” (p. 165).

If every machine has a virtual internal nature of both being and puissance, its power to act, which is unable to be comprehended, “whatever the reality in which the virtual object is incorporated, it does not become integrated” (Deleuze, 1994, p. 101), and an actual nature which is perceived, then every entity is at once exactly where it is and can only be where it is, and at the same time not at all where it is, because a description is not the same as that which is described. This is what allows for one thing to be present in different places; a song in multiple movies, or a dance move that is done by different people all over the world. Since things don’t have to be in one place, they can be everywhere and nowhere. “Since the internal reality of a machine does not have to be anywhere, it can be in many other machines at the same time, and each time it can be registered in radically different ways.” (Kleinherenbrink, 2019, p. 170). Addiction can be simultaneously in the brain of an addict and at the same time in the conditions of society necessary for an addiction to occur. It can be in a neighbourhood and simultaneously in a memory of someone who hasn’t used in fifty years. It can be the same machine and be experienced vastly differently, with no inherent internal contradiction.

This is why any description of an entity can only ever describe collections of attributes, or what it generates or generates it. It can never touch the machine’s virtual internal reality; it can never truly explain why it does what it can do. It is not the molecular structure of meth that explains its power, and it is not structures in society that explain its power to attract or repel people to or from meth. These things are things in themselves and have their own point of view, but these points of view only ever express their particular perspectives.

It is this aspect of Deleuzian ontology that calls into question theories that state that addiction is a purely social phenomenon, that addiction itself is socially constructed, and wouldn’t actually exist were it not produced within the society that acknowledges it. Deleuzian machines exist for every

aspect of the society, every actor within society—society itself is a Deleuzian machine—and they all have their particular points of view. Social theories place transcendent fields on the entities within those societies that are then presumed to be internal factors that describe those entities. In social theories, addiction can be described "like a disease" (Fowler & Christakis, 2008), conferring the descriptor of "pathogen" onto a drug user. But each entity within a system is a machine of its own and cannot be assumed to behave like any one descriptor, as this would violate externality.

Likewise, economic theories or marketing theories similarly treat entities as containing transcendent descriptors that will respond in a certain way to certain changes in their environment; however, if each entity has its own particular point of view, any economic or marketing intervention is a machine of its own, with its own point of view, that can only ever relate to the individual entities from its particular perspective. Therefore, it can have a chance at influencing relations, but cannot guarantee it, as failures in marketing campaigns show (DeJong et al., 2009).

Every relation between machines is an actualisation of a machine's virtual nature in the present; however, Deleuze needs to account for how this happens. He writes, "the first synthesis, that of habit, is truly the foundation of time; but we must distinguish the foundation from the ground." (1994, p. 79). It is the disjunctive synthesis, or the synthesis of registration, that achieves this. As they are the conditions from which relations contract, in a way, virtual objects always belong to the past; "Virtual objects are shreds of pure past" (p. 101), as the puissance of a machine must have been created earlier at some point in order for another machine to experience it in a certain way. A person's capability of consuming meth is not an entity capable of being experienced in 2019, yet this person's puissance must be present in what is sustaining that capability today. Desire is at once at work in the past while also working in the present. Contemporaneous with itself as present, being itself its own past, pre-existing every present which passes in the real series, the virtual object belongs to the pure past (Deleuze, 1991a, pp. 58–59). The synthesis of registration is that which "causes the present to pass" (Deleuze, 1994, p. 79).

This means that no matter what the relations are that other entities contract to experience entities, the capacities of both entities are never exhausted in a contraction, and there is always more on offer. Deleuze refers to this as the logic of the AND: "establish a logic of the AND, overthrow ontology, do away with foundations, nullify endings and beginnings" (Deleuze & Guattari, 1987, p. 25). "Instead, all connections between machines are disjunctive, which is to say local manifestations of virtual essences that remain irreducible to these essences" (Kleinherenbrink, 2019, p. 191).

As these manifestations are never complete descriptions of what a machine can do, Deleuze states that this is why "the mouth of the anorexic wavers between several functions: its possessor is uncertain as to whether it is an eating-machine, an anal machine, a talking-machine, or a breathing-machine" (Deleuze & Guattari, 1983, p. 11). Or we could say that the hand of the meth addict wavers between several functions: is it an injecting machine, a throwing away machine, a giving away machine, and so on. Deleuze brings attention to entities that have different functions, and they may oscillate between different possibilities in wondering which flows to break, and where and how to do it. "The data, the bits of information recorded, and their transmission form a grid of disjunctions of a type that differs from the previous connections." (Deleuze & Guattari, 1983, p. 52). It is the puissance of the machine from which the capabilities to make certain contractions come from, but these capabilities are never exhausted, so there is always a question over what a machine can or will do.

When machines encounter each other, they may alter the relations of the other, which may then experience variation in its internal matter, which may open up or close new capacities for connection with other machines. This is then recorded in the machine by the synthesis of registration.

> "The organ-machines now cling to the body without organs as though it were a fencer's padded jacket, or as though these organ-machines were medals pinned onto the jersey of a wrestler who makes them jingle as he starts toward his opponent. An attraction-machine

> now takes the place, or may take the place, of a repulsion-machine: a miraculating-machine succeeding the paranoiac machine. But what is meant here by 'succeeding'? The two coexist, rather." (Deleuze & Guattari, 1983, p. 23). "The past does not trail the present, but is intimate with it" (May, 2005, p. 57).

If I have a raw carrot, it contains a virtual private nature completely hidden from me, from which its desire comes, and which contains the puissance that got me to pick it up in the first place. If I then cut it up, I have altered its puissance (and created a number of new, irreducible, unique machines in each slice of the carrot); nevertheless, "the carrot" also remains as its own unique machine, now with new powers and possibilities of connection. I then put the carrot into some boiling water, and due to the registration of the carrot being sliced, it is capable of becoming soft (and therefore being encountered by a mouth machine) in a different way, which has also been recorded by the synthesis of registration, or the disjunctive synthesis. Yet in all this, the carrot has remained a unique, irreducible entity, but is only able to be experienced as such by a third body, a machine whose capacity includes being able to contract an experience of both the carrot and the other machines involved in altering its puissance.

When a machine encounters another machine, while contracting its experience of another machine into an actualisation, the second machine has no say in how the first machine experiences it, because it is based on the first machine's point of view. However, the virtual nature of the second machine can influence it, because the disjunctive recording has a say in how it is experienced.

Deleuze describes the process of learning, in this case, learning to swim: "When a body combines some of its own distinctive points with those of a wave, it espouses the principle of a repetition which is no longer that of the Same, but involves the Other—involves difference, from one wave and one gesture to another, and carries that difference through the repetitive space thereby constituted. To learn is indeed to constitute this space of an encounter with signs, in which the distinctive points

renew themselves in each other, and repetition takes shape while disguising itself." (Deleuze, 1994, p. 23).

Or, to reuse these words in describing learning to use a drug, when a body combines some of its own distinctive points with those of a drug high, it is a repetition that is no longer the same, but involves the drug—involves difference from one high to another, one phase of the drug high to another, one experience of buying drugs to another, and carries that difference through the repetitive space (the third body). "Production is immediately consumption and a recording process (enregistrement), without any sort of mediation" (Deleuze & Guattari, 1983, p. 14).

To go back to the example of the carrot, while the knife cuts the carrot, the carrot simultaneously does something to the knife, and registration is co-produced. Say for example, the knife cannot cut the carrot because it is too dull. Due to the actions of the carrot, the knife may be taken to be sharpened. In this way, the disjunctive synthesis means that encounters between machines have a chance at altering a machine's essence, if it can be recorded. "Connective synthesis 'cancels' difference by bringing entities into contiguous actuality" (Deleuze, 1994, pp. 223), but "disjunctive synthesis carves it into the heart of things" (Kleinherenbrink, 2019, p. 199). "The body without organs, the unproductive, the unconsumable, serves as a surface for the recording of the entire process of production of desire, so that desiring-machines seem to emanate from it in the apparent objective movement that establishes a relationship between the machines and the body without organs." (Deleuze & Guattari, 1983, p. 11).

Deleuze describes this variation of puissance in entities as the notion of becoming (Deleuze, 1991a, p. 37). All entities are constantly undergoing at least some form of becoming, even if it is so small to be essentially undetectable. This is because all entities have "receptivity" (Deleuze, 1994, p. 98) to record these changes in their internal state. Since these changes take place in the virtual private world of the entity, we can never say for sure how encounters between entities might have changed one or both of them, or might do so in the future. "We can be thrown into a becoming by anything

at all, by the most unexpected, most insignificant of things" (Deleuze & Guattari, 1987, p. 292). Because there is nothing initially required for this alteration of virtual matter, all relations have a chance of altering a machine's internal virtual nature, according to the puissance of the machine doing the relating. "We are also of a mind to believe that everything commingles in these intense becomings, passages, and migrations—all this drift that ascends and descends the flows of time: countries, races, families, parental appellations, divine appellations, geographical and historical designations, and even miscellaneous news items." (Deleuze & Guattari, 1983, pp. 84–85).

This feature of Deleuzian ontology may account for the difficulty of process of change theories to identify a particular structure in the process of changing one's mind. There certainly appears to be a process involved, but theories differ as to what this process is, or what the steps involved might be (DiClemente et al., 1991; Lippke et al., 2010; Remme et al., 2008). Correspondingly, evidence has been weak that change actually follows these processes, or that each step is necessary and in order (Povey et al., 1999; West & Sohal, 2006). This may be explained by a Deleuzian ontology in which everything has a chance of modifying something else, and there certainly are some deliberate actions that can be engaged in to change the chances of a certain outcome occurring, but since there is always a chance of something different happening, there cannot be any universal process of change that entities are required to follow. This would mean introducing a transcendent descriptor into entities that would violate externality. Rather, we should see that while change processes might possess similar features, they can take place in many different varieties of stages and manners, which is what the data seem to suggest (Guo et al., 2009).

It is the difference in the type of registrations that has Deleuze introduce the notion of intensities. A supernova exploding is not the same as a flower blowing in a breeze. They are what "occupies" or "populates" a body (Deleuze & Guattari, 1987, p. 153), which itself is "zero intensity" (p. 31). Intensities are what increases or decreases the chances of a virtual machine's essence being changed by an encounter, and an entity's intensity is determined by its puissance.

This may be what accounts for what so far appears to be the limited success of applying biological theories to addiction. Despite much research uncovering many different aspects of the changes that take place in various regions of the brain due to addiction, such as in the midbrain dopamine pathway (Volkow et al., 2002), actual interventions based on this research have been slower in coming, although promising avenues of research continue. In a Deleuzian ontology, the brain itself remains at zero intensity, even when its structure has changed. It is the desire of the brain, or its puissance that changes through altering of its intensities, and so therefore its power to make certain contractions has altered, but fundamentally remains the brain.

These intensities in the brain have been altered by the brain's relations it has entered into with other machines, and continues to do so. To merely identify what has changed does not give us any insight into what changed it and why, as they are fundamentally different. It gives us insight into what we might do in the brain (such as an implant that provides electrical stimulation), but we have no insight into how future relations the brain might enter into will continue to affect it.

Any relation from any machine has a chance of changing another, yet the changes that result from the encounter are not the same as the thing changing it. Meth releases dopamine in the brain, yet the dopamine is not contained in meth, nor is the idea of dopamine release contained in meth. The disjunctive synthesis that records the dopamine release does not come from the meth itself or the brain itself, but rather the recording of the contraction that meth engaged in when its relations encountered that of the brain. This is what powers the idea of becoming, "materiality, natural or artificial, and both simultaneously; it is matter in movement, in flux, in variation, matter as a conveyor of singularities and traits of expression" (Deleuze & Guattari, 1987, p. 409).

It is because of this that Deleuze refers to machines as assemblages, as they are always being assembled, and this process is continuous: "desire is always assembled"' (Deleuze & Guattari, 1987, p. 229). Assemblages are collections of aspects of entities that have themselves resulted from encounters with other machines. These assemblages are constantly in the process of becoming.

“Throughout its existence, an assemblage gets locked in fierce battles, loving embraces, secret thefts, and public declarations with the machines that generate it (those to which it connects) and the machines that it generates (those to which it is connected). Some of these encounters will be chaotic struggles for power, as several assemblages lay claim to the same entity” (Kleinherenbrink, 2019, p. 211). A drug user is an assemblage, the drug is an assemblage, the drug user experiencing the drug is an assemblage, their family is an assemblage, and so on. All are constantly becoming and having a chance at altering each other or being altered by each other. However, it cannot do anything at all, but its possibilities are limited by the context the assemblage finds itself in. A drug user may or may not decide to use drugs that day, but they cannot, say, be a confidence and supply agreement between political parties. “Whenever a multiplicity is taken up in a structure, its growth is offset by a reduction in its combination” (Deleuze & Guattari, 1987, p. 6). “Once entities become functionaries of another thing, this limits what they can do by locking them into certain patterns of manifestation.” (Kleinherenbrink, 2019, p. 212). This is why, as addiction theories seek to become more and more comprehensive, at the same time they find themselves struggling more and more to retain explanatory power for the wide variety of inputs and experiences they seek to cover (EMCDDA, 2013).

In describing the conjunctive synthesis, or the synthesis of production, Deleuze writes that it is “the birth of multiplicities” (Deleuze, 1994, p. 90). This is because he is stating that relations themselves are machines. If a person cuts up a carrot, and they boil the carrot, they have also cut up and boiled the carrot. This conjunction will produce something “for itself” (Deleuze & Guattari, 1983, p. 28) and be its own machine with its own virtual internal body and puissance by which it can engage in relations with other machines. Any encounter can produce anything, limited by the puissance of the items encountering each other. Hydrogen and oxygen can produce water, a million people can produce a country, a drug and a drug user can produce a spiritual experience. “The product is something removed or deducted from the process of producing: between the act of producing and the product, something becomes detached, thus giving the vagabond, nomad subject a residuum”

(Deleuze & Guattari, 1983, p. 26). This means that any connection always results in the production of a new entity, complete with its own internal private nature, and external nature able to be experienced. When Deleuze speaks of the eternal return, he asserts that whatever is produced is never identical to what has come before, it is always a new, unique, irreducible machine: "Eternal return… causes neither the condition nor the agent to return: on the contrary, it repudiates these and expels them with all its centrifugal force. It constitutes the autonomy of the product, the independence of the work… It is itself the new, complete novelty. It is by itself the third time in the series, the future as such." (Deleuze, 1994, p. 91).

