THE UNIVERSITY of EDINBURGH

ABILITIES, FREEDOM, AND INPUTS: A TIME TRAVELLER'S TALE

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Lay Summary and Abstract

The philosophy of time travel is a sub-field of metaphysics – the study of what there *is* and what things are *like* – that considers questions about the possibility of time travel and what a world in which time travel is possible looks like. These questions range from whether time travel is actually possible, to how time travellers can act in the past or future. This thesis delves into a particularly interesting, yet historically undertreated theme: the *abilities* of time travellers and relatedly their *freedom* as well.

The abilities and freedom of time travellers has been the source of a lot of recent discussion with some polarising views. The minority (which includes Lewis (1976), but also Ted Sider (2002)) argue for the affirmative – that time travellers are free and have the same (or perhaps more) abilities as non-time travellers. The majority (which includes Kadri Vihvelin (1996), Michael Rea (2005), Stephanie Rennick (2015), Alison Fernandes (2020), amongst others) argue for the negative, that time travellers do not have *exactly the same* freedoms and abilities as non-time travellers.

I think that it is a mistake to be so pessimistic about the abilities and freedom of time travellers. I treat concerns about the freedom of time travellers and concerns about the abilities of time travellers as two sides of the same coin. Therefore, in what follows, I argue for two related conclusions. First, I argue that time travellers have all sorts of abilities. Second, I argue that time travellers are just as free as non-time travellers. In arguing for these conclusions, I first produce a novel analysis of ability which reveals important details about how abilities track inputs rather than outputs. Second, I use this new analysis of ability to present a new compatibilist account of free will.

If I am right in arguing positively for the abilities and freedoms of time travellers, then this has large implications for both the current time travel discourse and the general debate surrounding freedom. Significantly, I am arguing against some prominent views about time travel and in suggesting that these views are mistaken, I am presenting new ideas about ability and freedom: specifically, that time travellers have the ability and are free to do *impossible things*.

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Introduction

> "The truth is, time travel is hard, and people are lazy."
> *Margaret Peterson Haddix,* "Redeemed"

Ask anyone to name a famous time traveller and they will answer almost immediately. Marty McFly, Harry Potter, Hermione Granger, Terminator, Bill and Ted, Sam Beckett, The Doctor, Hiro Nakamura, The Time Traveller… I could go on. We are able to identify time travellers in films, books, television shows, comics, and we can talk about time travellers moving through space, reacting, interacting and having conversations. In many ways, philosophers treat time travellers the same as other agents; agents who *can* do all of these things: physically interact with people, have conversations and react to the environment. However, in other ways, philosophers treat time travellers differently to non-time travelling agents. This is especially obvious when it comes to two relating themes: ability and freedom. I think that the discrepancy between the ways philosophers treat different aspects of time travel is strange, and will form the basis of this thesis.

Interestingly, the way that time travellers are portrayed in the media and the way that we talk about time travellers seems to presuppose some sort of ability and freedom. This is because time travellers are often portrayed as agents that travel to the past, run around, reacting and interacting to stimuli; essentially doing whatever they like.[1] For example, in "Harry Potter and the Prisoner of Azkaban" (Rowling, 2014), Harry and Hermione travel back to the recent past in order to save Sirius and Buckbeak. At no point during their visit to the past do they make any *changes* and yet at no point are they portrayed as if they are not free or as if they are unable to act how they wish. Neither Harry nor Hermione question whether they should perform an action or not on the basis that they are time travellers. This trend tracks throughout most stories involving time travellers: it seems that in order to create an interesting time travel story, time travellers are portrayed like ordinary agents with ordinary abilities and freedoms who can interact and act in the past (see for example: Back To The Future (1985), Avengers: Endgame (2019), The Terminator franchise (1984, 1991) to name a few others).[2]

The problem then is not that time travellers are portrayed without freedom in the media, but rather that philosophers struggle to reconcile the abilities and freedom of time travellers with other philosophical commitments.

Historically, philosophers of time travel have been concerned with whether time travel is possible. Specifically, whether time travel is *logically* possible. Famously, David Lewis's 1976 paper 'The

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[1] I also think that time travellers who are not portrayed as 'free' in television or film would not be seen as that *interesting* (especially give the media they are being portrayed in). Time travel is often used, in the media, make a story more exciting, to right some wrongs, to go back and change the past.

[2] Indeed, there are discussions in some films and shows about how a time traveller's actions in the past may affect the future (or what the ramifications for changing the past might be), but overall, these time travellers are still portrayed as if they are able to change the past or are *free* to do so. In other words, no one is saying that they will not be able to change the past, the discussions tend to be more about whether they *should*.

Paradoxes of Time Travel' aimed to dispel common counterarguments to this logical possibility.[3] More recently however, the concern is not whether time travel is logically possible (this much most philosophers can agree on), but more what this logical possibility means for other metaphysical issues. These concerns range from concerns about backwards causation to questions about the personal identity of time travellers.[4]

This thesis focuses on two historically undertreated but related concerns: the (1) abilities and (2) freedom of time travellers. Although historically untreated, there has been a recent surge in literature surrounding the abilities and freedom of time travellers, with some polarised views. The minority (which includes Lewis (1976), but also Ted Sider (2002)) argue for the affirmative – that time travellers are free and have the same (or perhaps more) abilities as non-time travellers. The majority (which includes Kadri Vihvelin (1996), Michael Rea (2005), Stephanie Rennick (2015), Alison Fernandes (2020), amongst others) argue for the negative, that time travellers do not have *exactly the same* freedoms and abilities as non-time travellers. Notice, that there are differing takes here. Some, like Vihvelin and Rennick argue that time travellers do not have the ability to do *certain* things, but they have many other abilities. Others, like Rea, believe that not only does the possibility of time travel negate the freedom of the time traveller themselves but also everyone who exists before the time traveller's journey to the past.[5]

I think that it is a mistake to be so pessimistic about the abilities and freedom of time travellers - especially given how the media treats them. I treat concerns about the abilities of time travellers and concerns about the freedom of time travellers as two sides of the same coin. Therefore, in what follows, I argue for two related conclusions. First, I argue that time travellers have all sorts of abilities. Second, I argue that time travellers are just as free as non-time travellers. In arguing for these conclusions, I begin by producing a novel analysis of ability which reveals important details about how abilities track inputs rather than outputs. Then, I use this new analysis of ability to present a new compatibilist account of free will.

If I am right in arguing positively for the abilities and freedoms of time travellers, then this has large implications for both the current time travel discourse and the general debate surrounding freedom. Significantly, I am arguing against some prominent views about time travel and in suggesting that these views are mistaken, I am presenting new ideas about ability and freedom: specifically, that time travellers have the ability and are free to do *impossible things*.

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[3] Although David Lewis brought the philosophy of time travel to the forefront of metaphysical discussion, others were coming to similar conclusions before the 'Paradoxes of Time Travel' was published. For example, Jonathan Harrison (1971), Larry Dwyer (1973), and Paul Horwich (1975).

[4] To name a small subset: Douglas Ehring (1987) discusses time travel and personal identity, Bradley Monton (1950) and Richard Hanley (2004) focus on causal loops and finally Richard Swinburne (2014) is concerned with the relationship between backwards causation and time travel. For an overview, see Nicholas Smith (2021).

[5] To be clear, Rea's view is one of the more extreme takes, most on the 'negative' side take a more conservative view and suggest that there are certain things that time traveller cannot do or are not free to do.

The main structure of this thesis is as follows:

In chapter one, I begin by introducing some general assumptions I make throughout this thesis and outline the Lewisian definition of time travel. Then, I introduce what I identify as the two main reasons for the pessimism surrounding the abilities and freedom of time travellers. In doing so, I split these reasons into two strands. First is the 'external' strand because these reasons are *external* to the time travel literature. I show that the mainstream free will debate has largely neglected the abilities and freedom of time travellers. I also show, with reference to time travel, that because I am cultivating a compatibilist account of freedom, I have to contend with traditional compatibilist troubles. Second is the 'internal' strand of reasons because these are *internal* to the time travel literature. I note that existing literature surrounding the abilities and freedom of time travellers is rather negative with the majority arguing that time travellers lack exactly the same abilities and freedom as non-time travellers. I propose an alternative way to look at these two things and in doing so offer some reasons to be optimistic.

In chapters two and three, I introduce and defend my new analysis of ability. Chapter two gives a taxonomy of the literature surrounding abilities and paves the way for my 'Input Analysis' (IA) of ability. Having outlined IA, in chapter three I defend the view from three potential objections.

In chapter four, I outline my compatibilist account of freedom. My account combines my Input Analysis (IA) with the ability to do otherwise requirement for freedom to form the Input Account of Freedom (IAF). In chapter five, I discuss some issues with IAF and critically compare IAF to some other more recent compatibilist accounts, before moving on to how what I have established in previous chapters combats the reasons for the pessimism outlined in chapter one.

I conclude this thesis by arguing positively for the abilities and freedoms of time travellers. I do this by drawing a connection between inputs and abilities and I show that we can still maintain much of what is intuitive about abilities and freedom even when considering time travellers. I show that we can be more optimistic about the abilities and freedom of time travellers by looking to novel ways to understand these two concepts.

Chapter 1: The Pessimism Surrounding Abilities and Freedom for Time Travellers

"Choose to be optimistic, it feels better"
Dalai Lama XIV

In this first chapter, I introduce the pessimism surrounding ability and freedom for time travellers. The pessimism has two strands: (i) the external strand highlights traditional compatibilist troubles which any compatibilist account must contend with and (ii) the internal strand shows that philosophers who do speak about the abilities and freedom of time travellers tend to argue for the negative: time travellers do not have the same abilities and freedom as non-time travellers.

I begin section one by outlining some initial assumptions. Given that this thesis is about the abilities and freedom of time travellers, I first introduce the possibility of time travel and some associated assumptions I make throughout (§1.1.1). Then, I introduce some definitions of freedom, compatibilism and determinism (§1.1.2).

In section two, I introduce two strands of reasons for the pessimism surrounding abilities and freedom for time travellers (external strand and internal strand). First, I suggest that existing theories of ability and freedom fall short at accounting for the abilities and freedom of time travellers, and additionally that existing problems associated with classical compatibilism have to be accounted for if I am to produce a new account (§1.2.1). Second, I look at how philosophers of time travel talk about the freedom of time travellers (§1.2.2). The abilities and freedom of time travellers is something that philosophers have taken genuine interest in. Kadri Vihvelin (1996), Nicholas J.J Smith (1997, 2005, 2015, 2017), Ted Sider (1997, 2002), Ira Kiourti (2008), Michael Rea (2015), Stephanie Rennick (2015), Neal Tognazzini (2016) Brian Garrett (2016), Ryan Wasserman (2020), Alison Fernandes (2020) (and more) all discuss these ideas. In particular, I suggest that the vast majority argue that time travellers are not free or do not have *exactly* the same abilities as non-time travellers.

The overall aim of this chapter is to introduce some main assumptions operating throughout my thesis and to introduce, what I identify as, the two main reasons for the general pessimism associated with abilities and freedom to time travellers. This chapter paves the way for providing novel accounts of ability and freedom that account for these two concepts in the face of time travel.

1.1 Freedom and Time Travel: Some Assumptions

1.1.1 Lewis's definition and some implications

I assume the Lewisian account of time travel. Lewis's account is one of the more frequently discussed accounts of time travel and therefore making this assumption is in line with the assumptions in the literature.[6]

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[6] Although Lewis' account is by far the most talked about, it is not the only account. Another definition comes from Chris Smeenk and Christian Wüthrich (2011) who define time travel in terms of the existence of closed timelike curves (CTCs):

According to Lewis, time travel is a 'discrepancy between time and time' (Lewis, 1976 p145). Lewis distinguishes between 'personal' and 'external' time. Personal time is the time on a time traveller's watch or phone (or physical ageing, digestion etc.) and external time is time external to the time traveller (British Summer Time (BST) for example). Therefore, in identifying the occurrence of time travel, we would look to see if there is a discrepancy between these two types of time. For example, if I were to travel back to 1922, I may have travelled 100 years in external time, but only 20 minutes in personal time (imagine that my wristwatch indicates that 20 minutes has passed). The difference in the periods of time (20 minutes vs. 100 years) is enough to show, according to Lewis, that the agent has time travelled.

In addition, when I talk about the possibility of time travel, I am talking about *logical* possibility. Furthermore, I take it to be true that time travel *is* logically possible. By accepting the logical possibility of time travel, I am agreeing with philosophers like Lewis 1976, Vihvelin 1996, Smith 1997 etc., who argue that time travel is not inherently contradictory. It is worth noting that philosophers on both sides of the 'are time travellers free' debate agree that time travel is logically possible. This much is common ground. Hence, I will not be debating whether or not time travel is logically possible, simply assuming the logically possibility of time travel is enough for my purposes.

I also assume the truth of eternalism.[78] Eternalism is a B-theory of time.[9] Under eternalism all times exist. The past does not go out of existence and the future does not come into existence.

> …In some universes the possible trajectory of an observer can loop back upon itself in time, to form what is called a closed timelike curve (CTC). In these universes time travel (p. 578) is possible, in the sense that an observer traversing such a curve would return to exactly the same point in spacetime at the "end" of all her exploring. (Smeenk & Wüthrich, 2011)

Additionally, Jack Meiland (1974) presents a 2-dimensional model of time travel, David Malament (1984) also has a CTC definition and finally David Deutsch (1997) offered a multi-location definition.

[7] Although I assume eternalism, there is large amount of literature that attempts to reconcile time travel with other theories of time. For more information on this topic see: Smith (1997), Grey (1999), Keller & Nelson (2001), Miller (2005), Monton (2003), Simon (2005), Sider (2005), Hales (2010), Daniels (2012), Hall (2014), Bernstein (2017) to name a few.

[8] Strictly speaking, I am assuming *static* eternalism rather than *dynamic* eternalism. Peter Kügler describes the difference as follows:

> In static eternalism, this goes along with the denial of temporal passage, but not all eternalists adopt this view. The combination of eternalism with passage yields dynamic eternalism (Kügler, 2020 p10280).

However, for ease I will just refer to static eternalism as eternalism throughout.

[9] J. M. E. McTaggart (1908) coined the terms 'B-series' and 'A-series' as umbrella terms for different types of theories of time. 'A-series' refers to theories like 'presentism' under which change exists and the present moves. 'B-series' on the other hand refers to theories under which change does not happen and events are ordered by 'earlier than' and 'later than' relations.

There are other 'events' that are in different temporal locations to the event I am experiencing right now – such as the coronation of Queen Elizabeth II – but this does not mean that these other events do not exist. There is no objective past, present or future under eternalism. Nonetheless we can still use these terms subjectively, relative to our current temporal location (and this is how I use them in this thesis). Sara Bernstein (2017) explains eternalism as follows:

> Eternalism holds that all time are equally real. There is no meaningful metaphysical distinction between the past, present and future; Abraham Lincoln is just as real as the iPhone 47. Whether or not one is located in the present is merely a matter of perspective, akin to whether or not one is located "here" in the spatial manifold (Bernstein, 2017 p81).[10]

Given that all times exists, it follows that, under eternalism, there is always a *place* for the time traveller to go to. Accordingly, the fall of the Berlin Wall did not go out of existence after 1989 just because it is now considered in 'the past'. Therefore, a time traveller can travel back to the fall of the Berlin Wall because this event exists under eternalism.[11]

Next, due to assuming the possibility of time travel, I also assume that backwards causation is possible. When we normally talk about causation, we talk about it going forward. By forwards causation, I am referring to a situation in which the cause is at t_0 and the effect happens later at t_1. For example, I press a light switch at t_0 (cause) and the light comes on at t_1 (effect). In many time travel scenarios, the causation happens in the other direction. That is, effects occur *earlier than* their causes. For example, consider a time traveller who presses a button on their time machine in 2021 and materialises in 1865. The cause is 'pressing the button on the time machine in 2021' and the effect is 'materialising in 1865'. The effect comes before the cause in external time.[12]

The final and perhaps the most significant assumption I make in light of the Lewisian depiction of time travel is that time travellers will not change the past.[13] Here, for ease I use the phrase 'time

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[10] The 'all time are equally real' line is slightly misleading as this is not a concept exclusive to eternalism. Indeed, there are non-eternalists who also think that 'all times are equally real'. For example, Quentin Smith (2002) argues in favour of 'degree presentism' which treats all times as equally real, but the present as ontologically privileged.

[11] A common argument against the compatibility of presentism and time travel is known as the 'no destination' or 'nowhere' argument. According to presentism, only the present exists (essentially the opposite of eternalism). Therefore, if a time traveller wanted to travel to the fall of the Berlin wall, it would seem that the time traveller would not have a destination to travel to, since the past does not exist anymore. How can someone *travel* somewhere that does not exist (Keller & Nelson, 2001 p334). Therefore, a theory of time that allows for travel to the 'past' or 'future' is a lot easier to pair with the possibility of time travel.

[12] There are those who find backwards causation puzzling, e.g. Tim Maudlin (2002) thinks that backwards causation cannot happen in our world because it goes against the very nature of perceptive causation.

[13] There are philosophers who have attempted to argue that time travellers can change the past. These philosophers tend to adopt what is called 'hypertime'. Essentially, they add another 'dimension' to time. Therefore, I shake the hand of Madonna in 1959 in 'hypertime A' but I do not shake the hand of Madonna in 1959 in 'hypertime B'. G. C. Goddu (2003, 2021), Peter van Inwagen (2010) and more recently Nikk Effingham (2021) argue that these situations involve changing the past. However, it is worth noting that all

travellers cannot change the past' to mean that a combination of the truth of eternalism and the logical possibility of time travel entails that time travellers will not change the past. Crucially, I am not (yet) commenting on what a time traveller *can do* in terms of their abilities and their freedom. Like Lewis (1976 p149), I take these two facts to be separate.

Under eternalism events only occur once and in one way. Therefore, the time traveller cannot change the past. I am unable to travel to a time just before the fall of the Berlin Wall and prevent the Wall from falling. This is because, under eternalism, events at a moment in time do not change. The way an event *is* will always be that way, and there is no way for the time traveller to alter that. To support this, Lewis says that events cannot change because events are not made up of temporal parts:

> If change is qualitative difference between temporal parts of something, then what doesn't have temporal parts can't change. For instance, numbers can't change; nor can the events of any moment in time, since they cannot be subdivided into dissimilar temporal parts (Lewis, 1976 p146).

Given this, just like a time traveller cannot change the fact that '2' is '2', neither can a time traveller go back in time and make an event A, $\sim A$. Under eternalism, if a time traveller does make a journey into the past, this journey has always occurred and will always occur. The time traveller does not change anything in virtue of travelling in time - their journey has always happened.

To further elucidate this, suppose I travelled back to 1908 and shook hands with someone. I am affecting the past by interacting with it, but I am not changing it. This is because it was true in 1908 that I shook hands with someone, and it is true now that I shook hands with someone in 1908. Time travellers do not *change* anything, their actions and the journey itself has always been the case. Much like the fall of the Berlin wall cannot be changed, neither can my journey to 1908 to shake hands with someone.

To support this, Lewis asks us to imagine a time traveller called Tim who wishes to go back in time to 1921 and kill his grandfather:[14]

> Tim cannot kill grandfather. Grandfather lived, so to kill him would be to change the past. But the events of a past moment are not sub-divisible into temporal parts and therefore cannot change. Either the events of 1921 timelessly do include Tim's killing of Grandfather, or else they timelessly don't (Lewis, 1976 p150).

I will be returning to time travellers attempting to kill their grandfathers throughout the thesis as the example is pertinent to my arguments surrounding the abilities of time travellers. In sum, the main assumptions I make throughout this thesis concern the Lewisian account of time travel.

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of these philosophers are also adopting a different view of time which is *not* eternalism. Thus, even though philosophers have argued that time travellers can change the past, this is not in keeping within the parameters of eternalism.

[14] Tim will become very familiar throughout the rest of this thesis.

Crucially, I assume that in order to maintain the logical possibility of time travel, time travellers are unable to change the past.

1.1.2 Freedom, determinism, incompatibilism and compatibilism

Having set out the relevant assumptions surrounding time travel, I now turn to defining important terms about freedom and determinism as well as providing some motivation for compatibilism over incompatibilism.

First, I begin with a traditional requirement for freedom – freedom as an *ability*. Ability conceptions of freedom are popular.[15] One particular ability conception forms much of the traditional debate surrounding freedom: the ability to do otherwise:

> **Ability to do otherwise (ABO)** an agent *S* is free to *A* only if *S* could have done *B*, *C*, *D*(…) instead.

Accordingly, I am free to make a coffee only if I could have had tea, orange juice, or lemonade instead. Simon Kittle (2015) describes ABO as follows:

> Traditionally, free will has been defined as the ability to do otherwise. If a person acts, that person had free will only if they could have done otherwise; only if they had the power to have acted differently. In other words, a person has free will on a particular occasion only if they are in a situation where there are at least two available options and the person is able to take either of them… free will is about having alternatives and being able to take those alternatives. When someone is able to realise any out of a range of alternatives, what the person does is up to them (Kittle, 2015 p9).

In this thesis, I take ABO to be required for an action or a willing to be free and throughout, I will use 'freedom' as short hand for 'free will' and 'free action'. However, as will become clear when outlining my account of freedom, it does not matter what specific ability requirement you adopt, my account can accommodate them.[16]

In addition, I adopt the following definition of determinism:

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[15] Christopher Franklin notes the influence of ABO in their rather aptly named paper 'Everyone thinks that an ability to do otherwise is necessary for free will and moral responsibility' (2014):

> Seemingly one of the most prominent issues that divide theorists about free will and moral responsibility concerns whether the ability to do otherwise is necessary for freedom and responsibility. What seems to be the most prominent argument for incompatibilism begins from the premise that the ability to do otherwise is necessary for freedom and responsibility and moves to the claim that determinism is incompatible with this ability and thus incompatible with freedom and responsibility (Franklin, 2014 p2091).

[16] In chapter four, I look at other ability requirements for freedom including Kadri Vihvelin's 'ability to choose on the basis of reasons' (2004, 2013) and Romy Jaster's 'ability to intend otherwise' (2020).

> **Causal Determinism** an event A is determined if and only if A is a result of (caused by) a combination of past facts and the laws of nature (Hoefer 2016).

My making coffee is determined iff this making coffee is caused by a combination of past facts and the laws of nature. Determinism is often (but not always) thought to be *incompatible* with the ability to do otherwise. According to causal determinism, actions are caused by past facts and laws of nature. Past facts and the laws of nature are both outside of our control – we cannot control the laws of nature, nor can we control what has already happened. Given that our actions are caused by elements outside our control, it follows that our actions themselves are outside of our control. Therefore, we are unable to do otherwise than what we actually do because what we actually do has been caused by things outside our control. Hence, ABO is incompatible with determinism. Those who argue that freedom and determinism are incompatible are known as *incompatibilists*.[17]

Compatibilists, on the other hand, argue that freedom and determinism are, for lack of a better term, compatible.[18]

Throughout this thesis, I take a compatibilist stance regarding freedom. This might be surprising, but I argue that a compatibilist solution works best because *just like* actions under determinism seem to be lacking in full-blooded alternatives, so too time travellers seem to be lacking in full-blooded alternatives. This is because, as we know from the Lewisian account of time travel, time travellers will not change the past and therefore they seem to be lacking complete ABO. I think that a compatibilist solution is best able to account for this and still retain a sense of ABO which entails that time travellers are free. To be clear, I do not take the time travel case and compatibilist accounts to be directly equivalent, just that the two are analogous for the reasons mentioned above. It seems like time travellers (like actions under determinism) are lacking in full-blooded alternatives (or ABO) given that there are things that they just will not do. Therefore, I develop an ABO friendly account of compatibilism.

In what follows, I label compatibilists who take ABO as necessary for freedom to be 'ABO-compatibilists'.

1.2 The Pessimism: Ability and Freedom for Time Travellers

In this section, I outline the reasons for pessimism surrounding abilities and freedom for time travellers. I identify two main types of reasons: external (to time travel) and internal (to time travel).

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[17] Some notable incompatibilists include: Peter van Inwagen (1983), Derk Pereboom (2001, 2003, 2005, 2009), Carl Ginet (1983) and Robert Kane (1989, 1996, 2008) to name a small sub-set.

[18] Some notable compatibilists include: David Hume (1975, 1978) and Thomas Hobbes (1997), the New Dispositionalist trio of Kadri Vihvelin (2004), Michael Fara (2005, 2008) and Michael Smith (2004), reasons-responsive compatibilists such as Susan Wolf (1981, 1990) and John Martin Fischer (2005) and hierarchical or mesh compatibilists such as Harry Frankfurt (1971), Gary Watson (2001, 2004) and Michael Bratman (1997, 2007).

Regarding the external strand, I consider two famous elements of the free will debate: Frankfurt's attack on PAP and the Consequence Argument. I show that any ABO-compatibilist account has to contend with both of these problems. I also show that, on the surface, one might see the possibility of time travel being incompatible with ABO. Regarding Frankfurt's attack on PAP, there has been a recent move to use the possibility of time travel to strengthen Frankfurt's original concerns and regarding the Consequence Argument, I show that this is a problem compatibilism *more generally*. Owing to me eventually cultivating an ABO-compatibilist account of freedom for time travellers, I must contend with both of these external reasons for pessimism.

On the other hand, the internal reasons for pessimism *are* time travel specific. In this sub-section, I discuss recent interest in the abilities and freedom of time travellers from those philosophers who specifically write on time travel and show that a large majority of these philosophers are relatively negative about these two concepts.

1.2.1 Ability, freedom and time travel: the external strand

Taking inspiration from Lewis (1976, p149), suppose that Tim is a time traveller who plans to travel back in time and kill his infant grandfather. He has all the requisite skills to carry out the deed, he has planned the attack meticulously and has been practicing at the shooting range for months. Tim also believes that he is free to kill his grandfather in the past. Tim, like me, subscribes to the 'ability to do otherwise' condition for freedom. Therefore, Tim believes that although he has the ability to kill his grandfather, he also has the ability to do otherwise, including refraining from killing his grandfather. This ability to do other than kill his grandfather is what Tim believes makes him free.

Tim puts his plan into action and eventually is standing in front of his infant grandfather having travelled back 70 years. Given Tim's planning and skill, Tim *should* be able to successfully kill his grandfather, however given the fact that Tim's grandfather lived to continue the causal chain that led to Tim's birth, Tim *should not* be able to kill his grandfather. It follows that it is impossible for Tim to both be alive to travel back in time and kill his grandfather and simultaneously not be alive to travel back in time and kill his infant grandfather.

Four brief points about this time travel story. First, the story I just told is a very simple way of illustrating two associated pessimisms with time travel – ability and freedom. I endeavour to provide reasons to be optimistic about both of these things throughout this thesis. For now, I am simply illustrating that time travellers, at least on the surface, do not seem to have the same abilities and freedom that non-time travellers do, just in virtue of the fact that there are things they *will not* do. Second, I think that these two pessimisms are related not just because they cropped up in the same story, but because abilities are such important requirements for freedom (at least according to the popular way I am understanding freedom). Third, the ability to do otherwise is just one way of talking about free will. I am using it for illustrative purposes because (i) it is the requirement for freedom that I adopt and (ii) it is an intuitive and popular requirement. It follows that if time travel is incompatible with the ability to do otherwise, then time travel is incompatible with a popular

and intuitive freedom condition.[19] Fourth, I have set myself a pretty hard task with an ability conception of freedom. This is because there are other ways of understanding freedom that are perhaps more compatible with time travel. For example, compatibilist accounts that do not adopt ABO may be easier to reconcile with time travel. This could include mesh accounts of compatibilism whereby a time traveller might have the requisite mesh to count as free or even reason-responsive accounts. However, given the prevalence and intuitiveness of ABO in the free will debate, I think that if I can maintain an account which adopts ABO *and* works for time travellers, then this is a big achievement.

Let us now look more at the story, relating the case of Tim to traditional arguments within the literature surrounding compatibilism and incompatibilism. Given that I eventually adopt an ABO-compatibilist framework with regards to the freedom of time travellers, I show that I must contend with two traditional problems for compatibilists and ABO-adopters: Frankfurt's attack on PAP and the Consequence Argument. Given the focus of this thesis, I show, with reference to time travellers, these reasons for pessimism.[20]

1.2.1.1 The ability to do otherwise, Frankfurt and PAP

In this section, I illustrate that those who wish to maintain ABO in a compatibilist account of freedom must also contend with two traditional problems for compatibilists: Frankfurt's attack on PAP and the Consequence Argument. As I am cultivating a compatibilist account of freedom that accommodate time travellers, traditional compatibilist troubles also plague my account.

From my definitions in §1.2, we know that 'the ability to do otherwise' or 'ABO' is a popular and historically important requirement for freedom. This requirement for freedom forms the backbone of the Principle of Alternate Possibilities or 'PAP'. PAP combines ABO with intuitions about moral responsibility:

> **PAP** an agent is morally responsible for an action only if they could have done otherwise (Frankfurt, 1969 p829).

PAP implies that moral responsibility and freedom are inherently linked. The implication of PAP is that if you do not have ABO, you are not morally responsible for your actions. Although I am not discussing moral responsibility directly, I *am* discussing ABO. If I can maintain ABO in my account of freedom, then I can reasonably also maintain PAP - another intuitive principle.[21] My

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[19] Indeed, one could just present a different freedom conception, however the point of this section is to show that the freedom and abilities of time travellers is in tension with *traditional* arguments and concepts surrounding ability and freedom; hence the focus on ABO.

[20] To be clear, it is not that I think that the possibility time travel necessarily makes these problems *worse*, just that these are existing problems that compatibilists and those who want to maintain the freedom of time travellers have to contend with.

[21] Of course, one could accept ABO and reject PAP. For example, I could think that someone was morally responsible for an action despite not freely acting (see, for example, Michael Slote (1990), Randolph Clarke (1992) and Carlos J. Moya (2007)).

reasons for discussing PAP and the problems associated with PAP is because of the relationship between ABO and PAP. I wish to maintain ABO in my account of freedom and therefore I am also able to maintain PAP.

Following PAP, if the time traveller does not have ABO, then they are not morally responsible for their action. The incompatibilist wields PAP against the compatibilist. Vihvelin describes the challenge facing the compatibilist as follows:

> At one time, this link between moral responsibility, self-determination, and the ability to do otherwise was common ground between compatibilists and incompatibilists. That is, everyone agreed that a person is morally responsible only if she has the right kind of *control* over what she does, and everyone assumed that a person has the right kind of control over something she does only if she *is able to do (or at least decide, choose, intend, or try) otherwise*. Given this assumption, anyone hoping to defend the claim that moral responsibility is compatible with determinism had to first show that the ability to do otherwise is compatible with determinism (Vihvelin, 2018).

Given this, if determinism obtains and PAP is true, then no one is morally responsible.

Peter van Inwagen, an incompatibilist, describes freedom as follows:

> A person has free will if he is often in positions like these: he must now speak or be silent, and he *can* now speak and *can* now remain silent; he must attempt to rescue a drowning child or else go for help, and he is *able* to attempt to rescue the child and *able* to go for help; he must now resign his chairmanship or else lie to the members; and he has it within his power to resign and he has it within his power to lie (van Inwagen, 1983 p8).

Therefore, van Inwagen concludes that freedom understood as an ability has to be incompatible with determinism.

From ABO, PAP and the incompatibilist argument that these principles are incompatible with determinism, we arrive at Harry Frankfurt's (1969) attack on PAP. Frankfurt is a compatibilist who wished to show that PAP was false in order to stave off the incompatibilist challenge that PAP is incompatible with determinism. In doing so, Frankfurt aimed to show that agents can be held morally responsible for actions despite being unable to do otherwise.

In what follows, I first outline a standard Frankfurt example before showing how philosophers have adapted Frankfurt examples by using the possibility of time travel. Therefore, I endeavour to show that Frankfurt's attack on PAP is strengthened by using time travel scenarios. If so, it seems that the possibility of time travel poses a bigger threat to PAP-sympathisers than Frankfurt's original arguments. In terms of my own arguments, although I am not talking directly about moral responsibility, I do wish to uphold ABO in time travel scenarios. Hence, the problem for the time traveller would be that there may be scenarios in which they do have ABO but in which we would want to say that they are free.