So not only are drugs real, or police real, or drug users real, but seeing the drug is real, thinking about the drug is real, injecting the drug is real, running from the police is real, the intervention is real, and so on, and they are all ontologically equivalent, they are all the same as each other, and as each entity comes into relationship with each other they simultaneously birth a new machine, as ontologically real as all the others. Everywhere there is "the unconditioned character of the product in relation to its production, and the independence of the work in relation to its author or actor" (Deleuze, 1994, p. 92). Deleuze also describes these three syntheses as Libido, Numen, and Voluptas: just as a part of the Libido as the energy of production was transformed into energy of recording (Numen), a part of this energy of recording is transformed into energy of consummation (Voluptas). It is this residual energy that is the motive force behind the third synthesis of the unconscious: the conjunctive synthesis "so it's…", or the production of consumption (Deleuze & Guattari, 1983, pp. 28–29).

It is these three syntheses that allow Deleuze to insist that there is no universal, transcendent background in which the drama of existence plays out, but rather all are ontologically equivalent, and all are machines. "A machine is constituted from the moment there is communication between two portions of the outside world that are really distinct in a system" (Guattari, 2009, p. 93). There is no field of "badness" through which to evaluate certain substances or behaviours as pertaining to

addiction (nor can addiction be said to be "bad" in itself), rather all machines possess a unique and irreducible private nature that generates a puissance that can generate machines and alter others, within the context of a third body (itself a machine). Deleuze refers to this third body sometimes as an "older" machine (Deleuze & Guattari, 1983, p. 30) in which encounters take place. So, once two entities meet, they not only remain the two irreducible entities but generate a third. "Any conclusion that one 'truly is' a nurse, an athlete, or a criminal is wrong, precisely because a virtual being does not resemble actual identities, relations, or activities. What is true, however, is that these markers of identity can signify the machines in which we tend to dwell and to which we tend to connect, so that these could be major factors in determining our becoming." (Kleinherenbrink, 2019, p. 230).

It is because of this generative capability that this productive synthesis is the synthesis of the future. "With the birth of a new celibate machine, it too starts to connect (first synthesis) and become (second synthesis), giving rise to further celibate machines in the process, and so forth." (Kleinherenbrink, 2019, p. 235). This is what accounts for the generation of true novelty, and the production of something new in this world. These new generations do not have to be related to the machine that produced them. There is nothing "saltish" in sodium atoms and chloride atoms yet combined they make salt.

There is nothing in drugs that makes them inherently different from any other substances. It is simply the outcomes (in themselves machines) of all the past encounters with various people and social structures that have led to them being seen as they are. As Deleuze writes, the puissance of a child is not just the outcome of their experiences, but also "bread, money, dwelling place, social promotion, bourgeois and revolutionary values, wealth and poverty, oppression and revolt, social classes, political events, metaphysical and collective problems" (Deleuze & Guattari, 1983, p. 121). "In the absence of metaphysical standards, everything is equally abnormal, transversal, and eccentric" (Kleinherenbrink, 2019, p. 245).

Everything everywhere is always connecting, relating, producing new machines with which they are comprehending through their own point of view, which may be perceived in any possible number of ways by another machine. “Perhaps, rather than saying that anything can happen, it would be more accurate to say that anything can happen, given the right conditions.” (May, 2005, p. 116). The transcendental becoming of all machines is “A perpetual and violent combat between the plane of consistency, which frees the BwO [Body without Organs], cutting across and dismantling all of the strata, and the surfaces of stratification that block it or make it recoil.” (Deleuze & Guattari, 1987, p. 159), which is as “invisible” as it is “incessant” (Deleuze, 1994, p. 109). Another way of putting this is to say that everything is both extremely fragile and surprisingly sturdy, depending on the case (Kleinherenbrink, 2019). Machines are dependent on their continuation by constituent machines that have no interest in continuing their function (such as the reliance of humans on the continuing function of blood cells); likewise, addiction relies on continuing acts of seeking out drugs, using them, then being motivated to seek them out again. “Wherever something has been generated by machines, it takes machines to undo it. No tree disappears without a fire burning it, termites consuming it, or thunderbolts detonating it into a swarm of splinters. Puissance is always something that must be overcome by other machines.” (Kleinherenbrink, 2019, p. 250). If addiction is going to be overcome, some other machine, or machines must do the work necessary.

The conspiratorial theory, stating that addiction does not exist and is merely an invention by state or capitalist actors, is contradicted by Deleuze when he insists that all machines, whether physical or metaphorical, are ontologically equivalent, and must therefore be contradicted with force. “The prime function incumbent upon the socius, has always been to codify the flows of desire, to inscribe them, to record them, to see to it that no flow exists that is not properly dammed up, channeled, regulated” (Deleuze & Guattari, 1983, p. 33). The conspiratorial theory is a strategy of resistance, taking a shot at changing the puissance of addiction. Even as it declares addiction does not exist, it at once brings it into being.

It is the unconscious of a machine, or its virtual private nature that is the "real subject", with what we tend to identify it with (the total of its descriptions that we are capable of contracting) as the residual subject; "Desire is not in the subject, but the machine in desire —with the residual subject off to the side, alongside the machine, around the entire periphery" (Deleuze & Guattari, 1983, p. 285). It is the associations we have with drugs are what we call the drug itself, and see it take on these aspects. Deleuze states that "The question what is this? biases the results of the inquiry, it presupposes the answer as the simplicity of an essence, even if the essence is properly multiple, contradictory, etc. This is just abstract movement, and we will never be able to reconnect with real movement, that which traverses a multiplicity as such." (Deleuze, 2004, p. 113).

It is only within the third body, the "older" machine in which addiction can take place. Each theory analysed in Chapter 1 "placed" addiction in a certain place, designated it as the location where addiction "is", in order to define and treat it.

Now that a Deleuzian ontology has been systematically described and related to the subject matter as it currently stands, it is time to apply these insights to addiction as it is in itself, as a fourfold machine, with an internal and external nature, both one and multiple, in the context of other machines within a purely machinic ontology.

Chapter 4—Methodology

Having described the salient features of a machinic ontology, these can now be applied to relevant aspects of addiction. For there to be addiction, there needs to be at least three bodies involved (although in reality there will be a milieu of bodies involved). A first body, a second body that the first will be addicted to, and a third body that is the context in which the addiction takes place.

The first body

No machine can experience another machine on the other machine's terms, only its own. The brain does not experience meth, the brain experiences the brain. The brain can only ever experience the brain, and its existence from beginning to end is a constant stream of experiencing itself; there is an "indifference toward the act of producing and toward the product" (Deleuze & Guattari, 1983, p. 7). During this time other entities can enter into relations with the brain, and through those interactions can alter the brain's powers, or puissance, or ability to enter into certain other relations with other entities. While this is going on, the brain's experience remains complete and whole, and indivisible to its smaller components. It is true that within the brain, the meth is engaging in relations with the dopaminergic system, and causing changes to the dopamine molecules in the brain. These are also machines, with their own relations, puissance, and possibilities for contraction. While the dopamine machines exist within the dopaminergic system machine, which exists within the brain machine, all of these are ontologically equivalent. Each has their own perspectives, which are equally valid points of view. Likewise, the brain exists within a person who is taking the drug, and this person is at the same time an indivisible entity who retains their own perspective. "To think means to be embedded in the present-time stratum that serves as a limit: what can I see and what can I say today? But this involves thinking of the past as it is condensed in the inside, in the relation to oneself (there is a Greek in me, or a Christian, and so on)." (Deleuze, 1988a, p. 119).

The brain enters into relations with the drug, and these relations all have a chance at changing the puissance of the brain. Once the puissance of the brain is changed, this modifies the brain's capacity and ability to engage in relations with other entities it comes in contact with, whether these are internal or external to itself. Here, internal and external refers to physical dimensions, rather than virtual and actual, as things exist inside others in an asymmetrical fashion. Dopamine molecules exist within the brain, but the brain can't exist within a dopamine molecule. As these are physical considerations, but not an indicator of ontological superiority in any dimension, DeLanda (2006) refers to these as "contingently obligatory hierarchies" (p. 10).

As the brain is modified, it modifies its relations, which, while they have a chance of modifying the entities it comes in contact with, nothing is ever guaranteed. Since an entity is never in its relations, nothing is naturally located anywhere, and while a certain modification may be vastly more likely than others, there always remains the possibility for something drastically different to occur that is unexpected and unlikely. When a person experiences a drug, they are contracting relations in a variety of different ways: as a means to feel happy, as a cultural touchstone, as an act of rebellion, etc. When a brain experiences a drug, it is also contracting relations in a variety of different ways. For a drug to be psychoactive, it has to be able to be experienced by the brain as an entity that it can recognise. The brain experiences THC as anandamide and uses it accordingly (Pertwee, 2008). The brain experiences heroin as an endogenous opioid. When we distinguish between "synthetic" and "natural" opioids, that is a societal point of view which we, and our brains, exist within. For the brain, which gets its own ontologically equivalent perspective, they are all processes in an identical manner, as their individual power to modify the brain may differ based on their differing powers, but the brain does not (nor cannot) distinguish them based on their means of production.

When the brain contracts its relations with entities there is always a chance that something else might happen. Perhaps the pain signals will no longer be blocked, perhaps motivational signals will move from the ventral to the dorsal striatum; there is no way of knowing for sure. The contraction of

relations allows for new possibilities, but also for increasing or decreasing the chances of certain modifications occurring. Throughout all of these modifications, the entity retains its virtual, internal self, withdrawn from the world and unable to be entered into directly. The drug itself never changes the brain, it only enters into relations with the brain's relations, and it is these that change the brain.

In a machinic ontology, a brain modifies its homeostasis because it is within its puissance to do so. The brain has its own perspective on the administration of a substance, and it is going to engage in relations based on this perspective. If a person is experiencing chronic pain, and they decide they are going to take tramadol tablets to block the pain, that is one thing. The brain, on its own terms, experiences an increased, constant supply of opioids, which are indistinguishable from its own (Le Merrer et al., 2009). This has changed the brain's puissance, and the brain responds to this by altering its relation to its own creation of opioids, decreasing it. The perspective of wanting to eliminate pain is at least that of the person. From the brain's perspective, it has an ideal amount of opioid expression, and it will seek to achieve it, regardless of other perspectives as it is only able to relate to opioids based on its own. This leads to decreased opioid production and increased experiences of pain by the person taking the tramadol. As the brain does not have the puissance to distinguish between endogenous and exogenous opioids, it will not, and cannot do anything different with them other than contract them both according to its powers.

The second body

The entity with which the first body interacts, likewise, retains its own, virtual, internal, indivisible nature. When it enters into relations with the first body, say as an opioid molecule within a tramadol tablet that is taken by a person, it engages in a relationship with the brain in which the opioid molecule is absorbed and synthesised by the brain. Yet it isn't destroyed, as entities are both one and multiple simultaneously. One, so that entities can be this thing, "this particular horse", and yet at the same time multiple, so that entities can be one thing and not that thing, for "this horse" to be

a meaning statement requires the existence of multiple horses, of which this horse is a member. This opioid molecule is synthesised by the brain, yet at the same time it is a multiple, and that multiple continues. “Since the internal reality of a machine does not have to be anywhere, it can be in many other machines at the same time, and each time it can be registered in radically different ways.” (Kleinherenbrink, 2019, p. 170). When it does so, the brain machine and the opioid machine engage in production of the brain-opioid machine, with new puissances and possibilities available to it.

The entity retains its own perspective, ontologically equivalent to the first body’s perspective. As it enters into relations with the first body, in the same way these relations may change the first body in unexpected ways, so these relations may change the second. Opioid molecules may bind to different receptors in different ways, depending on their own perspectives and within the possibilities afforded to them by their own powers. As with the first body, nothing is prescribed and any interaction is possible, as long as it is within the boundaries of what its puissance allows it to do. For instance, “the affinity of buprenorphine for the delta [opioid] receptor is 10 times lower than that for mu and kappa receptors” (Vallejo et al., 2011, p. E354), so while it is less likely a buprenorphine molecule will bind a delta opioid receptor than a mu or kappa one, it is still within its puissance. Binding to a dopaminergic receptor is not.

There is also no difference, ontologically, between the two bodies based on any kind of hierarchy involving consciousness, intelligence, value, or anything else. When an opioid molecule contracts relations with a brain, they do so as ontological equals. “There is no reason to privilege the life of the subject above other lives. Nor is there any reason to reject it. It is one perspective on difference, one way of getting a conceptual hold of it. There are others, neither more nor less adequate.” (May, 2005, p. 24). Their capabilities and experiences are different, but one does not inherently get more say than another; they both have a chance of affecting the other. The second body retains its own puissance, unendingly repeating, that increases or decreases the likelihood of having a first body relate to it.

The third body

The third body is that in which the relations between two machines take place —the context in which their relations contract. This third body, or assemblage, is necessary for any relationships to occur, as there must be something in which they take place. This third body is also a machine, and it is also ontologically equivalent with the two bodies that engage in relations within it. Calling to mind again DeLanda's phrase, these hierarchies are "contingently obligatory"; obligatory because things have to be inside other things, and contingent because they are just the way things happen to be. In searching for a term that conveys the sense of "larger" or "encompassing" without implying a value judgement, Deleuze sometimes calls the contextual body an "older" body (Deleuze & Guattari, 1983, p. 18). There is no transcendent reason as to why dopamine is within brains rather than the other way around, it is just how things happened to work out. Nothing is more or less important because it is inside or enveloping anything, nothing gets more of a say, no contraction is automatically worth more because of where it takes place.