A standard Frankfurt story looks something like this:

> Imagine that two adventurers – Lucy and Steve – wish to murder their arch nemesis Count Vernon. Count Vernon has been a nuisance in their lives for too long and they have come to the conclusion that it would be best if Count Vernon was killed. Therefore, they hatch a plan to do just that. Lucy volunteers to carry out the killing blow, but Steve is not convinced that she will actually do it (maybe Lucy is known for bailing last minute). Owing to the importance of the deed, Steve decides to ensure that Lucy does in fact carry out the action. Steve, without Lucy knowing, implants a mechanism in Lucy's brain such that if the mechanism detects that Lucy is *going to choose* to do otherwise than kill Count Vernon, the mechanism will instead ensure Lucy does choose to kill Count Vernon. With all measures in place, Steve knows that his desired course of action is guaranteed. As it happens, Lucy does choose herself to kill Count Vernon, she does it quickly and professionally and the mechanism is not activated. It is plausible that Lucy is morally responsible for the action because she did so out of her own volition.

The take-home from Frankfurt-style examples is (broadly) the following:

1. According to PAP, a person is morally responsible for an action only if they could have done otherwise.
2. Frankfurt stories illustrate an agent who one would think is morally responsible for an action despite not being able to do otherwise (Steve has ensured the murder of Count Vernon by placing the mechanism in Lucy's brain).

Therefore, (from 1 and 2):

3. PAP is false, since there are cases in which you can be morally responsible for an action despite being unable to do otherwise. Moral responsibility does not require alternate possibilities.

In Frankfurt's terminology, the mechanism acts as a 'counterfactual intervener'. All this means is that should the counterfactual situation in which the mechanism detects Lucy is about to decide to do otherwise obtain, the mechanism will intervene to enforce the action.

In sum, PAP is motivated by two main claims. The first is that free will requires ABO and the second is that moral responsibility requires free will. In order to reject PAP, you need to reject one of these two claims, and historically, more are willing to reject the first. Frankfurt cases show that *given our intuition* that Lucy is morally responsible which requires freedom, and given that Lucy lacks ABO, free will must not require ABO.

Since these original counterexamples, other philosophers have attempted to adapt and improve on them. This is because a big criticism of Frankfurt's own examples is that the agent *can* actually do otherwise. For example, Vihvelin suggests that agents can do otherwise in a Frankfurt scenario, they can deliberate, think, mentally act – they cannot prevent the outcome, but this does not entail

that the agent cannot *do* otherwise (Vihvelin 2013, see also Alvarez (2009) for a similar argument). If it transpires that the agent in the scenario can do otherwise, then PAP need not be given up.

One attempt to improve upon Frankfurt's examples comes from Joshua Spencer (2013). Spencer presents a Frankfurt style counterexample to PAP involving the possibility of time travel. In what follows, I outline Spencer's time travel counterexample to PAP before explaining the problems with PAP and time travel.

Spencer presents the following case:

> Suppose that Martin is a time traveler; he travels in a machine that can transport him to various points in earth's history. During one of his many trips, Martin rescued a man from plummeting to his death. Let's suppose that the man rescued was a high-wire walker who was working without a net in a very desolate area with no one else nearby. Martin arrived in his machine just in time to see the man fall from his wire, head first toward the ground. Luckily, Martin quickly found a button labeled "Emergency Safety Net Release". Martin pressed the button and an emergency safety net was deployed across the field underneath the high-wire walker. The walker landed safely in the net and walked away from the situation unscathed. If Martin had not pushed the button and released the emergency safety net, then the high-wire walker would have fallen to his death (Spencer, 2013 p153).

As it happens, the high-wire walker is Martin's (then younger) grandfather. At that age, Martin's grandfather was yet to meet Martin's grandmother. Therefore, it follows that if Martin had not saved the high-wire walker from death (and given that Martin's grandfather was not resurrected a few days later), Martin would not have existed to travel back in time and save his high-wire-walking grandfather in the first place. Spencer concludes that Martin is morally responsible for saving his high-wire-walking grandfather, but he could not have done otherwise in the sense that is relevant for ABO. If he had done otherwise, he would not have existed. PAP is false.[22]

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[22] Broadly similar counterexamples to PAP have been presented by John Martin Fischer (2005). Fischer's examples are similar because they also include this element of 'non-existence' should the agent choose to do otherwise. Fischer is a 'semicompatibilist' which means that he believes moral responsibility specifically is compatible with determinism regardless of whether freedom is. Therefore, Fischer's Frankfurt-style counterexamples attempt to elucidate this theory:

> In my view, the Frankfurt-type cases provide very strong reasons to think that moral responsibility does not require alternative possibilities. Of course, they fall short of providing decisive reason to abandon the Principle of Alternative Possibilities. But they should make a reasonable person abandon an endless attempt seeking to identify some sort of alternative possibility and instead set about identifying what about the actual sequence of events leading to an action (or omission or consequence) grounds ascriptions of moral responsibility (Fischer, 2005 p306).

Overall, Spencer agrees that time travel is logically possible, but thinks there are constraints on time travellers' actions. Perhaps most significantly, Spencer suggests there are scenarios in which a time traveller does *not* have ABO.

What are the implications of Spencer's argument for the abilities and freedom of time travellers? If the time traveller could not do otherwise in this situation, then we can come up with a multitude of other situations in which a time traveller does not have ABO. We can imagine situations in which time travellers save their relevant family members or they try to kill someone who in fact lived past the attempt and therefore fail. Recall my example from §1.2.1 in which Tim tries to kill his infant grandfather, we can also conclude in that example that Tim does not have ABO because there is no other outcome for this attempt than 'failure'. If Spencer is right, then there exist scenarios in which we may have to ignore an intuitive and popular requirement for freedom – ABO and its related principle PAP. Overall, I disagree with Spencer that time travel provides us with reasons to reject PAP due to the fact that the time traveller does not have ABO. In the forthcoming chapters I show that in these situations, the time traveller does have ABO and therefore, if we want (which I do), we can also maintain PAP.[23]

Therefore, not only does Frankfurt's original cases already provide a hurdle for ABO-compatibilists to overcome, but also Spencer argues that time travel makes the cases again PAP and ABO *stronger*.

1.2.1.2 The Consequence Argument

I have illustrated, with reference to Frankfurt-style counterexamples to PAP, how it may be difficult to reconcile time travel with ABO in specific cases.[24] Next, I turn to a common incompatibilist argument. I contend that any account of compatibilism has to provide some sort of answer to the Consequence Argument and my account is no exception. Thus, the Consequence Argument provides reasons for pessimism around the compatibility of free will and determinism in general, this also includes freedom for time travellers.

Peter van Inwagen is an incompatibilist who is perhaps best known for making famous the Consequence Argument. In its simplest form the Consequence Argument runs as follows:

> If determinism is true, then our acts are the consequence of laws of nature and events in the remote past. But it's not up to us what went on before we were born, and neither is it up to us what the laws of nature are. Therefore, the consequences of these things (including our present acts) are not up to us (van Inwagen, 1983 p56).

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[23] I also disagree with Frankfurt that the agent is unable to do otherwise. In chapter four, when outlining my account of compatibilism, I show that we can still maintain ABO in these situations.

[24] To be clear, Frankfurt time travel scenarios are only a tiny subset of cases involving time travel. I do think more generally, given eternalism and time travellers being unable to change the past, we might be inclined to think that time travellers lack ABO, but here I have been using Spencer's arguments to show that time travel may strengthen the attack on PAP.

Given this, we cannot do otherwise than we do because our acts are caused by past events and the laws of nature, both of which are outside of our control. In a nutshell, agents do not have ABO. If agents do not have ABO, this is true of time travellers as well (assuming that determinism is true).

The Consequence Argument supplies me with more motivation to produce a compatibilist account of freedom. The Consequence Argument, is, for all intents and purposes, an argument for *incompatibilism*:

> This argument, in some form or other, is widely regarded as the most important argument for incompatibilism. And while not everyone finds it to be a convincing argument for incompatibilism, it is agreed on all sides that it is at least an argument for incompatibilism (Cutter, 2017 p278).

Another reason why I eventually adopt a compatibilist solution is to account for the Consequence Argument. As I show, I produce an account of freedom that can accommodate this incompatibilist worry *and* the push from Frankfurt. These sorts of incompatibilist arguments are useful at elucidating the same problems for time travellers and for those of us who wish to uphold a compatibilist account which encompasses time travellers. I have identified these arguments because I think that any ABO-compatibilist account needs to accommodate them.

In this section, I have elucidated what I take to be two main external problems: the Frankfurt-style challenge PAP and the Consequence Argument. These are existing problems for compatibilists who wish to maintain ABO that I have taken from the current literature and I argue that an account of freedom needs to acknowledge both of these challenges, especially any account of freedom that wishes to uphold ABO and is compatibilist in nature.

1.2.2 Ability, freedom, and time travel: the internal strand

As well as issues within the freedom debate external to the time travel literature, the second main strand of reasons for the pessimism surrounding time traveller abilities and freedom focuses on the existing conversation within the time travel literature itself. Importantly, I aim to show that philosophers of time travel who engage in the debate about the abilities and freedom of time travellers often argue for the *negative*: that time travellers lack certain abilities and freedom. First, in order to get to grips with the narrative within the philosophy of time travel, I will outline the problem that started it all: the Grandfather Paradox.

1.2.2.1 Lewis and the Grandfather Paradox

In outlining the Lewisian view in §1.1.1, I purposefully left out some of the main arguments and motivations behind Lewis's 1976 paper because they deserve more detailed discussion. One big motivation for Lewis was to give a response to the Grandfather Paradox. The Grandfather Paradox is an argument against the possibility of time travel:

P1 if time travel were possible then time travellers would be able to go back in time and kill their infant grandfathers.

P2 if a time traveller successfully killed their infant grandfather, the time traveller would not have existed to travel back in time in the first place

P3 someone cannot be *both* alive and not alive at the same time (A & ~A) – this is a contradiction

P4 contradictions are logically impossible.

P5 if the time traveller successfully killed their infant grandfather this would entail a contradiction.

Therefore,

C1 time travel is logically impossible.

Accordingly, if time travel entails logical impossibilities, then time travel itself is logically impossible. The broad consensus in the literature is that the Grandfather Paradox is an unconvincing argument and that the Grandfather Paradox does not illustrate the impossibility of time travel. Philosophers tend to agree with the Lewisian solution, which is to deny that the time traveller can successfully kill their younger grandfather. We already know this from §1.1.1; a time traveller will not change the past. Therefore, we can just deny premise 1 of the argument above and overcome the Grandfather Paradox. In other words, despite what the Grandfather Paradox claims, backwards time travel need not bring with it the ability to enact contradictions.

However, Lewis does not stop there. Interestingly, he also argues that time travellers can kill their grandfathers:

> Tim can kill Grandfather. He has what it takes. Conditions are perfect in every way: the best rifle money could buy, Grandfather an easy target only twenty yards away, not a breeze, door securely locked against intruders, Tim a good shot to begin with and now at the peak of training, and so on… In short, Tim is as much able to kill Grandfather as anyone ever is to kill anyone (Lewis, 1976 p149).

I will refer back to this passage throughout this thesis as it is integral to how I develop and expand on the original Lewisian arguments about ability. Lewis argues that Tim the time traveller both *can* and *cannot* kill Grandfather because can is equivocal. It means different things under different contexts. The 'cannot' is easy to understand – for Tim to kill his grandfather would entail a contradiction – however the 'can' is somewhat controversial. This is the element of Lewis that philosophers have taken issue with.

A brief caveat before I move on. The reason why philosophers have taken issue with the Lewisian sense of can is because the sense of can we are talking about here is the can of ability. Here, Lewis is suggesting that the time traveller can kill their grandfather because they have the ability, therefore, like Lewis, I take 'can' and 'is able' to be synonymous. Philosophers disagree over whether or not the time traveller can (is able to) do something at which they will always fail.

1.2.2.2 The current perspective

In this section, I show that philosophers of time travel tend to lean towards a negative account of the abilities and freedom of time travellers.[25] I show that a large and growing proportion of people who write on time travel disagree with Lewis's account of *can*. Thus in what follows, I give a brief review of the relevant parties that argue against the Lewisian conception of ability.

I preface this by saying that the philosophers who disagree with Lewis's sense of can do not argue that time travel is logically impossible. In fact, the majority agree that time travel is possible, but there are limits on what time travellers are able and are free to do.

Kadri Vihvelin (1996) argues that there is no sense in which a time traveller *can* kill her younger grandfather, given what we ordinarily mean by 'can'.[26] In arguing this, Vihvelin employs a weakened conditional analysis of ability, under which agent's must have the chance of succeeding. She combines this with traditional analyses of counterfactuals to conclude that there is no sense of 'can' in which the time traveller can kill their younger grandfathers given that they will always fail.

Stephanie Rennick (2015) argues that there are things that 'mortals' can do, but 'philosophers' cannot. Rennick argues that although mere mortals can murder their younger grandfathers, philosophers cannot. This is because philosophers know that they will not succeed (they have read Lewis 1976) and therefore will be unable to form the intention to murder their younger grandfather. Murder requires an intention, and it follows that if you are unable to form the intention to murder your younger grandfather, then you are therefore unable to murder your younger grandfather simpliciter:

> But if Lily herself is a philosopher, and she believes (as she should) that time travellers will not murder their grandfathers, then she believes she will not murder her grandfather. And given such a belief, she will not be able to form the intention to murder her grandfather (Rennick, 2015 p24).

For Rennick, there are therefore some constraints on the actions of agents, specifically agents who have the knowledge that they will not succeed prior to the attempt.

More recently, Alison Fernandes (2020) has argued that time travellers are limited by a 'rational constraint'. Specifically, time travellers cannot deliberate on actions with the knowledge that the action will fail. Therefore, if Tim in Lewis's story knows that he will fail, then he cannot deliberate on the killing. Fernandes argues that Tim's freedom is compromised because conditions about deliberation require that you do not self-predict your own behaviour. Specifically, when Tim travels to the past to attempt to murder his infant grandfather, he retains all of his memories and therefore will have sufficient evidence to come to the conclusion that he will not succeed in the

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[25] The philosophers I discuss in the section are not an exhaustive subset of philosophers of time travel. However, I take the following subset to be important for the themes considered in this thesis.

[26] In chapter two, I explain Vihvelin's view in more detail as I begin to develop my own account of ability.

action he so wants to do (after all, Tim has read Lewis 1976). Given this, Tim cannot reasonably deliberate on killing his infant grandfather.

Michael Rea (2015) is an incompatibilist when it comes to freedom and determinism. Rea argues that time travel threatens not just the time traveller's agents and freedom, but also the freedom of 'everyone temporally downstream of [the time traveller]'s arrival [in the past]' (Rea, 2015 p266).

Neal Tognazzini (2016) has similar worries to me concerning the traditional free will debate and time travel. Notably, Tognazzini argues that there are tensions that arise when it comes to thinking that time travellers have the ability to do otherwise under eternalism. Tognazzini states:

> It's a common thought that time travelers to the past would somehow be constrained to do only those things that they in fact did do, that they wouldn't be free to do anything that didn't already happen. That is, it's a common thought that we should be incompatibilists about free will and time travel to the past… I'll suggest that the answer to this question is complicated. On the traditional way of thinking about free will, I think the incompatibilist about time travel and free will wins the day (Tognazzini, 2016 p681).[27]

Other voices in the debate include Bokai Yao (2019), who has argued that various traditional accounts of ability fail when it comes to time the abilities of time travellers, and Brian Garrett (2016) who finds Lewis comparing time traveller abilities to non-time traveller abilities puzzling. Finally, as we have already seen, Joshua Spencer (2013) uses time travel to strengthen the case against PAP.

In sum, philosophers have had trouble reconciling standard accounts of ability and freedom with the possibility of time travel. A large proportion of the literature argues that although time travel is logically possible, it seems to limit certain freedoms and abilities.

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[27] Interestingly, Tognazzini does offer some positive remarks citing a residual incompatibilist worry: commitment to the 'strange shackles' argument (Sider, 2002b). Briefly, the argument is that once we have established the inability of time traveller to kill their younger grandfather, we then have to wonder what prevents them from doing so? Does a higher being stop them? A guardian of logic? The time travel police? In reforming the argument, Tognazzini argues that we might be able to resurrect compatibilism about time travel and free will. Tognazzini suggests that the strange shackles objection leads us to a view of freedom under which it does not matter whether the agent is *able to do otherwise*. Instead, what is important is:

> Whether the action occurs *in virtue of* some relevant facts about the agent and his mental states. It's puzzling to conclude that Harry [Potter] lacks free will, precisely because it looks like *he* is involved in everything that allegedly constraints him. And how could he be his own shackles… What I'm suggesting is that maybe a better way to go is to reject the link between free will and ability to do otherwise (Toganzzini, 2016 p689).

Tognazzini thinks that we should give up ABO in time travel scenarios. As I show going further, I argue that we can maintain ABO for time travellers and hence I do not consider Tognazzini's arguments in further depth.

1.2.3 The take-home

I have suggested that there are two main strands of reasons for the pessimism surrounding the abilities and compatibilist freedoms of time travellers: external reasons and internal reasons. First, any reasonable ABO-compatibilist account of freedom has to contend with traditional arguments in the free will literature. In particular, the Consequence Argument and Frankfurt's attack on PAP. For someone who wishes to maintain ABO in their theory of freedom (like me), it appears that Frankfurt's attack on PAP is strengthened in a small sub-set of time travel scenarios due to the non-existence of the time traveller should they do otherwise. In addition, the Consequence Argument tells us that given how we understand determinism, we are unable to have situations in which agents are able to do otherwise and determinism is true – the two are incompatible. Therefore, despite my focus on time travellers, I still need to overcome these existing worries in cultivating an ABO-compatibilist account of freedom for time travellers.

Second, philosophers who research time travel are, on the whole, rather negative about the freedoms and abilities of time travellers. Therefore, the initial outlook is pretty bleak when it comes to maintaining the freedoms and relevant abilities of time travellers.

The main issue seems to be that the freedom of time travellers is incompatible with there being things that the time traveller *will not* do. It feels like time travellers may not have full-blooded alternatives that we may expect in non-time travel cases. This is only a surface reading of what's going on in time travel cases. I do not think this is right, but it might be taken as an initial reaction.

1.3 Chapter Conclusion

In conclusion, whilst there is largely consensus that backward time travel is logically possible, the more contentious claim in Lewis (1976) is that travellers in the past retain the same abilities that normal agents have. The aim of this thesis is to account for time traveller abilities via a new analysis and to outline a new view of compatibilism using similar themes. Specifically, abilities that the time traveller will always fail to exercise.

So far, I have outlined some assumptions regarding the possibility of time travel and certain definitions I maintain throughout this thesis. I then outlined the problem I will be solving in the forthcoming chapters. I split this problem into two strands – the external and internal. Both of these problems illustrated tensions between the freedoms and abilities of time travellers and traditional problems associated with these concepts as well as existing troubles that compatibilists need overcome.

In the following chapters, I separate my argument into two stages. First, I set out a new analysis of ability that can account for the abilities of all agents (including time travellers). Then, I use my analysis of ability to show how time travellers have ABO and therefore, time travellers *are* free. In doing so, I show how we can accommodate traditional problems and incompatibilist worries.

Chapter 2: Senses of 'Can' and a New Analysis of Ability

> "Ability is nothing without opportunity"
> *Napoleon Bonaparte*

Having outlined the supposed tension between time travel and existing theories of ability and freedom, I can now begin to develop methods to overcome this tension.

In section one, I begin by outlining parts of the ability dialectic, discussing some traditional and more recent theories of ability (§2.1.1). I discuss the emphasis, in these theories, on 'outputs'. Then, I distinguish between two senses of 'can': the 'can' of Ability+ (Can_{a+}) and the 'can' of Ability (Can_a) (§2.1.2). The former sense of 'can' takes both Opportunity and Ability as necessary and sufficient for being able to do something. The latter sense of 'can' only takes Ability as necessary and sufficient. 'Ability' factors correspond to *internal* factors and 'Opportunity' factors correspond to *external* factors. I conclude by highlighting that the current ability discourse leans towards taking 'outputs' as a requirement for an ability and thus these theorists are stuck with adopting Can_{a+} (§2.1.3). However, this seems to neglect a pertinent and important sense of 'can': Can_a.

In section two, I outline my new analysis of ability – the 'Input Analysis' (IA). I begin by discussing the difference between inputs and outputs in more detail (§2.2.2). Second, I formalise IA and illustrate how my new analysis works in practice (§2.2.3). I also discuss IA in relation to the two senses of 'can' provided in §2.1.2, showing that IA can take both senses of 'can' (§2.2.4). Finally, I discuss two advantages of IA over the existing discourse: first that IA can overcome some of the problems with the existing dialectic, and second it is able to account for the abilities of time travellers (§2.2.4).

I conclude this chapter by arguing that my new analysis is a viable alternative to existing analyses which are unable to account for the abilities of time travellers.

2.1 Two Analyses of Ability and Senses of 'Can'

2.1.1 Two analyses of ability

In this sub-section, I look at two existing analyses of ability. First, I discuss conditional analyses and a more persuasive variant from Kadri Vihvelin (1996) and second, I discuss modal analyses. I aim to show that the vast majority of existing analyses of ability are what I call 'output'-focussed.[28]

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[28] Conditional and modal are not the only types of ability analyses, these are just the most widely discussed. Other analyses are proposed by: Michael Fara (2005, 2008) who presents a habitual analysis and Helen Steward (2012, 2020) who take the idea of a 'two-way power' and argues that actions are 'powers which an agent can exercise or not at a given moment, even holding all prior conditions at that moment fixed' (Steward, 2020 p345). Others, for example, suggest that we should think of and evaluate abilities by looking at proportions of cases in which agents successfully exercise their abilities (Jaster 2020, Manley and Wasserman 2008). I look at proportional analyses more in 4.1.1.1.

I am choosing to focus on these two types of analyses in particular because I consider them to be (i) the most prolific in the ability discourse and (ii) my biggest opponents.

2.1.1.1 Conditional analyses

Traditionally, conditional analyses of ability are formalised as follows:

CA S has the ability to A iff S would A if S tried to A (Maier, 2022).

This formulation is widely agreed to be false.[29] However, many contemporary analyses of ability take inspiration from CA. Therefore, I briefly discuss CA before moving to contemporary conditional accounts.

Consider the following sentence:

(1) I have the ability to eat a lemon.

Sentence (1) is true under CA if and only if, I do eat a lemon if I try to eat a lemon. CA is all about whether or not, upon trying, you succeed in exercising an ability. Therefore, to use my terminology, CA is all about the 'outputs'. Outputs are the results of trying to exercise an ability. The standard outputs are 'success' or 'failure' but other outputs include 'partial success' and 'partial failure'.[30] Therefore, under CA one has an ability iff when one tries to exercise an ability, one succeeds.

Consider a pianist who has been locked up in prison without access to a piano. Under CA, the pianist does not have the ability to play the piano since if they tried to play it, they would fail. They are lacking the external factors – or Opportunity - that would enable them to exercise their ability successfully. However, if the prison guards decided to give the pianist a piano, they would under CA, be able to play the piano. This is due to them now being able to *play the piano* upon trying.

One might think this is a strange conclusion to come to - the pianist might well be taken aback by the assumption that they are unable to play the piano simply because there does not happen to be one nearby. I discuss this concern, and the weaknesses of CA, in §2.5.1.1 - there are intuitive cases of both ability and non-ability for which CA seems to get the wrong answer. However, CA is only the initial starting point for conditional analyses.

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[29] See Maier (2020) for an overall summary of the problems with CA. I will also look more at the problems with this analysis in §2.5.1.1.

[30] These two 'partial' outputs may be considered to be the same output depending on whether you are a half-empty or half-full type of person.

Kadri Vihvelin presents a variant of CA (1996).[31] Vihvelin's variant is also an output-focused theory because Vihvelin takes the possibility of succeeding upon trying as necessary for having an ability. In support of this, Vihvelin initially states:

> And what we ordinarily mean when we say that someone can do something is that she has both the ability and the opportunity to do it. More precisely, we mean that she has the ability to do an act of the relevant kind and that nothing prevents her from exercising this ability (Vihvelin, 1996 p318).[32]

 I label Vihvelin's analysis VA:

> **VA** an agent *S* has an ability *A* iff, if *S* tried to *A*, *S* would or at least might *A* (Vihvelin, 1996).[33]

VA is considerably weaker than CA. For an agent to have an ability under CA, the agent must succeed in carrying out the action (if they try). However, under VA an agent has an ability iff there is a possibility of them succeeding ('at least might A'). Returning to my ability to eat a lemon (1): under VA, I can eat a lemon iff, if I tried to eat a lemon, I would or at least might eat a lemon. In determining the possibility at play here, Vihvelin identifies nomic possibility:

> … Most theories agree about this much: the closest antecedent-worlds are those antecedent-worlds which are most similar, in the relevant respects, to our own. So, for instance, when we ask what would have happened had I tried to walk on water, we do not consider worlds where I'm as light as a feather, worlds at which the earth has a much smaller mass, worlds at which I have wings, and so on. Rather, we consider worlds which have the same (or nearly the same) laws of nature as ours, where the earth has the same

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[31] There are other variants of CA, for example Donald Davidson (1980) presents a conditional-esque analysis of ability that looks to whether an agent has beliefs and desires that rationalise doing an action:

> **DA** A can do x intentionally (under the description d) means that if A has desires and beliefs that rationalize x (under d), then A does x. (Davidson, 1980).

Davidson's analysis is conditional in the sense that having an ability requires fulfilling a conditional: 'if A has desires and beliefs that rationalise x, then A does x'.

[32] In the next sub-section (§2.1.2), I discuss what Vihvelin means by 'ability' and 'opportunity' in more detail. For now the important aspect of this quote is that 'nothing prevents her from exercising this ability'.

[33] This analysis falls from the following passage from Vihvelin:

> If it is true that Suzy can kill her baby self then it must be the case that there are at least some occasions on which it's true that:

> (S) If Suzy had tried to kill Baby Suzy, she would or at least might have succeeded (Vihvelin, 1996 p320).

mass, and where I am a human being weighing what I actually weigh (Vihvelin, 1996 p319-20).

Vihvelin's analysis is arguably a better analysis than CA because VA takes into account situations in which an agent intuitively has an ability, but fails to exercise that ability. To illustrate this point, I turn to John Austin's (1956) famous golfer example:

> Consider the case where I miss a very short putt and kick myself because I could have holed it. It is not that I should have holed it if I had tried: I did try, and missed. It is not that I should have holed it if conditions had been different: that might of course be so, but I am talking about conditions as they precisely were, and asserting that I could have holed it. There is the rub (Austin, 1956 p218 fn.1).

Under CA, the agent here does not have the ability because upon trying to hit a short putt, the agent fails. However, VA is able to account for this because the agent in this scenario has, at least, the possibility of success. Indeed, there is a close, nomologically similar, possible world in which the agent does succeed in holing the short putt when trying. Therefore, Vihvelin's analysis can account for the fact that, in Austin's words: 'a human ability or power or capacity is inherently liable not to produce success, on occasion, and that for no reason' (Austin, 1956 p308). Ultimately, bad luck does not entail a lack of ability (Lewis makes this very point (1976 p150)).

Although VA seems like a plausible alternative to CA, it is nonetheless still an *output*-focussed theory. We (hopefully) would take the following claim to be true:

(2) Olivia has the ability to write a PhD thesis.

We evaluate the truth of (2), according to Vihvelin, by checking it against VA:

(3) Olivia has the ability to write a PhD thesis iff, if Olivia tried to write a PhD thesis, she would or at least might write a PhD thesis.

Given (3), I have the ability to write a PhD thesis, iff *upon trying*, I do or might write the PhD thesis. This is a case in which to have an ability, we have to *at least* have the possibility of succeeding in exercising this. This makes VA an output-focussed theory, despite the bar for an ability being considerably lower than with CA: the condition under which I have the ability in (2) is still based on the output. In the next section (§2.1.2), I highlight a short-coming output-focused theories but before that, I consider an alternative way to approach abilities.

2.1.1.2 Modal analyses

Another common way to understand ability is in terms of a modal analysis. To begin, consider the following sentences:

(4) I can make a cake.

(5) It is possible for me to make a cake.

Modal analyses draw on the relationship between 'can' and 'possibility'. That is, being able to do something is analysed via possible world semantics. One might think that (4) and (5) are equivalent because possibility and ability are analysable in terms of each other. Given this, Maier suggests the following, initial, modal analysis of ability:

> To have an ability to A is for it to be possible to A in some restricted sense of possibility (Maier, 2022).

The analysis is kept purposefully broad as there are different types of possibility. The following, more precise analysis falls from this:

> **MA** S has the ability to A iff S does A at some world (or set of worlds) satisfying condition C (Maier, 2022).

Therefore, I have the ability to make a cake iff I do make a cake at some possible world satisfying condition C. It depends how narrow you want your ability analysis to be as to which conditions must be satisfied; the sense of possibility one thinks is relevant for ability determines the conditions that the possible worlds must satisfy. For example, if one thinks that nomological possibility is necessary for ability, then the worlds satisfying conditions C would have to be nomologically similar to the world we are in. Ability analyses tend to focus on nomological possibility.

More specifically, David Lewis suggests that 'a nomologically… accessible world is similar to our world in the laws it obeys…' (Lewis, 1986). Nomological necessity concerns what has to be the case at every possible world, for example 'it is nomologically necessary that friction produces heat because at every world nomologically accessible from ours – every world that obeys the laws of ours – friction produces heat' (Lewis, 1986).[34]

Consider the following sentence:

(6) I can drive a tractor.

Plugging (6) into MA, we arrive at a sentence like this:

(7) I have the ability to drive a tractor iff I drive a tractor at some relevantly similar nomologically possible world(s).

Due to the focus on nomic possibility the world(s) must bear nomological resemblance to our world. Imagine that world w is the actual world and something is prohibited by the natural laws in world w. If world w' is nomologically consistent with world w then the same thing should also be

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[34] To be clear, the sense of nomological possibility I am talking about is based on *physical laws*. See Lewis (1973, 1983b, 1986, 1994), Earman (1978, 1984) and Loewer (1996) – just to name a couple – for in depth analyses of the debates surrounding the laws of nature.

prohibited in world *w'*. We then ask whether there are nomologically possible worlds in which I drive a tractor? Almost certainly, yes. Although I do not have this ability currently in world *w*, it is not far-fetched to imagine a close possible world (world *w'*), following the same physical laws, in which I own a farm and subsequently drive a tractor.

I contend that modal analyses are also output-focussed. Even though the focus is on performing the action at a nomologically possible world, the reason why (8) is true is still because at some nomologically similar world *w'*, I *do* drive a tractor. The focus of the analysis is still on the outcome of an action: the output.

Maier (2022) notes that often MA is posed as an alternative to CA in order to overcome many of the problems with conditional analyses, however one could imagine CA as just a kind of modal analysis. The conditional that CA takes on is a subjunctive conditional. Subjunctive conditionals highlight what would happen or what someone would do in a given situation or under certain circumstances – so the conditional 'if *S* tried *A*, then *S* would *A*' is a subjunctive conditional. Philosophers tend to analyse subjunctive conditionals in terms of possible world semantics (see Stalnaker 1968 and Lewis 1973). So, a 'subjunctive conditional is true just in case its consequent is true at the world where its antecedent is true that is otherwise maximally similar to the actual world' (Maier, 2022). Formally, we arrive at the following:

> **CA$_{modal}$** *S* has the ability to *A* iff *S* does *A* at a world at which *S* tries to *A* that is otherwise maximally similar to the actual world (Maier, 2022).

Let's look at an example to help clarify this analysis.

(8) I can lift a car

Which, under CA$_{modal}$ translates as the following:

(9) I have the ability to lift a car iff I do lift a car at a world at which I try to lift a car that is otherwise maximally similar to the actual world.

Now, whether (9) is true or not depends on certain factors which I will not go into here, but it is important to note just how similar CA$_{modal}$ is to CA. Given that subjunctive conditionals are analysed using possible worlds and the conditional normally used in CA is a subjunctive conditional, CA$_{modal}$ is essentially a more specific version of CA. One might prefer CA$_{modal}$ to CA because of the shift of focus to possible worlds and not simply whether an agent would *A*, if they tried to *A*. The similarities between CA and CA$_{modal}$ further strengthen my diagnosis that modal analyses are still output-focussed, even if the output is at a possible world.