If a brain is going to absorb an opioid molecule, it is within the third body that this action is going to take place. As this third body is also a machine, and it is ontologically equivalent, it also gets its own perspective. This perspective is just like the perspectives of the two bodies in that it can only be experienced by the third body on its own terms. The person who takes an opioid pill has a meeting of two machines within them, in which an opioid molecule binds to a receptor. Within the third body, the brain, it experiences an inhibition of pain reception, and within the third body to that interaction, the person experiences relief. But the brain doesn't experience relief, and the opioid receptor doesn't experience relief, and the drug doesn't experience relief, because the experience of relief is only available to an entity with the puissance of the indivisible, irreducible, and unique perspective of the person.

This third body is always within the context of yet a larger body, of which the body is a constituent entity. For example, the person experiencing relief may be part of a family, who find the family environment is now much more pleasant once the person no longer experiences chronic pain. This experience of a more pleasant family environment is unique to the family and can only be experienced by the family as its own machine with a virtual internal nature. The family is situated within a society, and this has its own perspective on a more quiescent family, and a person experiencing relief. None of these relationships are prescribed, and none of these relationships are more or less important than any of the others. Rather, they all exist simultaneously, and relations between those who are capable of encountering each other have an opportunity to change each other, with effects moving through different levels of the contingent hierarchy.

It is the nature of these third bodies that determine how they experience the interactions between two bodies within them. If I see a bird and I see a river, the third body which forms a context in which both of these things can occur is my vision, and so the contraction in which the entity is formed is through the medium of sight. Therefore, it is experienced through vision, and its powers and abilities are based on this experience. A bird and a river, registered through vision, has certain powers that can enter into certain relationships that lead to new possibilities, such as "that looks like it would make a great photo", or "I've never seen that behaviour before, perhaps I ought to write it down, and compare it to the scientific literature". However, such an entity cannot lead to certain outcomes, such as "noticing that both the bird and the river are emitting the same frequency of X-rays", as that is not within the puissance of the body (my sight) in which the encounter takes place. If I wanted to know about the emittance of X-rays, I would need to involve other entities capable of doing so. In each case, due to the nature of experience, different possibilities emerge.

In order to be able to allow for new outcomes to occur, the entity that is the third body must be capable of registration of the relations between two entities that take place within it. From a purely ontological viewpoint, relations are taking place all the time in an almost infinite variety of ways. All

entities are constantly changing, no matter how imperceptibly tiny these changes are, due to a constant stream of ongoing encounters, no matter how small, brief, or fleeting. “All entities are endowed with a ‘receptivity’ to record or register the traces of encounters in their internal matter” (Deleuze, 1994, p. 98). These registrations are only able to occur if the entity is capable of registration. If an encounter between two entities is taking place within my sight, it is experienced in that way. There are many other encounters taking place in other frequencies that my eye cannot perceive as it is not endowed with the necessary receptivity to do so. While the other encounters are happening, they are not being registered in the internal nature of this particular machine, and therefore cannot change the nature of it. If I wanted to know what kind of encounters were taking place and I wanted to expand my eye’s receptivity, I would use a separate entity that had the requisite receptivity to contract other relations into a form that my eye is capable of contracting (using, say, a spectrometer).

Registration allows for the third body to record traces of encounters and therefore alter its puissance, changing the possibilities of further relations, both with other entities, and how it might go about doing so. When a person takes drugs, it is the registration of traces of encounters that constitute the “effect” of drugs. The high of being on meth or the high of being on heroin are two different experiences, but in each case it is the registration of the contraction that has been the sought-after effect. The experience of the person is taking place concurrently with the registration of the effect on the brain, but in both cases, it is taking place in very different ways, according to the powers of the respective entities. Due to the registration of the effect on the brain, this facilitates the registration of the effect on the person, and the subsequent drug high. If the person snorts a line of chalk dust, the puissance of brains and chalk dust is not such that one can alter the other in such a way as to be registered by a person, at least not in the manner of a drug high. There is therefore no psychoactive effect.

In all instances, the brain only experiences the brain. This is why the morphological changes in the brain caused by gambling, or "process addictions", resemble substance-based addictions in scans of the brain (Bouchard et al., 2021). The brain has engaged in a number of contractions with an entity related to gambling, like a slot machine. It is the eye that sees the slot machine, the ear that hears the slot machine, the person experiences the associated emotions, but these are all ontologically different experiences, although none are more or less important. The brain experiences these inputs in the same way it experiences a psychoactive substance, by translating them into its own experience, which affects its essence correspondingly.

This is why Duff (2014) asserts that drug use is an assemblage, a context in which none of the component parts can be separated from anything else, and that the spaces in which drugs are used are just as ontologically vital as drugs themselves for understanding and explaining why and how drugs are used and what their effects are, although he commits the error of assigning ontological primacy to a certain level of hierarchy: "It is, properly speaking, the assemblage which recovers, rather than individual bodies or forces within it." (p. 94). This would have the effect of introducing a transcendent field of relative ontological importance, and violating the externality thesis.

Not only are drugs and the spaces and the paraphernalia and the laws all machines, but so are the effects. A drug high is a machine, ontologically equivalent to drugs, slot machines, the brain, the person, society, etc., as is the corresponding re-establishment of equilibrium afterwards. Whether this is experienced as withdrawal, or a hangover, or something else, this is also its own machine with its own virtual private aspect.

In all of these phases of drug use, the person has been able to register a change in experience. They are capable of registering the drug high, the low of withdrawal, and the way the different activities in which they engage through all of these events are experienced. It is this registration that essences are changed, changing puissances. For example, "that experience of getting high from smoking cannabis was great, I want to do it again".

The context to all of this, the assemblage inside of which it occurs, is "the use of the drug", from start to finish, which includes conceiving of using it, finding it, administering it, and so on. This, too, is its own, ontologically equivalent machine, which experiences its own environment on its own terms. Smoking cannabis on parliament lawn on "J-Day" is a different experience from smoking it at home after it has been prescribed for chronic pain.

In the same way we can register changes through different phases of a drug high, the entire experience of using a drug can register changes through multiple experiences of drug using, from its own unique perspective. It is a relatively common experience that the first drug high is of an intensity that is never experienced again, and that this memory of "chasing the first high" can be a powerful incentive to continue using (Bornstein & Pickard, 2020). The entire experience of using a substance has a character all of its own, unique from the momentary experiences that take place "within" a drug experience. Over time, the experiences of using drugs change, subject to their own experiences from their perspective, registering changes from encounters with other machines. For instance, for a teenager having their first experience of getting drunk, there are not just the features of drunkenness occurring, but there may also be feelings of being an adult, connecting with friends, rebelling against authority. After the entire experience is over, they may wish to repeat the whole experience, not just to get drunk, but to have those experiences of being an adult, connecting with friends, and so on. Once this person is in late adulthood, they may still be having experiences of getting drunk, but those experiences will have changed, on their own ontological level. The meanings will have changed, but only through half a lifetime of the experience of getting drunk, contracting relations with other machines, and having its registrations change its essence because of it.

Now the pieces are finally in place for a definition of addiction using this understanding of Deleuzian machinic ontology. Things only change if changes are registered, and registration can only occur as a

result of consummation, and consummation can only occur if it is in the entities' power to contract a relation. The definition may read as:

Addiction is the name of a relationship, wherein the third body (the context) is incapable of registering necessary changes to a first body as a result of an encounter with a second.

Addiction takes place in the third body, the context, and it is a description of an interaction between two bodies within the context, from the perspective of the context itself. The two bodies within it may not experience addiction; likewise, a context in which the third body is a machinic participant may also not experience addiction, but from the third body's own unique perspective, addiction occurs. "Necessary" in this definition is important, as it describes changes that must take place in the first body in order for the third body to continue being what it is. If a relationship is to be called addiction, the lack of ability to register necessary changes must have the potential to be existence-ending if the current milieu is not acted on by another outside force.

So, with this definition in place, the first step in the methodology can be described:

Examine an entity, and identify what relevant entities it comprises.

It will be impossible to identify all entities (first and second bodies) that an entity (third body) consists of, but listing the relevant ones should be relatively simple. "Relevant" in this case describes the entities that the third body requires to continue, that might be under threat from a relationship with other entities within it.

Addiction, in common parlance, is used in an anthropocentric manner, but any relationship described in this way can be addiction, and all are ontologically equivalent. A nut that fastens a bolt to a wheel on a car that is travelling down the highway is "fastened". This word describes the relationship between the nut and the wheel from the perspective of the third body, the context, in this case the perspective of the highway. The necessary state for the nut to be in, in order for the highway to be a highway, is "fastened", or else wheels would be coming off and causing accidents.

From the perspective of the highway, this would be less than ideal. Now the car is driven to the mechanic, and the mechanic wishes to remove the wheel from the car, but they cannot get the nut to turn. Now the nut is "stuck". Nothing has changed for the nut, or the wheel; only the context in which it exists has changed. But what has also changed according to a machine ontology is the unique, ontologically equivalent perspective of the state of the nut. It is the perspective of the highway that it is necessary the nut should be fastened, it is the perspective of the mechanic's garage that it is necessary the nut should be able to be fastened and loosened, according to the respective needs of the individual contexts, in order for those contexts (which are also their own machines) to be what they are.

It would be impossible to be a mechanic's garage without means of taking things apart. It would be impossible to be a highway without means of conveying transport along a thoroughfare. If either of those machines could not do those things, they would be something other than what they are. In order for them to be what they are, they require their component machines to engage in particular patterns of connection, registration, and consummation.

When a mechanic tries to loosen a nut and cannot, the wrench and the wheel-bolt-nut (as the nut is part of an assemblage) engage in a contraction, in which the wrench is applied in such a way to create a change in the essence of the wheel-bolt-nut by registering this change in its puissance; this will produce a new machine—in this case, a separate nut from the wheel-bolt. If the wrench does not have enough force generated through it, it will not have the puissance necessary to affect the nut's essence in this way, and therefore no changes in the nut will be registered from the garage's perspective.

The nut also exists in other nearly infinite contexts that may well have registered changes. Certainly, on a molecular level, there will have been many atoms that will have been thrown off by the wrench. Perhaps there is a trial of a potential new type of nut, and the lack of loosening is a valuable data point in the trial. Maybe the nut had been tightened by a new apprentice, and the lack of movement

is a positive sign of their basic competence (in which case the nut is now "fastened" again instead of "stuck"). In all of these other contexts, the nut exists in view of the nut from their own unique perspectives, and each requires the nut to be a certain way in order for these perspectives to be what they require. If an entity is "stuck" when a context requires it be loosened, this is "addiction". The nut is "addicted" to the wheel-bolt-nut machine from the perspective of the garage. Although, from other perspectives, it is not. The nut can also be in exactly the same configuration and no longer be addicted. Perhaps the garage uses another tool to remove the nut, performs the required maintenance, and reattaches the nut to the same degree of tightness as before. Now the nut is no longer addicted, but it is again "fastened" from the perspective of the garage, as the car is now ready to return to the highway.

A star works by containing so much hydrogen that the inward pressure from the immense gravity of all the matter is enough to overcome the strong nuclear force and initiate nuclear fusion (Larson, 2003). These fusion relationships between atoms must occur for a star to be a star, otherwise it would be something else. As these fusion connections take place between hydrogen machines, helium machines are consummated, along with photon machines and energy machines that generate outward pressure. As this is occurring, the star is not experiencing any addiction. It can fuse the hydrogen and not the helium, but while there is plenty of hydrogen, it can continue being a star. After enough time, there is so much helium and so little hydrogen that in order to go on being a star it must then fuse the helium machines within it. This contracts the helium machines into relationships that consummate carbon machines. If the star has enough material, this can continue all the way until the relations inside the star are consummating lead machines. Once this occurs, the star is no longer able to engage its component machines to behave in such a way that the star is able to continue being a star in its current form. It is beyond the star's puissance to force lead atoms to engage in nuclear fusion, and so the star, from its own perspective, experiences the lead atoms as not registering change; being "stuck". They are addicted to being lead atoms. From the star's perspective, this is existence-ending; from other perspectives (say, humanity's perspective of

requiring these interactions for metal-rich rocky planets to form), this is an act of creation, and rather than a static unhelpful state, this state is enabling all sorts of future possibilities.

Another way of describing addiction is the inability to stick or unstick as the context demands. A nut attached to a wheel-bolt-nut is both "fastened" and "stuck" as the context perceives it. A lead atom is "the building block of planets" and "inert" as the context perceives it. Addiction is in the relations of machines encountering each other that context registers it as both necessary and stuck. It cannot register the required product of consumption; it is incapable of it.

For addiction in the typical way it is used, anthropocentric and related to psychoactive substances or process-related, such as gambling, the same definition applies. However, addiction is always located "in" the perspective of the machine within which the stuck relationship takes place. While addiction can take place on multiple different "levels" of the contingent hierarchy they exist in, all of these addictions are ontologically separate and unique.

Therefore, the second step of the methodology can be described:

Identify at what level of hierarchy each of the constituent entities are operating.

For example, if Bob drinks a bottle of vodka every day, his family may well say he is addicted to alcohol. From the perspective of the family, what is required of Bob—getting up, going to work, doing maintenance around the house, etc.—may not be getting done because every day Bob is drinking vodka and getting drunk. From the perspective of the family, Bob is "stuck", doing the same thing every day, because from this perspective, certain things need to occur in order for the family to continue being a family, and getting drunk on vodka is not one of them; so, the family does not register a certain day's drinking as producing anything new, nor necessary.

At the same time, from Bob's perspective, he wakes up every day feeling an overwhelming sense of guilt for what he is putting everyone around him through, and because he wishes to escape this sense of guilt, he drinks another bottle of vodka in order to forget about it, for one more day. From

Bob's perspective, he is addicted to guilt. For Bob, what is required to do the things that make up "Bob" are motivations, loves, duties, positive feedback, feelings of being wanted and needed, and so on. He is not experiencing these things because all he feels is guilt. From his perspective, he is "stuck" experiencing the same thing every day, because the guilt doesn't change. The purpose of guilt is to motivate us to change our situation somehow—apologise, re-prioritise, and so on, which if successful allows us to produce new possibilities, but if Bob is unable to do this, he does not experience any change to the guilt.

Simultaneously, Bob's brain experiences a large daily influx of sedatives, which have a depressant effect on the homeostasis of the brain. From the brain's perspective, this depressive effect is too great for the brain to be able to do the things it needs to do in order to be Bob's brain, such as perceiving, reacting, controlling bodily processes, etc. In order to manage this, the brain increases its natural metabolic rate in an attempt to restore homeostasis. The brain becomes "stuck" doing this every day, because every day it experiences the influx of alcohol in the same way, and it does not have the puissance to experience it any other way. Should Bob stop drinking suddenly, the brain will continue being "stuck" and keep applying the metabolic increase, which the brain will experience as heightened arousal, Bob will experience as mental and physical discomfort, and the family will experience as Bob having a shaky body and an unpleasant experience.

On all of these levels (and they continue out in both directions of the contingent hierarchy), according to a Deleuzian machine ontology, the addiction is utterly unique from the addiction on all the other levels, from an entirely unique perspective with its own unique virtual self, and its own unique puissance. Ontologically, Bob's addictive experience is entirely separate from Bob's brain's experience. While the brain's experience is part of what allows Bob's addiction to function, it is expressed through entirely different mediums that Bob's addiction, with different interactions required for it, to go on. At all levels this is the case, and not one of the addictions can act as a representation for any of the others.

This explains why the various theories of addiction struggle to explain all aspects of addiction, because they are not actually describing the same thing. Each is describing a separate relationship from the perspective of different contexts, which require different relationships between their constituent machines in order for those things to go on being what they are. The interfacing between the nucleus accumbens and the mesolimbic pathway are ontologically unique to the interfacing between advertising and a teenager, yet both are ontologically equal. Addiction is a description of a particular kind of relationship, and this can be replicated in any context, with salient features unique to that context.

This also explains the impasse over whether addiction is a disease. From a Deleuzian perspective, "disease" is a form of relationship, just as addiction is a form of relationship, and from a certain point of view, they can look extremely similar, if not identical. Disease is a disorder in structure or function in an organism, but it can only be a "disorder" from the perspective of the context in which the structure exists, because it is the context that defines what "order" means. If I experience heart disease, the functioning of the heart is interfered with, but only its functioning as defined by me. The being of the heart itself experiences no issue whatsoever, it is happy to go on as it is. Even if I die, the heart is not troubled, its activities just change. It is me that is concerned about heart disease, which is the motivation behind designating it as so.

As disease is also a third body perspective of the relationship between two entities within its context, sometimes this relationship and the addiction relationship look identical, and a description of this relationship could fit into both categories. A brain that has morphologically changed to repeatedly encounter a substance in such a way that it can continue being a brain, and a brain that has morphologically changed to register damage from a relationship with a blood clot, may be able to be described using similar language. The family's perspective of the changes in puissance registered by that encounter might look very similar. And so, from certain perspectives, it might seem perfectly accurate to say that "addiction is a disease".

At the same time, from other perspectives, the addiction relationship may look very different from the disease relationship. Marc Lewis (2015) argues that addiction is not a disease but rather results from deep learning, triggered by certain stimuli. This is closer to the conditioning models described earlier, in which "rewiring" the brain, training it to respond differently to different cues, is what gives people the ability to overcome addiction. From this perspective, the disease relationship is not possible, as it requires a disorder to the structure of the brain to exist (to be "stuck" there) if it is going to. However, in Lewis's understanding, the brain is tremendously neuroplastic, and capable of great feats of loosening; therefore, it can't be a disease. It is the context that renders the disease description impossible: "Indeed, there's nothing more fundamental to the human brain than its plasticity" (Lewis, 2017, p. 10).

This also explains why addiction can "return" after a long time. One of the most perplexing features of addiction is that, sometimes, people can give up a substance and suddenly return to it 30 years later with the same zeal they had when they used it every day. In medical parlance, this is why addiction is referred to as a "chronically relapsing disease", in that it appears to disappear when the person stops using the substance, then at a later date, it can suddenly seemingly reappear. This can happen over a whole lifetime and at any time (Dennis & Scott, 2007). From this Deleuzian perspective, what is happening is that the description of the addiction relationship is sometimes aligning with the description of the disease relationship, and sometimes isn't. When the puissances of the relevant entities change to such an extent that the description of addiction no longer aligns with the description of disease, it "disappears", and if it ever aligns again, "relapse" occurs, and the disease description applies again.

To explain the ability of addiction to appear, disappear, and reappear, in a machine ontology it remained throughout. In a certain context it never left, there was always something stuck that was required to be loosened if that context was going to be able to continue going on as it was. Perhaps someone stops using alcohol and instead learns to sit with negative emotions. Over time they learn

to accept them and use their new puissance to contract them to generate new possibilities. One day they experience the loss of a close family member, and are confronted by vast new negative emotions that they do not have the puissance to contract. The negative emotions are "stuck". The person in this case could choose to loosen them by drinking alcohol again, or trying other means (therapy, rehab, running away, etc.), but in all this time what hasn't changed are perspectives that are "older", perspectives that this person exists as an entity within. If the person lives within a context of the belief "I ought to be happy", the existence of negative emotions may be seen as unchanging and "bad", meaning they are "fastened" from the perspective of the person (in the same way that lead atoms are "bad" and "fastened" from the perspective of the star). Each of these perspectives and the way they interact with the machines around them will keep changing the meaning, and therefore the puissance of the substance in a milieu. Sometimes this will cause its description to overlap with other descriptions, and sometimes it won't.

Since operating at different levels of the contingently obligatory hierarchies are important, this provides the rationale for the second step:

Identify what entities are operating inside others of the listed entities.

This may well lead to multiple different levels of hierarchy, and may also lead to expanding what is considered "relevant", as each of the entities are also at once their own unique process and their own third body, with their own unique perspective.

This is a Deleuzian conception of what addiction is—one possible description based on Deleuze's ontology. Of course, addiction is also a machine, which requires certain things to keep occurring in order for it to continue as it is. As with all other machines, addiction gets its own unique perspective, and in the same manner as the highway or the garage, certain relevant machines must be capable of certain patterns of connection, consummation, and registration in order to be what it is. If someone smokes a joint once every ten years when they are offered it, and never thinks about it in the

meantime, it is not an addiction. Addiction is its own machine, with its own desire, puissance, perspective on these things, and so on.

From this perspective, we don't experience addiction, we don't experience mental health. Addiction experiences addiction and we experience ourselves. The mental health system experiences mental health, we experience our constant stream of emotional and sensory experiences. Addiction and mental health are their own "regimes", or contexts in which we exist, and have them seek to apply labels of their own perspectives onto that which occurs to us. It is this regime that creates the conditions for these things to exist. Addiction exists within some contexts as a certain type of relationship, but simultaneously, it also doesn't exist at the same time within other, co-existent contexts.

Since the relationships between entities are asymmetric, it is necessary to trace the relationships within the third body, therefore requiring the third step:

Identify what entity is acting on other entities, and what entities are being acted on and by what.

In order to persist, addiction requires three main things. First, it requires a body that has the puissance to fasten to another body. Meth, with its internal power to relate to a human brain in such a way as to produce a strong effect, has a certain puissance. It also requires a lack of ability to loosen. If someone uses meth every day no matter the negative consequences, it implies that there is a strong "fastening" which will not be easily loosened. It also requires a third body, a context in which this can happen that experiences this fastening as existentially threatening to that context. If a meth user cannot feed their family because all the money goes on meth, this can only be seen as a problem by a context that sees feeding the family as existentially threatening, such as the family itself.

The reason why it is so hard to "pin addiction down" is that these relations can always be expressed in another way when viewed from the perspective of a different, simultaneously operating third

body. While the meth user's brain's fastening to meth is experienced as existentially threatening to the family, the meth user themselves may experience it as useful, or at least not existentially threatening. At the same time, they also experience themselves as a member of the family, and may have great concern over the family's ability to continue existing as it is, introducing contradictions and guilt into their thinking, as the two contexts in which they operate contradict each other. The theories examined in the first chapter all designated drugs "as" something, and then attempted to work around that static image, and "while it is clear that psychological processes as well as social interactions play a pivotal role in all stages of addiction, our review suggests that the two main modelling approaches are currently disjoint; we found no published computational model that incorporated both psychological and social dynamics." (van den Ende et al., 2022, p. 6). In a machine ontology, however, what drugs "are" changes with the viewpoint of the context they are experienced by. Addiction is therefore not "everywhere" or "nowhere", but rather it is a process that is simultaneously operating and not operating, depending on how different contexts register relations between various machines in a milieu.

If all of this is the case, it then implies the question of what is to be done about it? This is where care must be taken. It would be tempting to answer the question as an answer that requires a transcendental foundation to apply to the definition—this is what Kaufman was earlier warning about, as were Braidotti's "possibilities", or Duff's "harm". Rather than appealing to an introduced universal externality, we can stay consistent with machinic ontology in evaluating what might be more or less preferable.

First, it is worth defining what would be a hypothetical state of "perfect health" according to machine ontology in order to establish an "ultimate goal" towards which everything can point. As nothing is naturally anywhere and nothing is ontologically assumed, then how can anything be said to be good or bad, why should anything want to be going anywhere? Rather than seeing health as a normalised state, this ontology implies that perfect health is defined as the ability of an entity to

affect relations to the greatest extent possible. Since an entity cannot directly affect another entity, only alter its relations in such a way that it increases its chance of the other entity's relations altering its essence, this appears as the ability to fasten and loosen.

In a hypothetical state of "perfect health", the entity in question would be able to fasten to an almost infinite amount to anything it is capable of encountering. "To succeed in getting drunk, but on pure water (Henry Miller)" (Deleuze, 1987, p. 286), although with the complete freedom to fasten to whatever degree it wished. At the same time, it would retain the ability to loosen to an infinite degree, subsequently fastening however tightly to whatever connection is next. The possibilities of this entity to affect itself and to affect others would be almost limitless, based on the boundaries of its own abilities to contract others. Addiction can provide a certain degree of the fastening, but not the loosening, and so it is experienced as "unhealthy". Excessive loosening without the concomitant tightening is experienced as depression. If we are looking to build an entity's capacity for health then, we will be looking to either tighten or loosen as the perspective requires.

So, the fourth step is to:

Describe each entity's individual actions and detail what a healthy and unhealthy action is according to their own internal logic.

As there are three relationships required for addiction to exist, there are also these three same areas in which "work" can be done, "force" applied, to have a chance at altering the puissance of addiction.

The first requirement is a body with the puissance to fasten to another body. By applying an interaction with another body that has the powers to alter the powers of the first body, this ability to fasten may be weakened. This can take place at any "level" of the contingent hierarchy. For example, a cigarette smoker meeting with a therapist and talking through "all the ways in which smoking has negatively affected your life" may alter the puissance of smoking. Simultaneously,

taking varenicline may reduce the intensity of the drug effect in the brain, and may alter the puissance of smoking. Perhaps it may be a stop smoking ad on TV, perhaps a negative reaction of a loved one, maybe a random thought; anything has a chance. They will not have an equal chance, as the outcome of each interaction will depend on many other machines, all operating simultaneously.

The second aspect, the lack of ability to loosen, may seem like it is implied by the first aspect, the fastening of one body to another, but it is actually entirely separate. If a nut is fastened securely to a wheel-bolt-nut in a garage, and a mechanic-wrench machine does not have the puissance to loosen it, another machine will need to enter into relations with, which is entirely separate to the nut. If the mechanic separates from the mechanic-wrench machine and forms the mechanic-electric impact wrench machine, this machine now has the puissance to loosen the nut. Within the powers of the garage, the implied ability to loosen the nut was always present, although from an outsider's perspective, that wasn't able to be known before the operation was performed.

This second aspect is more hidden from outside contexts. Someone whose first thought in the morning is of drinking alcohol may be deeply fastened to alcohol in order to form the person-alcohol machine, which has all sorts of powers and possibilities they enjoy. Even if they physically cease drinking alcohol, if the associations with alcohol are all that of intense connection and drunkenness, then the implied loosening (I can have a glass of wine on a night out and stop) is not present.

Interventions in this aspect of addiction tend to be prevalent in peer support approaches. Encouraging people to "build positive self-concept and achievement motivation, reinforce family/significant others' relationships and support, and amplify the treatment continuum" (Hartz et al., 2001) are all examples of interventions that have the intention of increasing people's ability to loosen from a fastening (Tracy & Wallace, 2016).

The third thing required for addiction to exist is a context designating the interaction as an existential threat to its ongoing identification of the context as it is. If a garage cannot loosen any nuts, it cannot operate as a garage. However, if it alters itself (by incorporating the necessary tools),

it can do so, and can continue on as a garage. Altering the context in which the addiction takes place alters the puissance of the addiction. If a father is drinking every day, and the family experiences the fastenings and loosenings as a result of this as an existential threat, perhaps the context can be redefined in a way in which the addiction's puissance is altered. If the mother takes the children and moves to another country and no one contacts the father anymore, then the context (the family) has been altered, and consequently the powers of the addiction have been altered within that context.

It is the perspective of the third body, the context, of what fastenings and loosenings are required, and to what intensity, is desirable from the perspective of that context. This is where ideas of "good" and "bad" often come from. In order to be a member of a family, it implies a series of connections, fastenings, and loosenings as members of that family come into contact and separate in relevant and appropriate ways. What is designated as relevant and appropriate changes over time as other entities interact with the family entity and change the puissance of that particular machine.

Likewise, by changing societal contexts it changes the puissance, or desire, of the entities within it. Increasing the financial cost of cigarettes may or may not affect their puissance for someone. People within a society that are exposed to anti-smoking messages may or may not experience an affected puissance of smoking (Hanewinkel et al., 2010).

These third bodies, the contexts, are first bodies on their own contingent level of hierarchy. "The whole of the inside finds itself actively present on the outside" (Deleuze, 1988a, p. 119). If the intervention is not offered on the relevant level of the hierarchy, it will not affect the fastened relations that create the addiction. If a first entity, a therapist, encounters a second entity, someone addicted to alcohol, they may choose to contract relations with efforts to loosen that person's fastening to alcohol. However, if that second body was not actually fastened to alcohol, but rather fastened to guilt, they may have just engaged in relations with alcohol as it temporarily altered their power to loosen their fastening to guilt. The addiction was never to alcohol as the implied loosening was always high. Having stopped using alcohol, they still find themselves fastened with guilt, and

instead begin contracting relations with heroin to alter their power to loosen their fastening with guilt. This is then experienced in the third body, the context, as "substance-hopping" (Crummy et al., 2020).