A potential counterexample to the suggestion that modal analyses are just conditional analyses comes from Bokai Yao (2019). Yao presents another modal analysis of ability, drawing on

criticisms of conditional and dispositional analysis.[35] Yao suggests that an agent S can A only if it is possible for S to A given the fixity of the past (Yao, 2019 p403). The context is important for Yao's analysis as Yao is specifically talking about abilities in time travel scenarios, hence the focus on the fixity of the past. Notice, Yao's analysis is a *non-conditional*, modal analysis of ability. Yao presents the following principle:

> **Fixity Principle** S can at t [A] at t' in w only if there is a possible world v such that (i) S [A]s at t' in v and (ii) w and v have the same past up to t (Yao, 2019 p403).

Let us now plug the tractor example into the Fixity Principle:

(10) I can at t ride a tractor at t' in w only if there is a possible world v such that (i) I ride a tractor at t' in v and (ii) w and v have the same past up to t.

According to Yao, worlds w and v have the same past up to t when the worlds are 'indistinguishable in terms of the facts that have happened up to t' (Yao, 2019 p403). This way of analysing abilities is able to account for abilities in cases like Austin's golfer because there is presumably a close possible world, with the same past, in which the golfer does make the short putt.[36] I talk more about Yao's arguments in chapter 5. For now, it is important to see that there are arguments to suggest that not all modal analyses are reducible to a conditional analysis.

Throughout this section I have explained various theories of ability, all of which I have argued are 'output' focussed. These analyses take some level of success as necessary for having an ability, be that definitive success or the possibility of success. I suggest that these theories ignore a vital aspect of ability to which I now turn.

2.1.2 The 'can' of Ability+ and the 'can' of Ability

Having outlined some of the current ability discourse, I can now identify two main senses of 'can' operating within the discourse. I first explain the 'can' of Ability+ which combines Ability factors with Opportunity factors and then I explain the 'can' of Ability which just concerns Ability factors. I note that all output-focused theories discussed in the previous sub-section are forced to take the 'can' of Ability+. In addition, for ease during this section and to not conflate the ability factors

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[35] I have not yet discussed *dispositional* analyses of ability. Briefly, similarities between dispositions and abilities have been used to develop accounts of compatibilism. These compatibilists are known as the 'New Dispositionalists' and present analyses that talk about abilities *in terms* of dispositions. For example, to have an ability is just to have the corresponding disposition. When developing my account of compatibilism in chapter four, I go into a lot more detail about dispositional analyses of ability and accounts of compatibilism.

[36] One might question whether Vihvelin's analysis of Yao's analysis are *too weak* to be good analyses of ability. Both Vihvelin and Yao develop their analyses in a time travel context (which in itself may seem somewhat ad hoc) and both seem to be concluding that time travellers do not have abilities which are impossible. Therefore, one might question whether these analyses reflect everyday abilities like riding a bike or making a sandwich. Indeed, I discuss this point in more depth in §2.2.5.

with the ability itself, I refer to the ability *factors* as 'Ability/Abilities' with a capital 'A' and opportunity *factors* as 'Opportunity/Opportunities' with a capital O.

2.1.2.1 The 'can' of Ability+

The first sense of 'can' I discuss is the 'can' of Ability+ (Can_{a+}). To begin, consider the following two sentences:

> (11)   Jim can walk to the shops.
> (12)   Lucy can jump on a trampoline but does not have access to a trampoline.

Assuming that, all things being equal, Jim has the capacity to walk, i.e. Jim is not in a wheelchair, has fully functioning legs, and at this point in time is not otherwise preoccupied, (11) is true according to Can_{a+}. This is because Jim has both the Opportunity and the Ability. Jim has the Opportunity because Jim is not otherwise preoccupied, and Jim has the Ability due to Jim's functioning legs etc. Generally, having the 'Opportunity' refers to external factors and having the 'Ability' refers to internal factors.[37]

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[37] I am choosing to use the terms external/internal to refer to the factors involved in ability analyses. However, there are parallels to be drawn between the external/internal distinction and the extrinsic/intrinsic distinction and reasons for me choosing the former over the latter. Indeed, Romy Jaster (2021) who I discuss in more detail throughout uses the extrinsic/intrinsic distinction to explicate the sort of properties involved in ability ascriptions. Perhaps the most famous explanation of the extrinsic/intrinsic distinction comes from Lewis himself:

> A sentence or statement or proposition that ascribes intrinsic properties to something is entirely about that thing; whereas an ascription of extrinsic properties to something is not entirely about that thing, though it may well be about some larger whole which includes that thing as part…
>
> A thing has its intrinsic properties in virtue of the way that thing itself, and nothing else, is. Not so for extrinsic properties, though a thing may well have these in virtue of the way some larger whole is …
>
> If something has an intrinsic property, then so does any perfect duplicate of that thing; whereas duplicates situated in different surroundings will differ in their extrinsic properties (Lewis, 1983a p197).

Extrinsic properties are much easier to explicate than intrinsic. Examples include: being a sister, being 100 metres from the nearest pub. Intrinsic properties are more difficult to pinpoint. Potentially one's own mass is an intrinsic property. Lewis suggests that the shape of something is an intrinsic property. Perhaps what something is made out of could also be counted as an intrinsic property, e.g. a toothbrush being made out of bamboo, with the bamboo being an intrinsic property of that toothbrush. I am being purposefully cautious in asserting intrinsic properties as these examples are themselves up for debate. Indeed, Graham Nerlich (1979) and Bradford Skow (2007) contest that shapes are intrinsic.

You could imagine a situation in which 'extrinsic' factors are those relating to context or the situational factors and 'intrinsic' factors are those relating to an agents skills etc… However, the reason I am choosing

We have already seen that I label the success or failure of exercising an ability as the 'output'; whereas the 'stuff' that goes into the ability – the skills, the contextual factors – are 'inputs'. More on this distinction as we go on.

Now, compare sentence (11) to sentence (12). Assuming that, again all things being equal, Lucy has the capacity to jump on a trampoline, i.e. Lucy is not in a wheelchair, has fully functioning legs, and at this point in time is not otherwise preoccupied, one might read (12) as true. However, according to Can_{a+}, (12) is false. The reason it is false is because Lucy lacks the Opportunity – access to a trampoline - and therefore Lucy lacks a crucial element of Can_{a+}. We can draw an important distinction between these two sentences, in (11) Jim has both the Opportunity and Ability and in (12) Lucy only has Ability. Barbara Vetter (2013) describes the distinction as follows:

> Moreover, not only do different sentences with 'can' express different things. One and the same sentence can express all these different things in different contexts. Is it true to say of me, right now, that I can swim? Yes and no. Yes: I have learned to swim; my muscles are in working order; of course I can swim. Then again, no: there is no body of swimmable water anywhere near me. How should I swim if there's no water? Clearly, I cannot swim... The same sentence ('I can swim'), applied to the same situation, may with equal right be either affirmed or denied, held true or false. This is witness to the fact that 'can' is context-sensitive: it is used to express different things in different contexts. We have shifted the context of assertion by focussing, first, on my muscles etc. and, second, on the availability of swimmable water (Vetter, 2013 p6-7).

Given this, let us look at the Ability and Opportunity components of Can_{a+} in further detail. Anthony Kenny (1975) writes:

> An ability is something internal to the agent, and an opportunity is something external. It is difficult to make this intuitive truth precise. The boundary between internal and external here is not to be drawn simply by reference to the agent's body: illness, no less than imprisonment, may take away the possibility of exercising my abilities without necessarily taking away the abilities themselves (Kenny, 1975 p133).

Being able to do something under Can_{a+} requires an agent to have both the Ability and the Opportunity. As we have already noted, in (11) Jim can walk to the shops according to Can_{a+} because of factors both internal and external to him, he is not preoccupied at the moment in time

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to use external/internal over extrinsic/intrinsic is simply in virtue of the huge contention around what counts as intrinsic. For my purposes, the internal factors refer to thing like an agent's skills, their bodily make-up etc. Conversely, the external factors are factors outside the agent themselves, situational or contextual. My use of these terms hold no more weight other than to differentiate between different factors that are important for abilities. Therefore, I wish to stay away from more controversial terminology. Below I provide more detail about what I mean by 'internal' and 'external'.

and has fully functioning legs etc. However, in (12) Lucy lacks one of these key factors: the external factors (the Opportunity) and therefore (12) is false under Can_{a+}.

In addition to these key aspects of Can_{a+}, Kenny (1975 p142) also notes that, although someone may fail to exercise their ability under Can_{a+} often if someone can do something under Can_{a+} that person does succeed in exercising this ability. Maria Alvarez (2013) explains this as follows:

> …I might try but fail despite having the ability and opportunity. But… it does mean that, in general, if I have the relevant ability and the opportunity, and I try to exercise it, I shall probably succeed (Alvarez, 2013 p109).

Therefore, one important consequence of Can_{a+} is that under this sense of 'can' agents often (but not always) succeed at exercising their ability. For reasons that become clearer throughout this chapter, I disagree that success is an adequate measure of ability.[38]

In (11), it would not be unreasonable to assume that Jim will succeed in exercising his ability to walk to the shops given the circumstances laid out. However, it is not always the case that the agent will succeed in exercising their ability under Can_{a+}. Indeed, one can imagine situations in which an agent has both the Opportunity and the Ability and yet fails to exercise their ability. Recall, for example, Austin's golfer (Austin, 1956 p218 fn.1). In this case, Austin is saying that although he has both the relevant internal and external factors, he still missed a short putt. This is presumably not because he lacks the ability *simpliciter*, it seems more plausible that there are often occasions in which humans just fail to exercise abilities full-stop:

> …a human ability or power or capacity is inherently liable not to produce success, on occasion, and that for no reason (or are bad luck and bad form sometimes reasons?) (Austin, 1956 p218 fn.1).

So, there will be situations in which agents have both the Ability (internal factors) and Opportunity (external factors) and still fail to exercise their abilities.

Nonetheless, a combination of Ability + Opportunity usually means that the agent will succeed in carrying out the ability. Again, Jim from (11) can succeed in exercising his ability to walk to the shop because he has both the Ability factors and the Opportunity factors. However, Lucy from (12) will not succeed in exercising her ability because she lacks the Opportunity factors. Given this, we can begin to unpack a problem for *output-focussed* theories of ability. Under Can_{a+}, Lucy does not have the ability because she lacks the Opportunity and therefore, if Lucy tried to exercise her ability, she would fail. Because output-focussed theories (i.e. the conditional and modal accounts I explained in §2.1) are concerned with either the possibility of success or definitive success, it seems that output-focussed theories have to take Can_{a+} (that is, there is not the same

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[38] This is compared to people like Carl Ginet (1980), Donald Davidson (1980), Kadri Vihvelin (1996), Christopher Peacocke (1999) (in addition to the conditional and modal analyses from the previous section) who all take some sort of success element (be that possibility or actuality) as a measure of ability.

correlation between Can_a and success). This may not initially feel like a problem, but there is another sense of 'can' which is equally as important in ability analyses. Before expounding this problem in more detail, I turn to explicating this second sense of 'can' now.[39]

2.1.2.2 The 'can' of Ability

I label the second prominent use of 'can' the 'can' of ability or Can_a. Like with Can_{a+}, in this subsection I explain the phenomena, how it is different from Can_{a+}, and offer some examples which help elucidate the distinction between Ability and Opportunity. To begin, Maria Alvarez (2013) writes:

> The ability to do something, say, cook omelettes, is something that, if I have it, I have it also when I am not exercising it, and even if I rarely exercise it - though I can exercise my ability only when the circumstances permit me to do so, for instance, when I have eggs, a frying pan, I'm not tied up, and so on. That much is true of all our powers and capacities (Alvarez, 2013 p109).

So, an agent may have an ability even if they are not exercising it. I can still retain the ability to play the piano whilst not actually playing the piano. I do not need to physically put my hands to the keys and play in order to have this ability. Of course, this is not saying that Can_a excludes Can_{a+}. In fact, Can_{a+} is just Can_a with the addition of 'Opportunity' or 'external factors'. One can play the piano according to both Can_a and Can_{a+}. The statement is true under Can_{a+} if there is a piano present and the agent fulfils the criteria for Ability (internal factors); it is true under Can_a regardless of a piano's presence. Therefore, the two senses can coexist in one instance, it is just that Can_a is weaker than Can_{a+}; it is easier to satisfy Can_a simply because it requires less.

Consider the following sentence:

    (13)   Fred can open a jar of pickles despite not having a jar of pickles in his vicinity.

I suggest that sentence (13) is (i) true under Can_a and (ii) false under Can_{a+}. Regarding (i), the sentence is true because Fred possesses the internal features and characteristics. For example, Fred has the requisite strength, the right knowledge and he absolutely loves pickles. Fred, however, does not have the Opportunity because Fred does not currently have access to a jar of pickles. This brings us to claim (ii). The only difference between these two senses of 'can' is Can_a ignores the Opportunity or external components of abilities. That is, for an agent to have an ability under Can_a the agent need not have the Opportunity and a fortiori, given what I discussed in the previous section, having an ability under Can_a does not guarantee success. Thus, if Fred in (13) were to try to open a jar of pickles he would fail in virtue of the lack of jars of pickles in his cupboard.

In sum, Fred can open a jar of pickles regardless of whether or not Fred has the Opportunity to open a jar of pickles. (13) is true according to Can_a and false according to Can_{a+}.

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[39] This may bring to mind the common distinction between general and specific abilities. I discuss this distinction in more detail throughout this chapter.

I argue sentence (13) coming out false under Can_{a+} provides a different result to our everyday analyses of ability. A famous pianist does not assess whether she can play the piano by whether there is a piano in front of her. Specifically, the pianist is not assessing this capacity via her external factors. The ability is ascribed due to her internal factors, such as the number of hours she has spent practicing etc. I suggest that if the pianist did not currently have access to a piano, it would be odd (and potentially annoying) for her to answer 'no' to a question of whether she can play the piano. Similarly in Fred's case, he can open a jar of pickles under Can_a, regardless of whether he opens one right now, regardless of whether he ever opens a jar of pickles. In support of this, Vihvelin (2013) writes:

> We believe that there is a sense in which a person with the ability to do [*A*] can do [*A*] even when she's not doing [*A*], and even if she never does [*A*]. The monk who has taken a vow of silence remains able to speak; he can speak, even though he never does (Vihvelin, 2013 p6).

Further, and as may have become apparent, the distinction between Can_a and Can_{a+} maps onto the common distinction between general and specific abilities.[40] As Romy Jaster (2020) writes:

> The most common way in which general abilities are distinguished from specific abilities is that agents have general abilities in virtue of their intrinsic properties alone, whereas they have specific abilities in virtue of intrinsic and extrinsic properties… Having a general ability is for the agent to have some set of intrinsic properties (Jaster, 2020 p115).

Recall Jim and Lucy from §1.2.1 (sentences (11) and (12)). I explained that Jim *can* walk to the shops because Jim has both the Ability and Opportunity. Specifically, Jim can walk to the shops under Can_{a+}. Given this, we can also say that Jim has the *specific* ability to walk to the shops. By contrast, I explained that Lucy has the ability, under Can_a, to jump on a trampoline despite not

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[40] There are also other ways to flesh out this distinction. Ann Whittle (2010) describes 'general abilities' as 'global abilities' and 'specific abilities' as 'local abilities':

> …This sense of 'able' latches on to a "general practical" or "type" ability, what I shall refer to as a global ability… if determinism threatens anything, it threatens only [Alfred] Mele's "specific practical" abilities, Berofsky's "token" abilities, or what I shall call local abilities — the ability-to-walk-in-circumstances-C (Whittle, 2010 p2-3).

In addition, Vihvelin refers to general and specific abilities as wide and narrow abilities:

> First, some general points about talk about ability: I want to distinguish two senses of 'has the ability' or 'is able to' (and the 'can' that we use interchangeably with either of these phrases). My way of doing this will be somewhat stipulative, but the basic distinction is one recognized by commonsense. I'm going to call the first kind of ability 'narrow ability' and the second 'wide ability' (Vihvelin, 2011).

However, I continue to use the traditional terminology (specific and general).

having access to a trampoline. For Lucy, we can say that she has the *general* ability to jump on a trampoline.

For my purposes, the ramifications of the distinction between general and specific abilities is as follows: output-focussed theories are predominantly concerned with specific abilities. This is because specific abilities require both Ability and Opportunity and thus the agent would usually succeed in carrying out the action. If the agent does not have the Opportunity, they will not succeed in carrying out the action (think: pianist without access to a piano).