So, the final step in the methodology is to:

Describe how entities can be increased or decreased in puissance from a "higher" perspective — the assemblage they operate within. The ones that operate within each other will be described from the perspective of the entity manipulating the one within it.

All of the theories briefly surveyed in the first chapter designated the perspective through which they viewed drug use, and when the addiction relationship occurred in another "level" of the hierarchy, struggled to comprehend what was occurring. A therapist operating on the biological level, who believes that people use drugs because there are powerful "hooks" in the brain to incentivise doing so, might be perplexed at the prospect of the person ceasing to use the substance but not feeling anything has changed, or seeking out another substance. They are operating at the level of the person rather than the brain, and at the level of the person the brain is just one entity that is doing the fastening, rather than the context in which the addiction occurs.

Addiction may also be present in more than one "layer" at the same time, which may account for its seeming permanence. Growing up in an abusive situation, a person may experience feelings of worthlessness and seek temporary pleasure in substances, which leads to their brain rewiring and restructuring itself to anticipate a drug high whenever it experiences and interprets certain situations through this lens of worthlessness. In this case, each entity is simultaneously fastened to another entity and unable to loosen, and the context in which a fastening and lack of loosening occurs. If any intervention is applied in only one or two levels of this contingent hierarchy, the addiction relationship will still occur in others, and may well be the power that allows the addiction to re-attach and refasten at other levels.

Up until now, the features of this model of addiction have been described, but not its genesis. Why is addiction even a thing? Where did it come from? As addiction is its own machine, while it has its experience and its point of view, society is also its own machine, with its own experience and its own point of view. At a state level, it is through the experience of society that addiction is viewed and encountered, which then informs the generation of the theories that have been examined.

To experience addiction as addiction, society needs to encounter it as a relationship with the three salient features described earlier, through its own viewpoint. It has to be experienced as a body that has the puissance to fasten to another body. Addiction must be seen as a strong attachment formed by an entity to other entities within it. Meth addiction is experienced as such because of the intensities it experiences from person-on-meth machines, which is intense in a way that a person reading *Wuthering Heights* isn't. It also requires a bond between two entities within it, that society cannot easily loosen. If it was easy, it would not be addiction, it would be something else. Society does not experience toddlers throwing a tantrum as a problem, as that relationship can be easily altered. It also requires a third body, a context, in this case society itself, that experiences this fastening as existentially threatening to that context. Society must see addiction, the presence of these fastenings between entities that make it up and are not easily loosened, as occurrences that if they are not acted on in some way, could lead ultimately to some kind of existential threat to society.

In order for society to be society, as opposed to something else, certain types of relations need to be contracted between certain types of entities. If there are interactions that are unhelpful to the overall functioning of society, say a fistfight between two people, society itself needs to contain the puissance to manage this lack of function and restore its functioning; in this case, using entities within its milieu, such as the police, to loosen an overly "fastened" relationship between two people. If this is all that is required, there is no existential threat. However, if society experiences two people

fighting as an indication that this will encourage more people to fight, it may see this as an existential threat and respond accordingly.

It is from this perspective that societal level theories operate from. By describing addiction as spreading "like a disease", and using tools for modelling contagions as adjuncts for modelling the spread of addiction, this provides a societal perspective of what addiction looks like at this level (Ali et al., 2011).

What is implied in these theories is not only what addiction is, but also what society is, and what it requires in order to continue to operate. It needs to refer to societal methods of control. In 1992, Deleuze wrote an article titled "Postscript on the societies of control" in which he conjectured that society is moving from a disciplinary to a control society. As it is through these societal lenses that addiction is experienced, any shift in a type of society addiction is encountered in will also shift its experience of addiction and what it perceives it to be. "Types of machines are easily matched with each type of society… because they express those types of social forms capable of generating them and using them." (Deleuze, 1992, p. 6).

Foucault (1975/1995) conceived of the disciplinary society as one in which people are constantly moved from enclosure to enclosure, with the nature of the enclosures determining what activities are to take place within them. As a successor to the societies of sovereignty, in which the goal was "to tax rather than to organize production, to rule on death rather than to administer life" (Deleuze, 1992, p. 1), the goal of the societies of discipline was to regulate "these environments of enclosure, particularly visible within the factory: to concentrate; to distribute in space; to order in time; to compose a productive force within the dimension of space-time whose effect will be greater than the sum of its component forces." (p. 1).

In a disciplinary society, the machinic definition of a person (the way they know they are a person, as opposed to something else) is someone who has the puissance to fasten to other relevant entities in order that the contexts they enter into can be what they are. In order for a garage to be a garage, a

person must be able to enter it, and perform relevant contractions with relevant entities. If this is not possible, then it is not a garage. If a highway cannot convey transportation, it is not a highway. But simply doing this is not enough. Being able to contract entities in a garage means the person is a "mechanic", but to be a person requires more roles than this. They also must have the capacity to loosen the mechanic role, in order to be able to leave and enter other enclosures, in order to contract other entities to enable other enclosures to also be what they are: families, homes, social clubs, churches, etc. In order to be a person in a disciplinary society, a person must contain the puissance to loosen and fasten to multiple enclosures.

A disciplinary society creates addiction, because it experiences the impaired ability of a person to contract relevant entities as loss of function in its required enclosures. A mechanic who is drunk no longer has the puissance to contract relations with relevant entities in relevant ways, so the garage is no longer a garage. The person may be unable to fasten and loosen to the necessary enclosures required by the context (the image of the father spending all night at the pub rather than the home). For the disciplinary society, this is an existential threat, because the fastening and loosening of people to enclosures *is* the society. Therefore, abstinence was primarily the goal, in order to remove the puissance-altering entity that stopped people from being able to fasten and loosen as they ought to.

In a society of control, which Deleuze (1992) argued was in the process of replacing societies of discipline rather than control taking place by means of moulds, takes place by means of modulation (p. 2). It "works fluidly, instead of walls and boundaries, social organisation is accomplished by mapping and channelling our movements" (Brusseau, 2020, p. 3). In this society, the person becomes their data, which are constantly moving, warping, and changing. "Perpetual training tends to replace the school, and continuous control to replace the examination." (Deleuze, 1992, p. 5). As Deleuze was writing this in 1992, he had to speculate as to what methods would be employed to oversee this control. Since then, and with the subsequent rise of the internet, social networks, and

"big data", more recent articles have been able to apply these developments to the evolution of the societies of control.

Brusseau, writing in 2020, is able to describe how the tracking features of now ubiquitous information technologies that we carry at all times have been able to facilitate the development of a control society that works by "not… to observe and torment, they want to analyse and sell" (p. 7). Just as in the disciplinary society where the definition of a person was one who could fasten and loosen from contexts as necessary, in the society of control, one can fasten and loosen to whatever they want, as long as they register traces of doing so as data.

> So, after Deleuze, the technology of control has reformed. Data gathering is no longer a single e-card, but multiple and multiplying mechanisms. Data compiling is no longer centred on one gatherer, but dispersed across corporations and enterprises. Data recording is now subordinated to synthesising information from multiple sources. And data's end result is not accumulation, but redistribution at an accelerating pace back into the profitable networks that first produced the information. (Brusseau, 2020, p. 5)

This allows society to control, not by coercion and corralling, but rather by distraction and incentivisation. If a person's wants and desires can be tracked, they can be predicted, and therefore "the strategic requirement for control today is no explicit prohibitions, no blocked possibilities, no forbidden ways. There are only opportunities and temptations" (Brusseau, 2020, p. 10). People are therefore required to move in predictable trajectories, rather than move in specific ways and patterns. They can go and do whatever they like, as long as it is predictable. Deleuze (1992) stated that in disciplinary societies one is always starting again, whereas in control societies one is never really finished with anything, which is seen in phrases such as "life-long learners".

In a society of control, as people are perceived differently to a disciplinary society, so addiction is experienced differently. In a control society, the danger addiction offers is not in the effect on the person's ability to "be" what the space requires, but rather in their ability to generate and follow

reliable trajectories. “In the societies of control, on the other hand, what is important is no longer either a signature or a number, but a code: the code is a password” (Deleuze, 1992, p. 5). This produces coded “dividuals” who are different entities based on the contexts in which they enter and leave. “Deleuze’s dividual sees the subject as divisible and produced through modulatory control unlike Foucault’s individual, which is generated as a result of discipline” (Iveson & Maalsen, 2019, p. 335). The dangerous behaviour is not being high, but in being undetectable and unpredictable. Drug use requires engaging in “underground communities” who are harder to predict and track, and being high on drugs can often mean erratic and discontinuous behaviour, all of which are experienced as a threat by a control society (Paradis-Gagné & Holmes, 2022).

A control society expresses its engagement with addiction in terms of trajectories. “Harm reduction” is a statement of trajectory. We do not mind if you use drugs, as long as you are predictable and trackable when you do. As long as you have a direction to your drug use, go ahead. Popular contemporary slogans are also statements of service to data. “Connection is the opposite of addiction” (Hari, 2019, p. 311) is a statement of fealty to the registration of data.

There is not a clean break between the two, as many “disciplinary spaces” still exist; enclosures such as work and school still exist where one is expected to fasten and loosen accordingly. The difference in how these spaces experience addiction is illustrative as it highlights the difference between the two approaches. A factory worker may be drug tested and disciplined if they are found to be under the effects of drugs at work, but only if this occurs at work. It is not the use of drugs that is a problem, it is only the ongoing maintenance of the smooth running of the factory that is the issue. Outside of work, back in the society of control, it is only the predictability of the factory worker’s use that matters.

As the state of an entity can only be described in the perspective of the context within which it exists (the nut is “fastened” to the bolt in one context, “stuck” in another), it is only by understanding the requirements of the context to be the context that we can understand what fastening and loosening

means within the context. Now that addiction has been described both within a context, across contexts, and hierarchies, a methodology can be described for evaluating theories of addiction and methods of encountering addiction (commonly referred to by terms such as “treatment”).

The purpose of doing so is not to compare theories and treatments to some transcendent “correct” principle that ought to be aspired to; there is no teleological aspect to addiction, when approached in this way. Rather, it is a method of situating what is occurring within a certain point in this interpretation of a Deleuzian ontology for the purpose of uncovering an “adjacent possible” (Monechi et al., 2017). By identifying what is declared, it also implies other nearby possibilities for each declaration, which may allow the salient theories and treatments to evaluate and potentially incorporate adjacent insights.

The aim of this approach is to uncover where the addictive relationship “is”, according to this theory. Since this definition of addiction is the name of a relationship, wherein the third body (the context) is incapable of registering necessary changes to a first body as a result of an encounter with a second, it needs to identify the two bodies in a relationship and the context, incapable of registering necessary changes, in which this takes place. How does the theory understand the objects’ puissance; how does it describe their relations; how does it experience the encounter in terms of connection, registration, and consumption? What is its understanding of the virtual and actual aspects of its relevant entities? “The virtual is not the same as the actual; it has a different character. Solutions are actual; problems are virtual.” (May, 2005, p. 85). Can it sense the consumption at all? This may take place over multiple levels of hierarchy, in which case the relevant context will also be an entity within another context, and the process must be repeated for this context.

The attempted contraction is an aperture through which an object is changed or not. This can be described as the possibilities of whether this happens and how this appears from the three different bodies’ perspectives.

For example, in the disease model of addiction, there are three main stages: “Binge/Intoxication: an individual uses an intoxicating substance and experiences its rewarding or pleasurable effects” (Volkow et al., 2016, p. 364). Entity one is the brain and entity two is the substance (which can also be “substances”). They have become fastened within the context of the biological context of the human.

“Withdrawal/Negative Affect: an individual experiences a negative emotional state in the absence of the substance.” (Volkow et al., 2016, p. 366). They are no longer physically fastened, but there is an implied lack of loosening that has been facilitated by structural changes in the brain that make it no longer as capable of loosening.

“Preoccupation/Anticipation: an individual seeks substance use again after a period of abstinence” (Volkow et al., 2016, p. 367). There is now a tightening and a lack of loosening due to physical changes in the brain, with its puissance to respond to the chemical signals in an alternative manner now strongly compromised. The disease model therefore plots “where it is” in the process by tracking chemical signals and structures in the brain, and so it interprets the repetition of this process as “unchanging”, but it does not register the necessary changes in brain activity in order for the context (the person) to operate as necessary. This is an existential threat to the biology of the brain, and the person, as the action of the drug compromises the brain’s ability to do the things that allow the brain to be the brain, and for a person to operate as a “healthy” person, with the ability to tighten and loosen as necessary. This relation between these entities appears as the addiction relationship.

From here, the surrounding levels of hierarchy can be examined. What is the context in which this theory operates? It is also possible to identify a treatment model based on this theory, and see how it applies all of this: what does it define as fastening and loosening, what is “stuck” and why does it see it as a bad thing, what problems does it see it solving? By altering other entities in the hierarchy does it alter anything in the approach?

So, to conclude, a definition of addiction that allows it to be a unique process that does not require relying on any outside transcendent relations is:

Addiction is the name of a relationship, wherein the third body (the context) is incapable of registering necessary changes to a first body as a result of an encounter with a second.

And a methodology for investigating how this exists in the world, through our praxis, discourses, physical environment, and so on, is:

Examine an entity, and identify what relevant entities it consists of.

Identify what level of hierarchy each of the constituent entities are operating at.

Identify what entities are operating inside others of the listed entities.

Identify what entity is acting on other entities, and what entities are being acted on and by what.

Describe each entities' individual actions and detail what a healthy and unhealthy action is according to their own internal logic.

Describe how entities can be increased or decreased in puissance from a "higher" perspective — the assemblage they operate within. The ones that operate within each other will be described from the perspective of the entity manipulating the one within it.

This allows for each addiction assemblage to remain unique, and be made up of unique entities. It also stops us from referring back to a transcendent other.

In the next chapter, this will be applied to a small case study, as a pathfinder application of what may be possible with this methodology.

Chapter 5—Application

Case study

To illustrate the concept of machines moving within other machines, and how they create these obligatory contingent hierarchies discussed earlier, the case study will begin with describing a concept that will then be applied to an addiction-specific context.

The heart

"An organ-machine is plugged into an energy-source-machine…" (Deleuze & Guattari, 1983, p. 2). If we are to describe an animal as an "organ-machine", what of the organs themselves that make up this organ-machine? These machines make up the organ-machine, but are not necessarily allied to its goals. Each machine has its own desires. "Desire causes the current to flow, itself flows in turn, and breaks the Flows" (p. 5). The heart is an assemblage that channels a flow of blood through it, for the purpose of modifying the pressure and momentum of the blood. It desires to expand and contract, convulsed by waves of electrical activity. These convulsions arise from the flows produced from the desires of machines within the heart.

The opening apertures of the heart are where the superior vena cava and inferior vena cava connect to the right atrium of the heart. Upstream, the veins of the body have been connecting and consolidating, growing ever larger and containing greater amounts of blood as they join their respective flows. As the blood has moved through the body, the pressure has steadily dropped, and through a system of venous valves, pressure gradients, and muscular pump sympathetic vasoconstriction, the blood has arrived outside the heart. For the blood, this has been a forced march. The blood's only desire is to be in the lowest pressure state possible; its constituent particles seek to get as far away from each other as they can. Any rupture in a blood vessel sees the blood rushing to escape as fast as possible, and it will continue to do so until stopped by something else.

From conception, each blood cell has been press-ganged into action to fulfil the desires of other desiring machines possessing a greater power of action.

As the blood has been pushed, shoved, and cajoled on this journey around the organ-machine, conditions for the blood have been gradually improving. It has been moving from a higher pressure environment to a lower pressure environment. In order for the blood to wish to journey to the heart, the environmental conditions the heart offers the blood must be superior to the situation the blood is currently in. If the blood feels it is better off where it is, and there are no outside forces acting on it, it will stay there. To get it to move, it must either be enticed or forced to do so. The heart chooses enticement.

To invite blood to enter the heart, the heart grants the blood's desire: volume. The particles in a liquid desire space to spread out; to be as far away from their neighbours as they possibly can. This requires offering an aperture into the heart that promises the ability for the blood to achieve a lower pressure state than the blood is currently in. An aperture that offers expansion must therefore be the highest ratio between the size of the entrance and the size of the promised space the invitation is offering as possible. In order to achieve this, the heart relaxes itself, turning a small, cramped space into a yawning expanse, promising a wide, luxuriating void awaiting the blood and increasing the promise of the blood's desires. This aperture becomes ever more inviting as it, and the space behind it, expands and the blood rushes in.

Having filled with blood, the heart seals off this entrance. The aperture is now shut as the heart, having invited the blood, is no longer concerned with the blood's desires. Now that the blood is entirely enfolded by the assemblage of the heart, it is now capable of manipulating the blood for its own desires. The heart then contracts, shrinking the size of the atrium and pushing the blood together. The blood has been tricked! The apparent invitation into a cavernous space of lower pressure has turned out to be a duplicitous lie, as the blood is squeezed together. But salvation is provided for the blood as a new opening is provided, and the blood rushes to flee this now

uncomfortably claustrophobic space. Again, an aperture is provided that invites the blood to enter this chamber that promises to fulfil its desires. Wide enough to let the blood through, but also narrow enough that space inside is larger, promising greater space to spread out in, and a lowering of pressure. Now spread out in this second chamber, once again the heart closes the entrance aperture, and repeats this same betrayal, again squeezing the blood, and again offering it salvation by opening yet another valve, and creating an aperture for it to enter again. Now it expels, by deliberately creating an environment for the blood that goes against all of its desires, creating pressure and pushing the blood away.

The expulsion of the blood is also an invitation to the connected machine. In order for the blood to wish to move out of the heart, the heart must make its current environment less comfortable for the blood than an adjacent possibility. The process of expulsion therefore turns the aperture in the connecting artery into an invitation, as the blood's perspective of what is an invitation and what is an expulsion is relative to the state of the surrounding environment. As the chamber in the heart has made itself into such an uncomfortable space, the blood now gratefully rushes into the connecting space, despite it being a much higher pressure environment than the venous system from which it originally came.

Shortly afterward, the blood returns. It now contains some differences; it has been oxygenated and purified, and is once again outside the heart. The heart repeats this invitation, expanding the ratio of the aperture to the space beyond, once again the blood rushes forward and spreads out, and once again it is squeezed, rushing into the adjacent chamber. Once again it is squeezed, and once again it is simultaneously expelled and invited into the adjoining tube.

Through this process the blood has been modified. It has gone from a deoxygenated, low pressure state, and been forced closer together and forced into carrying oxygen. This has been achieved by a series of invitations and expulsions by assemblages whose desires are orthogonal to those of the blood. By manipulating and using the blood's desires, they have been able to achieve their own;

sometimes appearing to grant these desires, and sometimes deliberately acting against these desires.

Now empty of blood, the heart wishes to invite more blood, so it relaxes again. Once again, there is blood waiting in the vena cava, and once again the heart relaxes, beckoning the next load of blood with promises of space.

The recovery paradigm

The recovery paradigm came out of earlier work, seeking to define what *recovery* is, and what the pertinent factors are that enable recovery to be sustained. The model primarily works from the definition of the Betty Ford Institute Consensus Panel (BFICP) (2007) who defined recovery as "a voluntarily maintained lifestyle characterized by sobriety, personal health and citizenship" (Best et al., 2011, p. 294).

The Betty Ford clinic is undertaking the effort with the understanding that what they come up with will be able to be applied as a universal entity, something that will be able to be applied to all situations. It is this very claim to universality that endows these definitions with a nature that can be viewed similarly to film music, in that they claim to be all powerful over the understanding of the nature of the entities they seek to describe.

The article states that its reason for establishing a definition is that "these models do not all share the same measures or even the same underlying concepts of what they all refer to as 'recovery'. Thus, we have little to tell families, employers, schools, payers, and policymakers about how they can support and extend the recovery process" (BFICP, 2007, p. 221). Thus, the music swells. We are provided with a transcendent relationship that is assumed to be external to terms, and is championed by the subtext of the article. A transcendent definition is the protagonist, the bringer of

understanding, without which we have "little to tell" any of the other related entities to the recovery process.

The article then goes on to say that "it is presently not possible to tell treatment providers the best ways to foster recovery… For without a consensus definition of recovery that will permit systematic measurement, there will likely be no research to inform these issues." (BFICP, 2007, p. 221). Yet, according to a Deleuzian ontology, creating a definition of anything does not provide a transcendent relationship to already existing entities, but rather produces a uniquely new entity, with its own, utterly unique internal and external natures.

As a machine, "recovery" itself is its own entity, both one and multiple, with its own internal virtual nature which is inaccessible and unknowable, and its actual public nature, which is capable of contracting relationships with other entities and being related with in turn. These may modify its puissance, or desire. It is also defined by its mutually exclusive relationship to addiction, in that if one is in recovery, then one must necessarily not be in addiction. So, to define recovery according to the definition of addiction used in the previous chapter, recovery occurs when the relationship between two entities that would have led to the end of the existence of the third entity in which it took place is loosened to the point where the third entity's ongoing existence is no longer threatened.

Examine an entity, and identify what relevant entities it consists of.

According to the definition of recovery listed above, it is a context within which other machines exist. All of these machines are comprehended from the perspective of recovery, and whatever definitions are provided for each of them, are recovery's point of view of what they are. This definition of recovery begins with the words "voluntarily maintained"; it experiences the mental assent of a person, a person's intrinsic motivation as the act that "consecrates" an action. From this

perspective, the action a person must take that turns actions into entities that can allow the altering of the puissance of the entity of recovery is a voluntary one. If a person is forcibly detained in a space where drugs are not available, but against their will, it is not recovery. This part of the definition places addiction "in" the mental experiences of a person. I must decide, and continue to decide, not to use drugs, no matter what.

The next machine which makes up this milieu of recovery is "sobriety", a machine within which there are certain entities and relationships, in order for sobriety to be sobriety. In this definition, it "refers to abstinence from alcohol and all other nonprescribed drugs." (BFICP, 2007, p. 222). For this machine to "work", it is not the substances themselves that are bad, but the context of acquisition. In this definition, it is the act of "prescription" that transubstantiates a drug into a substance that no longer interrupts the sobriety machine. It is the contraction of relations into the act of prescribing that alters the puissance of a drug so that it no longer has the powers to affect sobriety. In this machine, addiction is "in" the substances themselves, and it is by putting these bad substances in their body, that someone "breaks" the entity of recovery.

This introduces a tension into this entity of "recovery", where according to one part of the definition, addiction is in the emotional life of the person, and in another part, it is in the substances themselves. These two different addictions are ontologically unique to each other, and although ontologically equal, they have been conflated as the same thing. This can be experienced as a contradiction, when some kind of emotional distress may occur, changing the environment within which one aspect of recovery is powered, yet the other aspect of the definition, the substances themselves, are not changed within the same context. If this other context is not changeable (perhaps no one wants to prescribe the drug), this will introduce tension, as a single perspective attempts to combine differing interpretations of different addictions into one perspective.

In this instance, "sobriety" and "voluntarily maintained" have created different forms of sense. As it is "only in relation to a certain problem that a proposition acquires sense", it means that if we were

to treat these two machines as equal, part of the same whole, we would have to posit an external source of sense which would be transcendent and therefore violate the externality thesis. This is an example of what Deleuze was referring to when he said, "the critical project is doomed to fail not only because the ground remains larger than the grounded (first objection), but also because the ground is thought in the image of the grounded" (Voss, 2013, p. 4). "'One is perpetually referred from the conditioned to the condition, and also from the condition to the conditioned'… This is to say that the condition is nothing but the *form of possibility* of the conditioned, and the form of possibility is fabricated retroactively in the image of the conditioned." (p. 4).

> Bodies that fall prey to transcendence are reduced to what seems to persist across their alterations. Their very corporeality is stripped from them, in favour of a supposed substrate—soul, subjectivity, personality, identity—which in fact is no foundation at all, but an end effect, the infolding of a forcibly regularized outside. (Massumi, 1992, p. 112)

The conditions of "sobriety" are made up of the forms of possibility of sobriety, and the forms of possibility of sobriety are fashioned in the image of sobriety. We know we are sober because our brain is doing sober things, and we know our brain is doing sober things because we are sober. At the same time the conditions of "voluntary maintenance" are different. This takes place within the "I", and it acquires sense through this perspective.

Voss (2013, p. 8) describes how, by contrast, Deleuze demands that the relation between the condition and the conditioned is one of intrinsic genesis, and not of extrinsic conditioning (Deleuze, 1994, pp. 154, 200). Furthermore, he demands that we must not think of the condition in the image of the conditioned (Deleuze, 1990, pp. 105, 128, 149). It must be rather something heterogeneous and unconditioned that is capable of providing a real foundation, that is, not as a transcendental form of possibility but as an internal principle of genesis.

So, Deleuze would say that each of these entities, at the moment of birth, are all endowed with their own unique sense, each internal to themselves, and not a transcendent extrinsic form of sense that

will apply to other entities. It is the idea of an extrinsic form of sense that allows for what Deleuze called the dogmatic image of thought (1994, p. 147), a sense that presumes itself and constrains thought by requiring entities evaluate themselves according to another entities' concept of sense.

So, if sobriety and voluntary maintenance are different entities, with their own unique and separate intrinsic notions of sense, how can they be conceived of together in a way that allows them to interact yet maintains their individual notions of sense? By applying a series of tools to explore ways in which they interact with each other, without trying to find a common ground. These will not exhaust the possibilities of interaction, as this is impossible; there is always something more. While a hypothetical state of "perfect health" for these entities will have their powers of contraction being capable of infinite fastening and infinite implied loosening, in practice this is impossible, so there is always something more they can possibly do.

Identify what level of hierarchy each of the constituent entities are operating at.

"Sobriety", in this instance, takes place within the brain at the level of neurotransmitters. It describes a particular configuration of neurotransmitters within the brain that exists at a specific moment in time. Sobriety also contains its own internal definition of sense that forms its own ground. In order to be sober, neurotransmitters must be produced endogenously, that is, by the brain itself and not by the action of foreign psychoactive substances. One can have reduced reaction times while driving because of being impaired by production of GABA neurotransmitters induced by alcohol and one is "not sober", yet one can have reduced reaction times while driving because of being impaired by production of GABA neurotransmitters induced by tiredness, and one is still sober. In this case, the internal logic of designating one expression of GABA neurotransmitters as representative of sobriety, and one of drunkenness, is due to sobriety's own internal sense.

Identify what entities are operating inside others of the listed entities.

“Voluntary maintenance” takes place at an “older” level of hierarchy, and it refers to the ongoing flow of experiences within the self, and describes a constant renewing of “sobriety” (or any other neurotransmitter state). In the same way the blood cells constantly circulate the vascular system, being renewed by the heart, so sobriety constantly circulates the “voluntary maintenance” system, being directed and manipulated in order to serve the needs of voluntary maintenance.

Each voluntary maintenance system is different, and in the same way that external actions on the heart can modify its puissance in regard to its abilities to manipulate the blood, external actions on the voluntary maintenance system can modify its abilities to manipulate sobriety. For one person, say someone who has given up alcohol a week ago and is experiencing cravings, sobriety may be something that “returns” often, and pumping it around the voluntary maintenance system is experienced as hard work, yet for someone who doesn’t drink, the effort of continuing the voluntary maintenance system may be seen as almost effortless.

As the person who has given up alcohol repeats this action, they may find it requires less and less effort to continue pumping sobriety around the voluntary maintenance system, as voluntary maintenance acquires new powers. It acquires greater powers of implied loosening, so a person may be able to see an ad for alcohol, but loosen their attention from it, and attach attention to something else with as much effort. Or it may acquire greater powers of tightening, so there is more pleasure in other, non-drinking activities than there would have been previously. As these powers change, so does the ability of sobriety to increase the powers of voluntary maintenance.