In addition to neglecting Can$_a$, output-focussed theories also neglect general abilities. Output-focussed theories of ability take what happens as a result of trying to exercise an ability as a measure of whether someone has the ability or not. When we consider whether someone has a general ability, we are not interested in whether an agent will succeed in carrying out the action, if they tried. Lucy in (12) will not succeed in carrying out her ability to jump on the trampoline, but we would still like to say *something* about her ability – this is why general abilities exist. However, because output-focussed theories put so much emphasis on carrying out the action, they cannot talk about general abilities without specific abilities. Output-focussed theories are unable to accommodate general abilities *in isolation*.[41]

A strength of the new analysis of ability I introduce in §2.2 – the Input Analysis – is that it allows us to talk about both specific and general abilities as well as accommodating both senses of 'can'.

Returning to the Jaster quote from above, there remains a problem as to what exactly the scope of these internal properties is (see Jaster 2020, Vetter m.s., Berofsky 2002).[42] Specifically, should we be considering all internal properties of an agent when assessing the general ability of that agent? It seems not, as Jaster contends 'we vary the broken leg when thinking about the ability to jump, the current nervousness when thinking about the ability to meditate, and the drugged brain when thinking about the ability to solve a mathematical puzzle' (Jaster, 2020 p115). We do not hold *all* internal properties fixed when assessing general agential abilities.

Jaster (2020) suggests that although internal properties can be a good indicator of general abilities, we can come up with cases in which not only internal properties factor into general ability ascriptions. Jaster gives the following examples:

> The ability to baptize. The ability to impress John. The ability to recognize a particular building. All of these abilities are fully general in the sense that we do not have a particular situation in mind when ascribing them and having them requires that the agent manage to

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[41] The reason I am talking about general abilities in isolation is because output-focussed theories *can* accommodate general abilities but only in conjunction with specific abilities. For example, I have both the general and specific ability to stand up from my office chair right now. Imagine that I have just stood up, I have exercised this general and specific ability successfully. Therefore, output-focussed theories can accommodate general abilities, but only when we also have the specific ability as well.

[42] I substitute Jaster's use of 'intrinsic' and 'extrinsic' with 'internal' and 'external' to mean the same thing as Jaster, but to maintain my consistent terminology.

exercise them across a large range of circumstances. Yet, all of these abilities depend as much on extrinsic properties of the agent as they depend on her intrinsic properties (Jaster, 2020 p116).

Indeed, the general ability to baptise does not simply depend on the internal properties of the agent, but on the various social and religious rules and regulations that the agent may follow. Similarly, the ability to impress John does not just depend on the agent's impressing abilities but, to the same extent, John himself. Finally, the ability to recognise a building also depends on that very building. Therefore, Jaster concludes that internal properties do feature in all cases of general abilities, but they are not the only thing that we should hold fixed when ascribing and assessing general abilities (Jaster, 2020 p116).

Jaster proposes an alternative, more nuanced account of general abilities, stating that we should analyse general abilities in terms of an agent's stable, mostly internal features (but, as we know from the previous cases, not exclusively so). Here, Jaster is taking into account the fact that although the features are mostly internal, in some cases there will be features outside of the agent's internal properties (recall the baptism, impressing John, recognising building cases). By 'stable' Jaster is making it clear that these internal properties cannot be fleeting. In other words, an agent does not have a general ability if that ability is a result of luck or of chance. Take the following sentence:

(14)   Terry, who has never golfed before, can hit a hole in one on his first try.[43]

According to Jaster's criteria, Terry has this general ability iff Terry has the relevant, stable, mostly internal features. Accordingly, in (14) we could say that Terry does *not* have the relevant, stable, mostly internal features that would give Terry the general ability to hit a hole in one on his first try, therefore (14) is false. This is because Terry has never golfed before and so if Terry did succeed in hitting a hole in one on his first try, it would be reasonable to put that success down to luck and not a case of ability. If, say, Terry upon getting this hole in one subsequently decided to take up golf as a hobby and began to play it regularly, then Terry may acquire the general ability to hit a hole in one. This is because (i) Terry develops relevant internal properties in virtue of taking up golf and (ii) these internal properties that enable him to hit a hole in one stabilise.

We can see how Jaster's account of general abilities might map onto Can_a.[44] To say that Terry can hit a hole in one, under Can_a, is to say that Terry has the *internal* features (or the *Ability* factors) and to say that Terry can hit a hole in one, under Jaster's account of general abilities, is to say that Terry possesses stable, mostly intrinsic properties. Although the properties can be external (as we have seen in the baptism, impressing, and building identification cases), the properties are mostly

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[43] This could also be described as 'fluke ability' (see Bernard Gert and James A. Martin 1973) which is consistent with Jaster's account. Given the 'stability' aspect of this account, we might be inclined to think that these types of situations would not be classed as 'abilities'.

[44] Jaster's account is not the only account of general and specific abilities and I am not arguing it is the best, just that it is a good fit with the current discourse.

intrinsic.[45] This coincides with the way Can_a accounts for abilities because of the focus on internal properties independent of the external situation.

By contrast, as noted above, specific abilities are more closely connected with Can_{a+}. Vetter writes, with reference to John Maier's (2022) example about a tennis player who is miles away from a court:

> Her specific ability, on the contrary, is gained and lost with changes in her external circumstances: the presence or absence of a racquet and ball in her vicinity, and other similar factors. Her general ability to serve is an intrinsic property of the agent; her specific ability is an extrinsic property (Vetter, 2012 m.s.).

Therefore, specific abilities require both internal and external factors. Our pianist has the specific ability to play the piano if and only if they have the Ability and there is a piano present. They have the general ability regardless of having access to a piano.

To conclude, general and specific abilities are a way of identifying different type of abilities. Specific abilities are most closely aligned with Can_{a+}, and general abilities with Can_a. Therefore, I argue that not only are output-focussed theories of ability left with adopting Can_{a+}, but they also will not get the right answer when we talk about general abilities. Consider our pianist without access to a piano, under Can_{a+}, they do not have this ability because they will not succeed in carrying out this action.[46]

2.1.4 Conclusion

In this section, I outlined two of the main players in ability analyses: conditional and modal. I showed that these analyses are *output-focussed*. These analyses take outputs (e.g. success or failure) as necessary and sufficient for having an ability. I identified two different senses of 'can': (i) Can_{a+} (Opportunity + Ability) and (ii) Can_a (Ability alone) and two different sorts of abilities: specific and general. I argue that output-focussed theories of ability are restricted to one sense of 'can' and often get the wrong result when accommodating general abilities. Therefore, I suggest we look to new methods to analysing all abilities.

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[45] I will admit that my account of Can_a does not map onto Jaster's account as neatly as I am making it out here (although for my purposes, it is still useful to see how Jaster's account and my definitions interact). Under Can_a, I am saying that there is a sense in which John can baptize whilst lacking the Opportunity factors (i.e. a baptism pool, someone to baptise, a free day). This is because John has the relevant Ability factors. Under Jaster's account, these factors are relevant and stable, internal factors (or, to use her terminology, 'intrinsic'). My account does not make any reference to stability or relevance (at least, with respect to Can_a).

[46] This piano example is a criticism of *CA* in particular. We get a different result with, for example, Vihvelin's analysis. VA focuses on the *possibility* of succeeding. Given that it is not logically impossible for the pianist to exercise their piano playing, we can imagine a close possible world in which they *do* exercise their piano playing. Broadly speaking, it seems like Vihvelin's analysis can encompass general abilities whereby the exercising is not *logically impossible*.

In the following section, I present my new analysis of ability: IA. IA is compatible with Can_a and Can_{a+} as well as capturing both general and specific abilities. This, I argue, makes it a more desirable analysis of ability than output-focussed analyses.

2.2 A New Analysis of Ability

First (§2.2.1), I explicate the distinction between inputs and outputs in further detail. The rest of this section (§2.2.2-2.2.4) aims to develop and evaluate my new analysis of ability, building on the given motivations and the discussion of outputs and inputs. My new analysis of ability, which I label the 'Input Analysis' (IA), shifts the focus from outputs to inputs. I show that not only can IA adopt *both* senses of 'can' discussed in §2.1.2.1 and §2.1.2.2 but also that IA can accommodate both general and specific abilities. This is in direct contrast to output-focussed theories which are focussed on Can_{a+} and often fail to really capture what is going on with general abilities.

 2.2.1 Inputs and outputs

The distinction between inputs and outputs forms the core of my analysis of ability. Broadly speaking, inputs and outputs are the things that go into and come out of an attempt. Much like a mathematical function whereby the 'input' goes into the function and the 'output' comes out of the function, I have a similar idea in mind for ability analyses.

2.2.1.1 Inputs

In this sub-section I talk more about inputs specifically. The concept of an output is rather more straightforward; the output is the result of an action: the consequence. Inputs require further elucidation.

Informally, inputs are the things that go into an action and thereby help determine the action's aims. Formally, under the umbrella term 'inputs', I identify two different types: 'skill-based' and 'context-based'. Skill-based inputs are inputs which are determined and developed by the agent, whereas context-based inputs are external to the agent. This distinction is the same as my previous discussion of 'Ability' and 'Opportunity' (Kenny 1975, Alvarez 2013) from §2.1.2. Recall, Anthony Kenny:

> An ability is something internal to the agent, and an opportunity is something external. It is difficult to make this intuitive truth precise. The boundary between internal and external here is not to be drawn simply by reference to the agent's body: illness, no less than imprisonment, may take away the possibility of exercising my abilities without necessarily taking away the abilities themselves (Kenny, 1975 p133).

Where Kenny is saying that Abilities are internal and Opportunities are external, I am saying that the skill-based inputs are internal, and the context-based inputs are external (same concepts, new terminology). Both of these types of input conditions aid in the potential exercise of an ability. Given the relevance of both internal and external inputs ('Ability' and 'Opportunity' factors),

follows that IA can adopt both Can_{a+} and Can_a. An agent can possess an ability in virtue of having both the skill-based and context-based inputs (Can_{a+}) or simply in virtue of having the skill-based input conditions alone (Can_a) (I talk more about this in §2.2.4). Under IA, outputs are irrelevant for assessing ability.

Let us take a closer look at the two different sorts of inputs. Context-based inputs are the same as 'Opportunity' factors. These inputs are external to the agent. Take my ability to jump in a puddle: in this instance the context-based inputs could include the weather (as the weather may affect one's specific ability to jump in puddles), what the puddle is made out of (might be a puddle of acid) and geographical location of the puddle.

On the other hand, there are skill-based input conditions. Under my account, these are the more salient inputs because an agent can have an ability just by possessing the skill-based inputs. These inputs, as illustrated by Kenny's definition, are internal to the agent. They are the things that an agent has spent time doing or has practiced which may aid them in carrying out the action. Returning to my puddle example, although there are contextual inputs, ultimately one can have the ability to jump in a puddle just in virtue of the skill-based inputs alone e.g. functioning legs, jump-based dexterity. That is, the lack of contextual input does not entail that the agent does not have the ability. The agent can still jump in a puddle, even if there is no puddle present at that particular moment. Although I am distinguishing between different sorts of input conditions in order to accommodate both senses of 'can', under IA the skill-based inputs alone are sufficient for abilities.

Relating my distinction between context-based and skill-based inputs to the distinction between general and specific abilities we can now explain these abilities in terms of inputs.

Although I have already detailed this distinction in §2.1 it is also pertinent to the current discussion of inputs and outputs. Both A. M. Honoré (1964) and Alfred Mele (2003) have popularised this way of approaching abilities. Honoré talks about specific abilities as follows:[47]

> To summarize the use of 'can' (particular) in relation to particular actions: success or failure, on the assumption that an effort has been or will be made, is the factor which governs the use of the notion. If the agent tried and failed, he could not do the action: if he tried and succeeded, he was able to do it. If he will fail however hard he tries, he cannot do it; if he will succeed provided he tries, he can (Honoré, 1964 p464).

An agent has specific ability iff the agent has both the Opportunity and Ability. In John's case, he does not have the specific ability since (i) he does not have the Opportunity and thus (ii) if he tried to play golf he would subsequently fail. Mele writes 'the ability to golf that [John lacks] is a specific practical ability, an ability an agent has at a time to A then or to A on some specified later occasion' (Mele, 2003 p447). To use my terminology, specific abilities need to have both skill-based *and* context-based inputs. Thus, John needs to have both his skill-based inputs (golfing knowledge, the

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[47] Honoré refers to specific abilities as 'particular' abilities, but the two terms are synonymous.

correct dexterity and movement to hit a golf ball…) and the context-based inputs (access to golfing equipment and a golf course…).

Alongside specific abilities, there are general abilities. These abilities only require the skill-based inputs. Again, I turn to Honoré for a definition of general abilities:

> It is time to turn to 'can' (general), which is so labelled because it is most commonly used in connection with types of action rather than particular actions. 'Can' in this sense is used to assert a general competence, ability or skill in the performance of some type of action. If a person is a competent golfer, 'he can hole a short putt' must be true; otherwise he would not be competent (Honoré, 1964 p464-5).[48]

John's golfing ability can be characterised as a general ability to golf. We can also understand general abilities in terms of inputs by saying that an agent has a general ability by possessing the skill-based inputs *alone*. This is regardless of whether or not the agent carries out the ability. Therefore, John has the general ability to golf because of the skill-based inputs; John has practised, knows the game, and has the muscle memory.

In §2.1, I explained that output-focussed theories are better equipped to talk about specific abilities. This is because, specific abilities require both the Ability and Opportunity which, combined, brings about the output. I suggested that output-focussed theories neglect general abilities or at least, get the wrong result when accommodating them. General abilities are an important subset of ability. I would even argue that we discuss our general abilities far more in everyday conversations than our specific abilities. I talk to my friends about my ability to play the flute despite barely ever having a flute present. When watching Parks and Recreation, I often speculated that Leslie Nope had the ability to become President of the United States despite never having succeeded. We also talk about sports people having the ability to do things that they have not yet done. For example, many football pundits said that Mohammed Salah had the ability to score over 25 goals in Premier League season, despite Salah not scoring that many goals this season. This is because pundits understood that Salah has the capacity to score that many goals; he has the internal, Ability factors or, to use my terminology, the *skill-based inputs*. Pundits said this because of how talented Salah is, not because he successfully scored over 25 goals – he did not.[49]

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[48] I think the Honoré definitions are a good indication of the difference between general and specific abilities, but I am not saying that these definitions map onto my theory directly. Honoré's account has elements of success type language built into it. For example, Honoré writes 'if the agent tried and failed, he could not do the action' or "he can hole a short putt' must be true; otherwise he would not be competent' (1964 p464-5).

[49] Often, but not always, our general abilities exist because there have been situations in which we have also had the relevant specific ability. I can talk about my general ability to play the flute because there have been time where I had both the Ability and Opportunity inputs. The reason why pundits talk about Salah's general ability to score over 25 goals in a premier league season is because they have seen him with the specific ability to score lots of goals. Importantly, I do not think that specific abilities need to necessarily be tied in with outputs, we can tell an input based story for them. What we can say, however, is that outputs are *epistemically useful*, but not what's constitutive of having an ability. So, the way we know Salah had the

General abilities are so important because not only do they enable us to talk about abilities we have more generally, but also talk about abilities that we think people have 'in them'.

For this reason, I think it is fair to say that general abilities are a salient feature of our everyday assessment and discussion of abilities. This is not to say that specific abilities are not salient, but just that *both* are important for our ability talk. Therefore, we should not be picking which sort of ability needs to be covered by an analysis, instead we should be attempting to accommodate both types of ability; this, I argue, is what IA does. In sum, I show that not only can IA accommodate both senses of 'can' discussed in §1.2.1 and §1.2.2, but *also* I show that IA can accommodate both general and specific abilities.

To further establish the importance of inputs over outputs, I borrow an example from Alfred Mele (2003): John is a golfer but has not golfed in years and is currently nowhere near a golf course. Does John, in this moment, have the ability to golf?

The answer to this is not captured just by looking at the output. The output of John trying to play golf is 'failure', since John does not have any 'Opportunity' factors or 'context-based' inputs – the things that usually give rise to the output. However, if we look to the skill-based inputs here, our answer is different. The relevant inputs differ from case to case, here the skill-based inputs may include whether John even knows what golf is, or whether John can recall how to play golf, or whether John can hold a golf club. Therefore, according to the skill-based inputs alone, John does have the ability despite in that moment not being able to carry out that ability successfully:

> Although I have not golfed for years, I am able to golf. I am not able to golf just now, however. I am in my office now, and it is too small to house a golf course. The ability to golf that I claimed I have may be termed a general practical ability. It is the kind of ability to A that we attribute to agents even though we know they have no opportunity to A at the time of attribution and we have no specific occasion for their A-ing in mind (Mele, 2003 p447).

2.2.2 IA and senses of 'can'

2.2.2.1 Input-focused + Can_{a+}

I now provide more detail about how input-focused theories map onto both senses of 'can' discussed in §2.1. As I have shown, there are two types of inputs: skill-based and input-based. An agent can possess both the context-based (Opportunity) inputs and the skill-based (Ability) inputs

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specific ability to score lots of goals in a given match is that he has a track record of doing so. Likewise, one of the ways we know I have the general ability to play the flute is that I have done so many times. This *is* evidence that you have the relevant inputs. In other words, when we ask 'how do you know S has the ability?' we might usefully refer to outputs. But referring to the outputs is compatible with the answer to 'what makes it the case that S has the ability?' being *they have the relevant inputs.*

and have an ability regardless of whether the agent successfully carries out the action. This is in line with Can_{a+} whereby having an ability requires having both the Opportunity and Ability.

For example, Fiona has the ability to knit a scarf due to her context-based and skill-based inputs (both external and internal factors). These inputs include, access to wool and knitting needles (context-based) and knitting talent (skill-based). Crucially, the input-focused analysis does not count success or lack-of as a measure of ability and therefore I suggest that success is not a required component of ability analyses. Therefore, it does not follow from Fiona failing to knit a scarf that she does not have the ability. In this case, Fiona possessing both skill-based and context-based inputs are enough for her to have the ability to knit, even if she does not successfully exercise this ability.

2.2.2.2 Input-focused + Can_a

Second, input-focussed theories can also take Can_a. Returning to the case of Fiona, we can say that Fiona has the ability without having the context-based inputs (knitting needles, wool etc…). Fiona has the ability simply in virtue of her skill-based inputs. Therefore, Fiona's knitting skills are what measures her ability in this circumstance.

The relationship between output-focused, input-focused, Can_{a+} and Can_a is perhaps best illustrated via a table:

Fig.1

	Can_{a+}	Can_a
Input-focused	IA (internal + external)	IA (internal alone)
Output-focused	VA/MA/DA/CA	N/A

Fig. 1 illustrates that input-focused theories can take both of the senses of 'can'.

2.2.3 The Input Analysis

The ultimate goal of IA is to show that we should be treating the abilities of time travellers and ordinary everyday abilities (like making a cake, or riding a bike) the same. I want IA to capture the same sense of ability in both situations. I formalise IA as follows:

> **IA** *S* has the ability to *A* iff *S* possesses the inputs relevant for *A*-ing.

Consider the following sentence:

> (15)   I can make a cake.

According to IA, this translates as follows:

(15*) I have the ability to make a cake iff I possess the inputs relevant for making a cake.

The relevant inputs for *A*-ing are the elements the agent puts into their actions, the effort, the practice, the physical functioning of limbs, the materials, the appropriate situation, the weather, the mental capacity to remember details. The specific relevant inputs will change from context to context. The relevant inputs for making a cake will be different from the relevant inputs for running a marathon.

Returning to (15*), first we determine what the various inputs are for this specific context and then determine whether or not (15) is true. I have already discussed the duality of inputs - context-based and skill-based - and therefore I will separate the inputs for (15*) in these two categories. First, context-based inputs. These include the availability of the resources to make the cake, be that flour, vegan butter, sugar etc., and a kitchen to bake the cake. Second, skill-based inputs. These include one's own physical capacities, i.e. whether I am able to physically put all the ingredients together, whether I know how to make a cake.

There are two ways in which I have the ability to make a cake under IA. I can make a cake iff I possess skill-based inputs alone and I can make a cake iff I have a combination of skill-based and context-based inputs. The former is the general ability and the latter the specific ability. Therefore, (15*) is true in two situations: (i) if I possess only the skill-based inputs and (ii) if I possess both the skill-based and context-based inputs.

Finally, I turn to showing how IA can account for the abilities of time travellers. Take the following example from the literature:

(16)   Tim can kill his younger grandfather.

I am borrowing this example from David Lewis (1976) who argues that (16) is true relative to a specific set of facts. Lewis writes:

> Tim can kill Grandfather. He has what it takes. Conditions are perfect in every way: the best rifle money could buy, Grandfather an easy target only twenty yards away, not a breeze, door securely locked against intruder, Tim a good shot to begin with and now at the peak of training and so on. What's to stop him? The forces of logic will not stay his hand! No powerful chaperone stands by to defend them from interference (Lewis, 1976 p149).

I agree with Lewis here and my analysis should not be seen as an alternative to Lewis's view, more of an extension and development of it. The crucial difference between (15) and (16) is that, due to the truth of eternalism and maintaining the logical consistency of time travel, Tim will never

succeed in killing his grandfather.[50] No matter how hard poor Tim tries, it is logically impossible for Tim to succeed in killing his infant grandfather and his infant grandfather to stay dead. However, it is also logically impossible for me to simultaneously make a cake and not make a cake. What then is the reason for philosophers being more inclined to accept the truth of (15) but not (16)? The problem is better spelled out in terms of *nomological possibility* and we can use some of Vihvelin's arguments to briefly elucidate the issue. Again, we have already seen in §2.1 that Vihvelin employs a traditional analysis of counterfactuals, under which we evaluate the truth of counterfactuals by looking at what happens in the closest possible worlds in which the *antecedent* is true:

> If it is true that Suzy can kill her baby self then it must be the case that there are at least some occasions on which it's true that:
>
> > (S) If Suzy had tried to kill Baby Suzy, she would or at least might have succeeded.
>
> But that is so only if on some occasions at least some of the closest worlds at which Suzy tries to kill Baby Suzy are worlds at which she succeeds. Whether this is so will depend, of course, on what the time traveler's world is like. I assume, as discussion of time travel standardly assumes, that the time traveler's world is much like the actual world (Vihvelin, 1996 p320).

Comparing this to the cake example, we can imagine there being a close, possible world in which I do make the cake:

> (17)   If I had tried to make a cake, I would or at least might have succeeded.

We evaluate (17) by looking at what happens in the closest possible worlds in which the antecedent is true. In these worlds, I do try to make a cake and presumably, I do succeed in making the cake. However, as Vihvelin shows, there are no nomologically possible worlds in which the antecedent of (S) is true. It is not nomologically impossible for me to succeed in making a cake, however it is for the time traveller to kill her baby self.

The problem, then, is how to account for the ability of the time traveller in (16) and my ability to make a cake in (15). Both sentences depict different scenarios (nomologically speaking), but the aim of my analysis is to capture the same sense of ability in both.

Under IA, sentence (16) can be translated as follows:

> (16*) Tim has the ability to kill his infant grandfather in the past iff Tim possesses the relevant inputs for killing his infant grandfather in the past.

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[50] The reason I am putting this clarification of 'staying dead' is that one could imagine a possible world (albeit not a nomologically similar possible world) in which Tim successfully travels back in time and kills his infant grandfather only for his grandfather to be resurrected days later. This resurrected grandfather would then go on to become Tim's grandfather and therefore this situation is *not* logically impossible.

Let us break down the relevant inputs for Tim's ability. Examples of skill-based inputs in Tim's scenario include that Tim is "a good shot to begin with and now at the peak of his training" (Lewis, 1976 p149). On the other hand, there are context-based inputs. In the passage above, context-based inputs include "conditions are perfect in every way", grandfather an easy target only twenty yards away, not a breeze.

I have been discussing the concept of an 'input' and the different types of 'inputs' involved in different abilities. The next step is to make it clear what makes an input *relevant*. The question is, in Tim's scenario, what counts as a *relevant* input? Thus far, I have been giving examples of inputs that fit into one of two categories: context-based and skill-based. I contend that when determining which inputs are 'relevant' we have to think about what we appeal to when describing abilities. More specifically:

> **Relevant Inputs** an input is 'relevant' insofar as it has some sort of explanatory relevance for having the ability.

What are the relevant inputs for me being able to play the piano? The relevant inputs are those I appeal to when I explain *why* I can play the piano. For example, my skill, my training, having access to a piano etc.

This also explains why the skill-based inputs are the more salient (that is, under IA we can have abilities just in virtue of the skill-based inputs). This is because the skill-based inputs have more *explanatory relevance*. In explaining my ability to play the piano the inputs that seem more informative are the skill-based inputs. What explains my ability to play the piano? Predominantly, my training, my practice and less so having access to play the piano. Indeed, it would be odd to explain my ability to play the piano by saying 'there is a piano over there'. This gives us another reason as to why agents can have abilities in virtue of their skill-based inputs alone.

I consider inputs relevant insofar as the input has some sort of explanatory relevance for the ability in question. The skill-based inputs have more explanatory relevance which explains why they are the more salient or important inputs.

Overall, the agent may fail to exercise their ability or they may succeed – the *outputs* are unimportant. This allows for situations, like in sentence (16), in which no matter how hard Tim tries, Tim will fail in killing his infant grandfather.[51]

Ultimately, I am suggesting that Tim in (16) does have the ability despite the fact that the output of his trying will always be 'failure'. This is due to Tim possessing the relevant inputs.

This analysis, as it currently is expounded, is slightly too broad. It could be argued that all inputs have *some* explanatory relevance. For example, we could argue that my ability to play the piano is

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[51] The time traveller will always fail to exercise this ability, which indicates an important difference between everyday cases and cases involving time traveller attempts to change the past. I discuss this a potential problem for IA in §3.1.

explained, to a certain extent, by the presence oxygen. Would we want this to be considered as a relevant context-based input? Or should there be some threshold for which inputs are explanatorily useful? I suggest that we should not be considering *all* contextual inputs as explanatorily relevant for having an ability and that there should be a threshold.

In order to have a threshold for relevant inputs being explanatorily useful, I suggest that there are some inputs which we can take as background assumptions. These inputs, although to a certain extent have *some* explanatory relevance, should not be included in the list of relevant inputs for having a specific ability. A way to think of this is as follows: the *absence* of oxygen would affect the plans of many agents, not just Tim, not just my ability to play the piano. Therefore, not only would oxygen have to be explanatory relevant for the abilities of specific individuals, but for the abilities of everyone more generally. However, there will be context-based (as well as skill-based) which are solely relevant for Tim or for me playing the piano. For example, the presence of a gun for Tim's ability to kill his grandfather in the past or the presence of a piano for my ability are agent-specific context-based inputs that explain the ability. I think it is fair to make some background assumptions with regards to the context in which the ability is specified. The agent-specific inputs are the more salient ones and the one which are to be included in our list of relevant inputs for the abilities in question.

Therefore, when speaking about relevant inputs throughout this thesis keep in mind that I am not considering *every* small detail as relevant even if said detail has *some* explanatory relevance. There are background assumptions that we can make given the ability and the context in which we are working in.

2.2.4 Advantages of IA

Having laid out IA and its relationship to the different senses of 'can' and general and specific abilities, I turn to discussing two specific advantages of IA – (i) that it addresses shortcomings of existing analyses and (ii) it accounts for the abilities of time travellers. I suggest that these advantages make IA a more preferable analysis than output-focussed theories.

2.2.4.1 Addressing the shortcomings of existing analyses

2.2.4.1.1 The Conditional Analysis

Recall the Conditional Analysis:

> **CA** an agent S has an ability A iff S would A if S tried to A (Maier, 2022).

Here, I explain two of the biggest problems with CA and show the ways in which IA gets around them.

The first problem is that there are abilities agents have which they just fail to exercise (for example, by bad luck). These cases of bad luck do not equate to a lack of ability and CA fails to properly capture these cases. Recall Austin's (1956) golfer again:

> Consider the case where I miss a very short putt and kick myself because I could have holed it. It is not that I should have holed it if I had tried: I did try, and missed. It is not that I should have holed it if conditions had been different: that might of course be so, but I am talking about conditions as they precisely were, and asserting that I could have holed it… Nor does 'I can hole it this time' mean that I shall hole it this time if I try or if anything else: for I may try and miss, and yet not be convinced that I could not have done it; indeed, further experiments may confirm my belief that I could have done it that time although I did not.
>
> But if I tried my hardest, say, and missed, surely there must have been something that caused me to fail, that made me unable to succeed? So that I could not have holed it. Well, a modern belief in science, in there being an explanation of everything, may make us assent to this argument. But such a belief is not in line with the traditional beliefs enshrined in the word can: according to them, a human ability or power or capacity is inherently liable not to produce success, on occasion, and that for no reason (Austin, 1956 p308).

Under CA, the golfer does not have the ability to make the short putt since he failed upon trying. However, the golfer is still convinced that they could have holed it. Perhaps, the golfer is at the peak of their training. In any case, it seems false to conclude that because of this one miss, the golfer fails to have the ability. The key phrase in the above passage is the following:

> A human ability or power or capacity is inherently liable not to produce success, on occasion, and that for no reason (Austin, 1956 p308).[52]

Sometimes humans just fail for no reason other than bad luck. Importantly, this failure does not and *should* not equate to a lack of ability. These are two very different things.

IA can account for cases like this because IA ignores the 'output' of the action (whether the agent succeeds or fails): an agent can still have an ability even if they fail to exercise that ability. Instead, IA asks whether the agent has the relevant inputs for the ability ascription. For example, presumably being a golfer requires knowing the rules of golf, having access to golfing equipment or a golf course, perhaps the wind speed is particularly low and the golfer has at least some previous golfing experience.[53] All of these inputs account for the ability the golfer has despite their failure in this circumstance.

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[52] We also find this idea in Lewis (1976, p150) – a temporary lack of luck does not entail a lack of ability.

[53] Note that this last input may sound very 'output-y'. However, previous experience of making a putt does not equate to previous success of making the putt. The former is an input and the latter is an output disguised as an input. It is a subtle but important distinction and when giving examples of inputs, I am careful to not involve 'previous success' in amongst the relevant inputs. I discuss this as a potential objection to the input analysis in §3.3.

In the golfer case, CA gets it wrong because it mistakenly denies that the golfer has the ability. The second problem with CA is that in other cases, it mistakenly affirms that an agent has an ability when intuitively it seems like they do not.

> Suppose that I am offered a bowl of candy and in the bowl are small round red sugar balls. I do not choose to take one of the red sugar balls because I have a pathological aversion to such candy. (Perhaps they remind me of drops of blood and…) It is logically consistent to suppose that if I had chosen to take the red sugar ball, I would have taken one, but, not so choosing, I am utterly unable to touch one (Lehrer, 1968 p32).

Under CA, the following statement is true: 'if I tried to choose the red candy, I would have chosen the red candy' and therefore the agent has the ability. However, this seems wrong or at least counter-intuitive. It is more intuitive to say that the agent does not have the ability to choose the red candy, since they cannot choose it due to their pathological aversion. One could imagine parallel cases of phobias in which an agent would jump out of a plane if they tried (and therefore, under CA have the ability), but the agent could not try due to their fear of heights. Here, it is perhaps better (and more in keeping with common sense) to conclude that the agent lacks the ability due to their aversion or phobia.

IA is able to accommodate Lehrer's case. The question we need to ask is whether the agent in Lehrer's case possess the relevant inputs for choosing the red sugar ball? I argue no because they do not possess the *relevant inputs*. There are some relevant inputs that the agent does have: dextrous hands, the requisite movement in the arms to reach for a candy and pick it up. But an important input is missing, or perhaps more accurately, these other inputs are 'overridden' by the pathological aversion. Consider the following, analogous example:

> Carrie is an acrophobic, she has an intense fear of heights. For this reason every time she is above a certain height, she is unable to move. When asked whether she has the ability to skydive, Carrie firmly answers "no". However, under CA, Carrie would have this ability since, it is true that Carrie would jump out of a plane if she tried to jump out of a plane. Because Carrie is an acrophobic this inhibits this ability.

I think Carrie's case is a clear indication of someone lacking the relevant inputs. Some relevant inputs for skydiving would include be willingness, mental desire to jump, the requisite leg movements, booking on to the skydive adventure and going up in the plane. Carrie is lacking these relevant inputs because her mental health condition is overriding these relevant inputs. We can say that her acrophobia *is* an input, but it is not relevant for her *having* the ability. Recall my definition of 'relevant inputs':

> **Relevant Inputs** an input is 'relevant' insofar as it has some sort of explanatory relevance for having the ability.