The conception of circulation, pumping, and flow, then, is a tool for identifying the relationship between sobriety and voluntary maintenance, and describing one way of conceptualising the relationship between them. It allows us to let each entity retain its own internal ground of sense without requiring a transcendent dogmatic image of thought while at the same time letting these

entities interact with each other, both comprehending each other according to their own particular point of view.

As changes in the heart affect the blood and vice versa, so do changes in voluntary maintenance affect sobriety and vice versa. The heart requires the blood in order to “work”, but the blood has no such need of the heart to be blood, and seeks only lower pressure environments. In the same way, voluntary maintenance requires sobriety to work, but sobriety has no such need of voluntary maintenance. A heart, deprived of blood, can have more blood introduced and will be quite happy to pick up where it left off, and the blood will continue to flow. In the same way, if sobriety is removed, voluntary maintenance cannot continue to function, but sobriety can come back any time, totally intact and able to continue.

Voluntary maintenance’s ground of sense, then, is different to sobriety. For a heart, “blood” is a neutral concept, mostly any blood will do, and yet for the blood, the powers of the particular heart will affect its journey greatly. For voluntary maintenance, any sobriety is adequate for its needs, and yet for sobriety, the type of voluntary maintenance it is placed into will make a huge difference to its experience. For a person with many supports and resources in the community, sobriety may have an easy journey, as their voluntary maintenance system possesses the necessary puissance for it to do so. For a person who does not have these supports and resources, their voluntary maintenance system does not have many of the puissances that make for an easy journey for sobriety, and so the journey will be much harder.

By conceptualising these entities in this way, it allows for the evaluation of these entities according to their own unique internal notions of sense. One sobriety is not the same as another. One voluntary maintenance is not the same as another. This is why outcomes seem to vary so widely across client populations, as the entities being compared are not the same.

Multiple concepts can be applied to the same relationships in order to continue uncovering various facets of the ways in which entities can contract each other.

The concept of “stuckness” can also be applied to this relationship to ascertain new insights into how they interact. Voluntary maintenance implies a repetition of something; in this place, sobriety. It would appear at first glance that having sobriety being “stuck” would be an ideal situation; however, according to voluntary maintenance’s internal logic, sobriety is always being loosened by other entities, as they are contracted with other entities within the brain. There is always a chance that an encounter with another entity may affect sobriety, so what is required by voluntary maintenance is a constant tightening of sobriety by conscious actions taken by the individual.

The only way to get sobriety “stuck” is to do something that makes it break down. Getting drunk, or any other action that has been previously defined as breaking sobriety, will mean that it will no longer be able to move, only being stuck in one state (you can’t be “unsober” according to sobriety’s internal sense, on a whim). Voluntary maintenance will not be able to be what it is if there is no way for sobriety to be able to be tightened and loosened as required of voluntary maintenance to operate.

The reason why having a stuck sobriety is so fatal to the entity of voluntary maintenance is that it is the power to tighten or loosen sobriety that is what is necessary for it to be what it is. This is what Braidotti and Oksanen were referring to when they advocated for possibility to be seen as the opposite of addiction, that the great “harm” of addiction was that it reduced possibilities in people’s lives. When Oksanen (2013) referenced Deleuze speaking about “to get drunk… but from water” (p. 64), he was referring to the power of being able to tighten and loosen sobriety to an almost infinite degree, but never let it get stuck. As with all other definitions and concepts of addiction, they were not wrong; rather, they explored one notion of sense and sought to apply it transcendently to all entities.

By conceptualising these entities in this way, it becomes clear that the two of them operate under very different rules, and with different internal concepts of sense. If we attempt to treat sobriety and voluntary maintenance as two facets of the same thing, we can find ourselves struggling to

explain certain phenomena, i.e., why does one person keep relapsing, whereas another person engages in a certain "therapeutic" action and no longer uses the substance?

Therefore, if we wish to intervene in what is occurring, and support someone's sobriety, interventions for the two need to be different. It is possible to do things that ensure sobriety that won't help with voluntary maintenance. As sobriety relies on voluntary maintenance, that also relies on the assemblages within which voluntary maintenance operates, and circulates and tightens and loosens accordingly.

Identify what entity is acting on other entities, and what entities are being acted on and by what.

Another machine making up the entity of recovery is that of "personal health". "Personal health refers to improved quality of personal life as defined and measured by validated instruments such as the physical health, psychological health, independence, and spirituality scales of the World Health Organization QOL instrument" (BFICP, 2007, p. 222). These tools are wide-ranging and comprehensive, and the World Health Organization (WHO) "defines Quality of Life as an individual's perception of their position in life in the context of the culture and value systems in which they live and in relation to their goals, expectations, standards and concerns." (WHO, 1998, p. 8). This can largely be described as an attempt to describe a persons' (in Deleuzian terms) desire, their ability to contract relationships, and alter their surrounding essences. For personal health to "work", there must be a certain amount of contractive ability present.

As in the "voluntary" aspect of recovery, this entity occurs "in" the emotional experiences of the person. It is the act of perception by a person that makes the entity of "personal health" work. Although there are many different entities involved in altering a person's capacity to engage in certain relations with certain other entities, for this definition of personal health, none of that is important. Whether or not someone lives in an oppressive regime is beside the point; it is the act of

perception that makes it so. Here we have perception as the act that consecrates another entity and makes it good.

Citizenship refers to living with regard and respect for those around you as defined and measured by validated instruments such as the social function and environment scales of the WHO-QOL instrument (WHO, 1998). This is similar to the idea of personal health, but with a focus on social aspects of a person's life. As with personal health, this occurs in a person's perception, and it is the act of perception that makes these social entities within which the person lives a good or bad one.

Overall, the recovery paradigm locates addiction as mostly "in" the experiences of the individual. Recovery is "voluntarily maintained", and if this cannot be achieved then it is not the puissance of this machine, which is this definition of recovery, to register necessary changes to a first body (in this case, an entity within the context of the person) because of an encounter with a second (in this case, an unprescribed drug). In this model, an unprescribed drug is "stuck", attached to some other entity within a person, and unable to be loosened in order for this entity, a person defined in this particular way, to continue on with the required tightenings and loosenings required for them to be defined as a "healthy person".

This entity does not give any details as to what assemblage the drug may be "stuck" to. There is no place for describing how the drug may be forming a "self-medication" assemblage consisting of, say, trauma-drug taking-relief, or a "social" assemblage or any other possible context it may be consumed in. This entity cannot register any changes in the puissance of the substances unless they are altered by the sacrament of prescription. It also has nothing to say about the other entities which have the power to alter a drug into a medication. It gives them the power to do so but says nothing about the milieu in which both the doctor and the patient are a part.

Likewise, this entity cannot register encounters with extrinsic, disciplinary spaces. As recovery is only voluntarily maintained, intrinsic motivation is required for this entity to "work" and must therefore contain a high degree of fastening to certain assemblages with the person. While other entities can

register these encounters, recovery can only register the changes that are made to voluntary maintenance, which occur through the encounters with these other entities.

For example, a person is “in recovery” based on this definition. They experience a car accident and are left in chronic pain. This registers traces in the essence of “personal health”, but not in “sobriety”; however, the experience of the chronic pain contracts relations with the “voluntarily maintained” entity that makes up recovery. What is the person going to do with this experience? They decide they would like some relief, which produces the relief entity, which actualises the motivation to seek pain-relieving drugs and form an assemblage of person-drug. However, the person decides they would like the recovery machine to stay functioning, so they form a temporary assemblage with a doctor that is capable of consecrating the pain-relieving drugs so that they can escape the registration of “recovery”. Now the person can form this assemblage in such a way that recovery cannot register changes to sobriety because of the assemblage.

Although from the perspective of recovery everything is “working” fine, with sobriety, personal health, and citizenship still being fastened to the degree required for the entity to be what it is, sobriety’s implied sticking has increased. There are now entities that can interact with it (such as chronic pain) that are capable of making it stuck, that were not present previously.

Now, say that after some time, the doctor no longer wants to continue performing the sacrament of prescription, but the chronic pain still persists. Personal health registers change, but sobriety doesn’t. The doctor’s reasons for ceasing to prescribe the medication are not known, and from the perspective of recovery, are “invisible”, as it cannot register the changes. If there are systematic issues behind the doctor’s decision, it remains outside the definition of recovery.

But if the person buys psychoactive pain medication from a non-prescription source and consumes it, sobriety suddenly breaks down. It is no longer capable of working, and now the entity of recovery cannot perform the actions it needs to in order to “be” recovery. If, in response, concerned others lock the person in a room in order for them to “detox” from the pain medication, recovery cannot

register this action either, as it can only recognise voluntarily maintained ones. The only way for this action to be registered is for the extrinsic motivation to be "turned into" intrinsic motivation, whereupon it will retroactively "appear", and be deemed useful.

Describe each entities' individual actions and detail what a healthy and unhealthy action is according to their own internal logic.

As with "voluntary maintenance", "personal health" is also a system around which "sobriety" circulates. In order for personal health to be what it is, sobriety must repeat in such a way that this is possible. As with voluntary maintenance, in order for personal health to be registered by the recovery entity, the entities working inside of it must be capable of circulating, or repeating in ways that tighten and loosen as required, without getting "stuck". It is perfectly alright to be tired, if one has access to ways of not being tired as required. It is perfectly alright to be hungry or thirsty or lonely, if one is capable of loosening these conditions when necessary. Sobriety contributes to these implied loosenings, by increasing personal health's powers to contract with other entities in ways that increase the implied loosening.

Describe how entities can be increased or decreased in puissance from a "higher" perspective — the assemblage they operate within. The ones that operate within each other will be described from the perspective of the entity manipulating the one within it.

For example, someone in early recovery from alcohol is feeling lonely on a Saturday night. The entity of personal health has within it an entity of friendship which is stuck, and because it is stuck the entity of personal health is not able to be what it is. In the past, when this person has felt like this, they've gone to the pub and drunk alcohol, which has made them feel temporarily better, but they have typically gotten into fights and woken up in the morning lonelier than ever. Contracting the

entity of alcohol and the assemblage of the pub did not allow them to contract relationships with loneliness in a way that significantly altered its powers, and therefore did not allow the entity of personal health to "be" in the way that recovery demanded. If they employ the entity of sobriety, however, they now have other possibilities. There is no guarantee that powers will be altered such that loneliness is loosened, but it's possible. If sobriety continues to circulate, powers will be altered as various entities are encountered and contracted, and other tightenings and loosenings will be possible.

Throughout all of this, the entities of voluntary maintenance and personal health remain utterly unique and separate, and therefore so do the entities within them. The sobriety within voluntary maintenance and the sobriety within personal health are different. They are utterly and fundamentally different, with different forces acting on them, and coming into unique contractions with other forces.

When evaluating what is important, it is always from the perspective of the third entity, the environment in which it is held, so that both the internal entity, as well as concepts such as "important" or "useful" can be evaluated according to a consistent standard of sense. If one watches a bird dive in a river to catch a fish, they don't experience the bird becoming wet, they just contract bird and fish, remaining constant throughout, according to their perception. The experience of the bird takes place within the entity of the bird.

In the same way, the entity of voluntary maintenance never experiences any changes in the entity of "sobriety", it just moves around the circulation, but always remains the same. It can contract with other entities and be affected by them, but it is always experienced as the same sobriety from the perspective of voluntary maintenance. So, in evaluating what helps voluntary maintenance pump sobriety, sobriety never changes. In evaluating what helps sobriety pump, voluntary maintenance changes constantly. Sobriety is described by voluntary maintenance from the perspective of voluntary maintenance.

At the same time, the sobriety within personal health is described from the perspective of personal health, and they are not the same. This understandable conflation of two separate entities under the single term leads to such concepts as the "dry drunk"—the person who has an entity of voluntary maintenance operating as is necessary; however, entities within personal health remain stuck, leading to a person who no longer ingests alcohol and gets physically drunk, yet retains many of the same effects and mannerisms as previously. One sobriety is flowing, the other is not. By conflating the two separate entities, the only way to describe the result is with a contradictory phrase.

It is this confusion of two separate terms that introduces an uncertainty that means we can get this wrong. By applying another entity's internal sense to a different entity, we can unwittingly interfere with the pumping action of that entity. For example, by treating sobriety as a pump on the same level as voluntary maintenance, we might see a strong craving to drink as a "failure" as it should be "voluntary" and perhaps if we needed a "pump" such as medication or a chaperone, it is seen as a betrayal of the voluntary part, and therefore we feel as if it has been stuck. But that is applying voluntary maintenance's sense to sobriety, as within the internal sense of sobriety, the source of the motivation is not important, only that the neurotransmitters remain in a particular state.

Likewise, if we confuse the two sobrieties, we may see a stuckness in one as a stuckness in the other. The abstinence violation effect (Marlatt & Gordon, 1985, p. 37) is an example of this, where someone has a small lapse with no large consequences, and therefore the voluntary maintenance machine breaks down, and they decide they've completely ruined everything and might as well completely relapse. In this case, they've decided the personal health machine has also broken down as sobriety is no longer working there; however, it is a different sobriety and it is circulating just fine.

Having traced all of this, we can conceptualise this definition of "recovery" as an assemblage containing two simultaneous flows of voluntary maintenance and personal health, with each of these assemblages containing their own, unique, flows of sobriety. In order for recovery to "work" as it should, all of these flows need to be operating effectively.

This allows for an understanding of what are appropriate interventions for sobriety, voluntary maintenance, and personal health. We are doing these things because "recovery" wishes them to be so according to its own internal sense, but this does not supersede the internal sense of the entities which make it up.

So, a flow of voluntary maintenance sobriety and a flow of personal health sobriety will need to be supported, with individual attention paid to each. There are innumerable ways in which this can be done, and the methodology of how it is achieved is likely not too important, as shown by large multi-modal studies such as Project MATCH, which found no appreciable difference in outcomes between the different interventions studied overall (Project Match Research Group, 1997).

At the same time, the "pumps" of voluntary maintenance and personal health also need to be maintained. So voluntary maintenance, for example, might be easier in a nice house, or going to a nice job. These experiences form pumps, which, if experiences in life (themselves their own entities) are experienced as awful, may make it too difficult to flow. If we wish to maximise the power of entities, we want to contract interactions with them to support them to pump better. So, for voluntary maintenance we want ("want" here is assuming that the person has decided they wish to achieve recovery according to this paradigm) to increase the power of that voluntary nature and its ability to continue, as things that build motivation are useful. We also want sobriety to flow better, so things that help it not to get "stuck" are useful. Passing a bottle store may make it harder to pump sobriety, so taking another route to work is useful.

Simultaneously, voluntary maintenance and personal health are also flows as well as pumps, which are affected by what occurs in recovery. For example, if someone is discouraged from engaging in "recovery" at all, this can affect the flow of voluntary maintenance, and so on. This is why David Best, who writes from the perspective of the recovery paradigm, describes group engagement as so important (Best et al., 2011), as it constantly reinforces (pumps) voluntary maintenance, by getting

people involved with other entities outside themselves, and personal health, by engaging in social activities which are physically and emotionally healthy.

So, not only are the pumps and flows of the various entities identified, but also how they encounter each other and make sure their internal senses remain separate, in order that their individual points of view can be respected.

Outcomes of this case study

This has been a brief application of this methodology for applying a Deleuzian ontology, as an initial exploration of what might be possible by re-examining addictions in this way. As a result of this case study, there have been a few unique insights provided.

The first is that even though the three components that this definition declares make up recovery are listed sequentially, one of these components is not operating on the same level as the other two, but rather operates inside them. This is not immediately obvious from the text, but has important ramifications for anyone looking to use this definition as the theoretical basis for further work, whether this be practical or scientific.

The second is that there are two different, unique sobrieties, each operating within their own respective entities, and containing their own unique perspectives. If this is not acknowledged and accounted for in subsequent analysis of outcomes, there will be a significant confounding factor within the data that is unaccounted for. Since this has occurred within a fairly limited case study of a single definition, it may be that conflation of multiple entities under the same label is a widespread issue throughout addiction studies, and may be a part of the reason for multiple, contradictory theories. This will need to be investigated further.

Chapter 6—Discussion, limitations, and conclusion

Discussion

The following chapter will reflect on and evaluate the significance of this research in the discipline of the addiction field. This study makes it possible to rethink addiction in the following way: that addiction is a process rather than a thing. Previous studies have approached addiction as a thing and have therefore only been able to capture a single stage of the process rather than the whole cycle. Definitions therefore fail, or more accurately, cycle in and out of accuracy as the process moves through various phases.

Addiction

Addiction is a process, rather than a thing. Addiction is the description of the process by which two things relate to each other within an environment with a high level of attachment, but a low ability to detach (de-attach) from each other.

Previous studies failed to definitively locate where addiction "is", because rather than identifying the location of a thing, they have only been able to identify one part of a process in action. Addiction moves between layers, and from environment to environment, with each process of addiction making possible the existence of the process in other environments. The neurological effects of meth in the brain are what makes possible and are made possible by the physical effects on the body, which is what makes possible and is also made possible by the social effects in a person's life, which, finally, is what makes possible and is made possible by the state of society in which this process takes place. The various theories surveyed in Chapter 1 have captured what this looks like briefly in one area, but the entire process has remained undetected, because they have only looked for a single static thing rather than documenting the unfolding of a process which moves throughout objects and environments as it changes them. None of these environments are more or less

important than the others in participating in the process of addiction, and so all need to be taken into account equally.

This places limitations on what a definition is capable of achieving with regards to addiction. A definition tries to describe something as it *is*, regardless of environment. Since addiction is a process that involves two things in a larger setting, it may look different in one environment compared to another. The process of addiction will modify things within or adjacent to that environment, which may make possible the process of addiction to take place in another environment, but this process will not look identical to the other one. It will have unique features that require unique conditions in order to be what they are.

Definitions also fail because addiction can appear to be other things depending on how it is viewed at a certain point in the process. If a snapshot of the brain is taken when the process is occurring, there it can look similar to a disease; if a snapshot of society is taken when a drug is spreading in influence, it can look like a contagion; and if a snapshot of the person's life is taken, it can look like a mental illness. All of these perspectives remove the temporality of the situation and seek to equivocate what is occurring to something else that appears similar in that moment. This is then said to be what addiction *is*, with subsequent treatments developed as a consequence of this perspective. Further measurements and feedback from the effectiveness of the treatments developed from this perspective find that as addiction moves through this stage of the process, such treatments can be very effective, but as the addiction moves away, their effectiveness is reduced, or subjects display behaviour for which the theories or interventions cannot account.

For the addiction specialist who is seeking to support someone to overcome or lessen the effects of their addiction, this means that interventions can target either things that work to attach things together tighter, or they work to increase potential loosening of attachments. Both of these are necessary aspects for addiction to be a strong process within an environment. Additionally, the processes of addiction are part of a larger process that requires things to be a certain way in order to

continue to function. This means that any methods of interrupting a particular addiction process need to take into account the entire process that is occurring in order to make sure that addiction isn't going to be able to simply reroute around the newly interrupted smaller process. To think like this and take into account the entire larger process of addiction is only possible once the search for a particular location of addiction is abandoned, and the entire process is allowed to unfold.

Deleuze

This thesis contributes to the discipline of Philosophy by using Deleuze differently in the following ways: it retains each entity's individual concept of sense, and it also allows entities to retain their ontological equivalency yet recognises their contingently obligatory hierarchies.

Sense is created by the environment (or milieu, as Deleuze refers to it) in which contractions take place. This means that every part of the addiction process has its own sense which is ontologically equivalent to the other parts, but is also utterly unique to them. This enables multiple, mutually contradictory theories to exist alongside each other without actual contradiction, because these individual notions of sense which understand the ways in which these things are contradictory is the sense provided by one environment's point of view. In previous studies that have looked at addiction through a Deleuzian lens, a particular point of view has been elevated above all the others, such as Duff (2014) elevating the contexts in which drugs are taken to being the transcendent sense to which all other environments of the addiction process through which addiction must be interpreted. This sense then becomes a relation that is internal to the terms that make up these other environments, thereby violating the externality thesis.

By allowing each environment to retain its own individual sense, the entities within it are able to retain their own unique powers, regardless of what the entities of the same name are doing in other environments. This allows them all to have the same ontological importance where addiction is just another process that is capable of modifying entities, not *good* or *bad* outside of anything other than

a particular entities' perspective. Addiction is a unique process that can occur to an entity that uniquely modifies the powers of that entity, which in turn modifies what it can do to other entities. Whether this is seen as positive or negative entirely depends on the perspective of the entities that have their powers modified.

This allows the creation of a methodology that traces how the various assemblages move within each other that make up the assemblage we are interrogating, and how they relate from the perspective of the addiction process and the other process within which they occur, but not having to appeal to an introduced externality. In thinking through how the process occurs and how it affects the entities that make it up and how they, in turn, affect other entities, we are not engaging in thinking that presupposes itself by appealing to a transcendent externality.

This results in an application of Deleuze that is capable of explaining everything we see in the various theories of addiction, not only the various theories but also why they exist, why there is evidence to support them, and why none of them provide the whole picture. I have argued that they all try and pin down what addiction *is*, whereas Deleuzian ontology would say that addiction is a temporal process that occurs between two bodies within a third in such a way that it will threaten the ongoing existence of the third if it is not acted on by an outside force. This definition of addiction does not rely on internal terms, nor transcendent externalities applied to an entity, but on addiction being a process that can occur to entities, the same as any other process, such as burning, freezing, aging, and so on. Addiction is doing something, in the same way that burning, freezing, jumping, and welding are all doing something. Addiction is also doing something unique, as a unique machine in itself, increasing or decreasing puissance that leads to unique possibilities that would not have been possible had addiction not been present. Application of a Deleuzian ontology allows us to come up with new language, tools, and possibilities surrounding psychoactive substances that were not possible before.

This thesis also treats assemblages in a new way, in that it both respects the ontological equivalency of entities, yet recognises the contingently obligatory hierarchies in which it is necessary for some entities to operate inside others. This is only an acknowledgement of the physical realities of space, and not relative importance, as that would be a transcendent externality.

This enables significant new possibilities both in re-examining existing texts and data, and in generating new data. By approaching addiction from the perspective of the entities that are part of assemblages, it gives the ability to establish various baselines, and de-conflict entities that are actually different things, operating within different assemblages. For example, in the case study in the previous chapter, if someone wished to generate data tracking "sobriety" based on the definition of recovery, there would be two different sobrieties they'd be tracking, with an unknown confounding factor in there. This would affect the outcome of the study, but would not be perceptible. This present approach gives us the ability to perceive that difference and account for it.

Limitations

The case study has explored a fairly limited application of the previously described ontological model and the methodology of its application. It has restricted itself to a textual critique of a single definition of a concept in a model, and only focused on how the component concepts making up the main concepts are organised within each other.

This ontological model and methodology for applying it will be expanded to be applied to many more aspects of addiction, in order to ascertain new insights into how various assemblages that make up the addiction assemblage interact with each other. In the case study described, it was discovered that the frames of reference of each entity were not identical, that these understandings were assumed, and this led to a sense that was produced that assumed itself, and contradictions in how concepts such as "sobriety" were understood.

It is then plausible to imagine that this same mixing of frames of reference occurs all throughout what is said, assumed, agitated for, fundraised, and practiced in the addiction field. This will be investigated and explored in a later work that will take a much wider view of the entire field and the environment it exists within. These environments, which have so far been unexamined, provide their own inherent points of view which create their own unexamined sense.

This work has also left unexplored the very idea of a "model" as the site of production of an understanding of what addiction is. The model is a framework by which we designate various states of entities in relation to what is called addiction, but this in itself is the product of various entities that have converged in a certain way to produce this outcome. We treat people who are struggling with smoking cannabis very differently to those who are struggling to cook a certain type of meal, because both of these situations respond to different "types" of transcendent points of view.

The unexamined reliance on "models" of addiction points to the centrality of Western ideas of logic and concepts contained within this work. There are Western concepts of corporeality that are assumed and unexamined and anything that crosses the threshold of "the body" becomes subject to certain discourses; for example, "self-harm" is treated differently to other forms of relief. Western concepts of morality and transcendent judgement are intertwined with the models and critiques that have been offered, and yet "nothing is naturally located anywhere or doing anything" (Kleinherenbrink, 2019, p. 95), and so all of these discourses are up for debate. There are also many Indigenous ideas and concepts both of addiction and the entities that make up the assemblage, along with the concept of indigeneity itself.

To engage in a full case study of all of these assemblages and how they interact with each other is beyond the scope of this work, but would trace all the ways in which entities are one and multiple at the same time. To be "clientele" is one thing, but to be "clientele" within the health system is another thing entirely, and is a different entity with different powers of contraction with various other assemblages. To be "clientele" within the legal system is yet another entity with different

powers of contraction and so on and so forth. When sense assumes itself, it tries to conflate all these different entities, but they remain different, and it is within this difference that contradictions and "non-sense" can arise.

As well as the "older" entities within which the entities that the case study described sit within, also unexamined are the "younger" entities that exist within entities such as definitions. Methods, reports, conversations, acts, architecture, programmes, attitudes, and practices all exist within definitions and are shaped by the music they provide. These "younger" entities circulate within their definitions in the same way as "sobriety" circulates within "voluntary maintenance" and are similarly shaped by their older entities and affect them by how their own desires leave traces upon the system within which they circulate.

All of the assemblages that make up the assemblage within which they circulate will be traced and followed, tracking their contractions, subjunctions, and productions as they interact with each other, bringing new understanding to what it is that is occurring. This does not only need to happen through writing, but also through interviews, art, music, historical examinations of what has occurred, and so on.

The media, through which these interactions take place, have also remained unexamined. The recent move of institutions to using information technology to store the data on clients who engage in "treatment" has implications for how addiction's virtual nature may gain or lose puissances. The existence of a form of storage of data provides a body without organs on which are registered traces of data which contain the details of how various entities have encountered each other. This existence of data is treated as neutral, and yet it is also a product of "older" entities also.

The way the models structure the journey of people encountering addiction also contain certain assumptions, such as "outcomes" being final, and idealised states of relationship to substances. These idealised outcomes assume firstly what an ideal state is, based on unexamined entities within which the model is located, and secondly that this state is essentially unchanging. Rather, the

interactions that led to a changed puissance in the “drug” assemblage are also a site of production of new assemblages with their own puissances. A capitalist viewpoint of outcomes leads us to transcendently identify some entities as “production” and some as “waste”, yet in a Deleuzian ontology everything is ontologically equivalent. In nature, there is no such thing as food and waste, only different points of view of what substances are (for example, what is waste to an animal may be food to fungi). This could also be traced through the methodology described in the previous chapter.

There are also a variety of other concepts that can be used to interrogate this data: Deleuzian concepts such as smooth and striated space, more about the body without organs, and rhizomes. There are other concepts, such as infinitely circulating debt, which will be used to further explore concepts such as circulation. These will all be used as structures for fleshing out the methodology further for investigating Deleuzian ontology.

Conclusion

There appears to be promise in exploring and developing this perspective on addiction, and Deleuze’s ideas that he saw as contributing towards the “great health”. When Deleuze exhorted us “To succeed in getting drunk, but on pure water” (Deleuze, 1987, p. 286), he was asking us to imagine a world where people might be able to fasten almost infinitely to anything else, yet remain almost infinitely able to loosen at a moment’s notice and fasten to something else. This is the great health, the ability to do and be almost anything, yet never be stuck to anything so that one can’t be anything else.

To fully embrace these ideas requires us to evaluate each entity from its own perspective, to resist the urge to impose transcendent outsides on entities, and let them have their own say. This requires trust and optimism that the benefit of this process will be worth the temporary sense of destabilisation.

Deleuze is primarily a writer of freedom, the freedom to go anywhere, do anything, and connect and disconnect to whatever one will. How *might* we live is the challenge, and Deleuze's ontology is the ground by which one can take that leap. By refusing to fall back on an *a priori* externality and going with each entity's perspective, we may yet be able to learn far more about addiction and what it may be able to do, and how we might fasten and loosen to it in response.

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