We can see how Carrie's acrophobia is not explaining her *ability* to skydive, instead we could say that it explains her *inability* to skydive. As a result, we can conclude that Carrie's acrophobia is *not* a relevant input for her ability. The acrophobia is overriding Carrie's relevant inputs.

We can think of other cases in which certain inputs override the relevant inputs. It may seem that John has the ability to refrain from smoking, he wants to give up, he has control of his body, and he can stay at home instead of buying cigarettes. However, his addiction is overriding these relevant inputs and thus we can conclude that he does not have this ability due to his addiction.

Under IA, the pathological aversion case seems to give us the right answer, in that the red-candy-hating agent does not possess the relevant inputs as their aversion is overriding them. IA thus bypasses another significant problem for CA.

2.2.4.2 The abilities of time travellers

Here, I argue IA that an advantage of IA is that it is able to account for the abilities of time travellers. So far, I have shown how my analysis is an attractive alternative to CA as it overcomes the problems associated with it. Specifically, IA is able to account for abilities even though we might fail to exercise that ability and also IA explains why we might not have abilities when we have phobias and psychological aversions. Now, I show how my analysis is an attractive alternative to other ability analyses – VA and MA.

Time travellers are agents and therefore I believe they should be included in analyses that aim to capture something about agents. Furthermore, Vihvelin herself (amongst others) is interested in the abilities of time travellers. So the relevant parties agree that these agents are deserving of attention. Thus, I argue that if an analysis cannot account for the abilities of time travellers, then this is a disadvantage of that analysis.

Let us take each of the CA variants in turn to illustrate how they cannot account for the abilities of time travellers. First, Vihvelin's analysis (VA):

> **VA** An agent *S* has an ability *A* iff, if *S* tried *A*, *S* would or at least might *A* (inspired by Vihvelin, 1996 p320).

Now, recall that Tim from (16):

(16)   Tim can kill his younger grandfather.

Tim will never succeed in killing his infant grandfather in the past. Therefore, under VA Tim does not have the ability to kill his grandfather since there is no possibility of him succeeding. Although VA is considerably weaker than the original formulation of CA, there still needs to be at least the possibility of succeeding. However, in the time travel scenarios we are concerned with there is no chance of success. I think that VA is wrong about the ability of Tim.

My new analysis *is* able to capture the abilities of time travellers. We only need to look to the relevant inputs. Given that my account is not concerned with the 'output' of the action, it does not matter how many times Tim fails to kill his grandfather. All we need to ask is whether Tim possess the relevant inputs? I argue yes. Again, consider the following passage from Lewis:

> Tim can kill Grandfather. He has what it takes. Conditions are perfect in every way: the best rifle money could buy, Grandfather an easy target only twenty yards away, not a breeze, door securely locked against intruder, Tim a good shot to begin with and now at the peak of training and so on. What's to stop him? The forces of logic will not stay his hand! No powerful chaperone stands by to defend them from interference (Lewis, 1976 p149).

I suggest these elements are included in Tim's 'relevant inputs' and constitute Tim's ability to kill his infant grandfather. Therefore, although Vihvelin does take interest in the abilities of time travellers, I disagree that her account accurately identifies the abilities of time travellers.

Under my new ability analysis, abilities are not arbitrary; an agent must still possess the relevant inputs. But crucially, we have shifted the focus such that we are not measuring an agent's ability by the output.

Ira Kiourti (2008) supports my concerns. She argues that Vihvelin is not only concerned with output, she holds the output *fixed*. She writes:

> As it stands [VA] is not very convincing as an ability principle. For starters the following objection can be brought against [VA]. Say, I want to evaluate my ability to ride a horse, but there are no horses around. If I tried to ride a horse (holding the absence of horses fixed) I would invariably fail. But this doesn't seem to capture facts about my ability to ride a horse (Kiourti, 2008 p345).

Kiourti suggests that Vihvelin commits a modal fallacy. We already know that Vihvelin argues there is no meaningful sense of 'can' in which the time traveller can kill their infant grandfather (given what we ordinarily mean by can). However, Kiourti argues that Vihvelin holds the outcome of the action fixed. Specifically, Vihvelin holds fixed the fact that the time traveller *will fail* and from there she argues that the time traveller does not have the ability:

> Whether we are talking about time travel scenarios or normal cases, we surely cannot apply Vihvelin's ability principle to evaluate an agent's ability to do [*A*] by (implicitly) asking what would happen if she tried to do [*A*] and failed (Kiourti, 2008 p350).

In order to arrive at her sense of 'can', Vihvelin claims that the time traveller will fail to kill their infant grandfather at all nomologically possible worlds in which the time traveller makes the attempt. Therefore, she makes the assumption that if there were an attempt on the time traveller's younger grandfather, it lies in the personal past of the time traveller. However, to assume that the time travellers' attempt lies in their personal past is to assume that they failed. Since, if they had

not failed, the attempt would not lie in the time traveller's past… the time traveller would not have existed. Therefore,

> Since Vihvelin limits her attention to only nomologically possible worlds where Suzy tries to kill Baby, she limits her attention to worlds where it is already presupposed that the attempt in fact failed. Then Vihvelin is reduced to claiming that the attempt must fail because it does fail (Kiourti, 2008 p350).

IA does not fall foul to Kiourti's objection to Vihvelin. Given that IA does not pay attention to the output, it follows that we are not holding the output fixed and therefore we do not fall into similar problems.[54]

Second, we have modal accounts:

> **MA** S has the ability to A iff S does A at some world (or set of worlds) satisfying condition C (Maier, 2022).

VA and MA are somewhat similar. Indeed, there are those who suggest that VA is just a modal account of ability (Maier 2022). This is because Vihvelin focuses on the fact that an agent has an ability iff there is a possibility of exercising the ability. It follows that we can apply similar criticisms to MA. In modal analyses more generally one could restrict the set of possible worlds to include worlds in which the time traveller does successfully kill his grandfather only for his grandfather to be resurrected a couple of days later. In this situation, the time traveller does have the ability to kill their grandfather because there is a possible world in which they succeed. Therefore, Tim has the

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[54] Ted Sider (2002b) also offers some arguments against Vihvelin's account. He focuses on something called 'selective attention', considering as an analogy 'permanent bachelors'. We will define a permanent bachelor as someone who never gets married. When visiting possible worlds in which permanent bachelors exist, we would find that permanent bachelors never get married for many different reasons: 'some never have the inclination, others wish to be married but never find a suitable partner, others slip on banana peels and fatally injure themselves while walking down the aisle, and so on' (Sider, 2002b p125). However, permanent bachelors are still free to get married, indeed they can get married, they just would not be a part of the permanent bachelor group. Given that those who are free to get married are not permanent bachelors, the permanent bachelors left will fail to get married. Why do these people fail to get married? For a variety of coincidences and coincidences are not usually thought to impact our freedom. The same idea can be applied to the freedom of time travellers:

> There is no one driving force that makes a time traveler fail; the failures need not be caused, for example, by the fact that they are time travelers. There are, of course, causes for the failures; "coincidental failures" are not uncaused failures. But the sorts of causes here – slips on banana peels and the like – are not the kinds of causes we take to undermine freedom; they are neither the presence of disabling mechanisms nor the absence of enabling mechanisms. So even if the closest possible worlds to a given world, *w*, in which a time traveler attempts to kill her former self are worlds containing such coincidental failures, this does not imply the presence in *w* of disabling mechanisms or the absence in *w* of enabling mechanisms (Sider, 2002b p134-135).

ability to kill his grandfather, because he does kill his grandfather at some world in which the grandfather is then resurrected a couple of days later.

However, discussions of ability and possibility tend to restrict the possible worlds to those bearing nomological resemblance to our world. As Vihvelin writes:

> This is not the sense of 'can' we ordinarily use when we talk about what people can and cannot do. It's logically possible for me to run faster than the speed of light, but I cannot do so. It's logically possible for me to walk on water, but I can't do that either. On the other hand, I can swim and I can ride a bicycle (Vihvelin, 1996 p317).

I think Vihvelin is right to disregard worlds which allow for resurrection and agree that modal analyses in general should, overall, maintain that nomological resemblance is important for ordinary ability assessments. However, the issue is not which worlds we should include, but rather that modal analyses still put emphasis on whether the agent successfully performs the action, even if the performing occurs at a possible world. Modal analyses are concerned with the possibility of the agent *succeeding* and therefore are still output-focussed. But in time travel scenarios, there is no relevant possibility of the agent succeeding in killing their infant grandfathers. Therefore, modal analyses cannot account for these sorts of abilities. One might object to this and argue that if there is not a possible world in which the time traveller succeeds, then they do not have the ability, I discuss this objection in §3.2.

To support my claim, we can think of cases analogous to the time travel case in which an agent has all the relevant inputs (like the time traveller) and yet there is not a close, possible world in which the agents succeeds. For example, imagine that I have all the relevant inputs for playing the piano but pianos no longer exist in the world I am in. Let us also imagine, that pianos do not exist anymore because they are against the laws of nature of this particular world – perhaps the laws are something along the lines of 'pianos can only exist for the first few hundred years'. It follows that all close possible worlds to this world are also worlds in which there are no pianos (assuming that we think a 'close' possible world should have some sort of nomological resemblance, which I do). Given this, we can say that although I have all the relevant inputs for playing the piano, there is not a close, possible world in which I succeed – like the time traveller. However, intuitively I do have the ability because I have the relevant inputs – I have the required finger dexterity and strength, I have practiced and know the ins and outs of a piano. It is simply the case that due to pianos no longer existing in the world, I will now never succeed in playing the piano, and thus it also follows that there is no close, possible world in which I succeed in playing the piano. This is a case, like the time travel case, in which, under IA, the agent has the ability despite them failing at all close, possible worlds.

Overall, under IA, time travellers have the ability to kill their grandfather iff they have the relevant inputs. That is, Tim *can* kill his infant grandfather because he possesses the skill-based and context-based inputs despite him never succeeding in carrying out this actions. Time travellers may also have other abilities that involve changing the past (something they will not do). Assuming that it is true that Tim *does not* high five his grandfather in 1934, Tim will not make it the case that he does high five his grandfather in 1934. However, is Tim *able* to high five his grandfather in 1934?

Under IA, we have to look to the relevant inputs. Context-based-wise Tim might be close enough to his younger grandfather to warrant a high five, Tim might already have his hand lifted in a high five motion. Skill-based-wise Tim might just really love high-fiving, Tim has a desire to high-five his grandfather and he can move his arms in a motion that constitutes a high-five. It is inconsequential whether Tim succeeds in high-fiving his grandfather and in fact, we know given the way I have set up the story, he will not. Thus, we can talk about abilities that time travellers and non-time travellers will never exercise. This is direct contrast to output-focussed theories which are unable to capture what I take to be genuine cases of ability in these time travel scenarios.

2.3 Chapter Conclusion

Thus far, I have presented a new analysis of ability – IA – that focuses on inputs rather than outputs. In presenting this new analysis, I first showed how much of the existing ability literature relies on *outputs* and argued that this fails to capture the abilities of time travellers. In presenting an input analysis for ability, I am able to capture a lot of what is intuitive about abilities (our practice, our skill, our context), whilst avoiding a lot of problems with outputs.

A lot of the pessimism surrounding the abilities of time travellers stems from the fact that successful exercising of specific time traveller abilities is impossible. However, I contest that this is because we are so focussed on the *outputs* of actions that we ignore what is actually important for abilities. Although, outputs are epistemically useful, they are not what constitute having an ability. Therefore, bringing the focus back to what goes into the action provides us with a way to approach abilities that is intuitive, but not output-focussed. In presenting IA, I also showed how my new analysis captures different senses of 'can' and both *types* of ability (specific and general). This is an advantage of IA over existing analyses which I have argued are left having to make concessions about senses of 'can' and sometimes get the wrong result about general abilities.

In the next chapter, I discuss some potential problems with IA, in particular focussing on whether IA is wrong about impossible abilities and abilities which agents will always fail to exercise. Having discussed these possible objections, I turn to using IA to formulate a theory of freedom.

Chapter 3 – Three Problems for IA

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"It's kind of fun to do the impossible"
Walt Disney

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In the previous chapter I developed my new analysis of ability – the Input Analysis (IA). In doing so, I was able to account for the abilities of time travellers. The next step is to use IA to cultivate a new account of freedom, which I do in chapter four. First, though, I address three potential problems for IA.

The first problem I call 'the problem of repeated failures'. Repeated failures occur when a time traveller tries multiple times to exercise an ability that is impossible. For example, a stubborn time traveller who really wants his younger grandfather dead and therefore attempts to kill his grandfather multiple times. The question is whether someone can *really* have an ability that they will always fail to exercise.

The second (related) problem I label 'the problem of the impossible'. In arguing for the abilities of time travellers, a potential consequence of my argument is that other agents can do impossible things. This is because I argue that time travellers can (have the ability to) kill their grandfathers despite this being impossible. Do I then have to make the jump that everyone can do all sorts of impossible things? Can IA even get off the ground with the presupposition that time travellers can do the impossible?

The third problem I label 'the problem of previous outputs'. This problem highlights that in determining the relevant inputs for an ability, one might need to draw on a previous 'output' or when determining the relevant inputs, some inputs might look like outputs in disguise. For example, if I am determining whether I have the ability to ride a bike, I might be inclined to use 'previous riding of a bike' as an input. Thus it may seem that I am smuggling previous outputs into an input-focused analysis.

I address each of these problems in turn.

3.1 The Problem of Repeated Failures

Brittany is a time traveller who has decided to go back in time and murder her infant grandfather. She is incredibly stubborn and will not stop until he is dead. Let us assume that all the relevant planning and training has gone into this mission and therefore let us assume that under IA she has the ability:

IA S has the ability to A iff S possesses the inputs relevant for A-ing.

And inputting Brittany's ability, we arrive at:

(18) Brittany has the ability to kill her infant grandfather iff Brittany possesses the inputs relevant for killing her infant grandfather.

First, four assumptions: let us assume that (i) (18) is true, (ii) Brittany murdering her infant grandfather is logically impossible given the laws of nature (no resurrection is allowed in this world), (iii) the person Brittany wishes to kill is *actually* her infant grandfather and (iv) that Brittany does have the relevant inputs. We know that Brittany will be unsuccessful in her attempt to kill this person, and yet Brittany has this ability (according to IA).

Suppose that Brittany does try to kill her grandfather and she does fail. But, due to her stubbornness and determination, she tries again, and again, and again. Every attempt to exercise her ability fails.[55] Consider an everyday case of ability like riding a bike. Will I fail in each attempt to ride a bike? Probably not, seeing as it is not logically impossible to succeed in riding a bike and because I possess the relevant inputs. For example, I have access to a bike and an empty road to ride down (context-based) and I know the bodily movements, I have the balance and I have practiced riding a bike (skill-based). By contrast, despite my reliance on inputs and *not* outputs one might be inclined to argue that Brittany's case is not a case of ability owing to Brittany repeatedly failing to kill her infant grandfather (something that is unlikely to happen in the bike example).

To this point, Vihvelin (discussing a time traveller called Suzy wishing to kill her younger self) writes:

> More generally, I say that it's true not only that Suzy's attempts to kill Baby Suzy will all fail; I say that it's also true that if Suzy had made any further attempts to kill Baby Suzy, these attempts would also all have failed. And because she wouldn't succeed no matter how often or how hard she tried, I don't think the time traveler can kill her baby self (Vihvelin, 1996 p319).

That is, a critic might argue that even if we accept that Brittany has the relevant inputs, we cannot accept that she has this ability because of the infinitely repeated failures: this is far too difficult a pill to swallow.

To answer this problem I offer two responses. The first response draws on Peter Vranas's (2010) arguments concerning everyday examples of abilities that agents fail to exercise.

For context, Vranas is responding to Vihvelin's claims that a time traveller does not have the ability to kill their 'younger self'. Vranas formalises Vihvelin's argument against these abilities of time travellers as follows:

> **V1** If someone would always fail to do something if she tried to do it, then she cannot do it.
> **V2** A time traveller would always fail if she tried to kill her baby self.
> Thus: **C** A time traveller cannot kill her baby self (Vranas, 2010 p116).

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[55] Given that to succeed would be logically impossible.

First, Vranas considers V1. In arguing against this first premise, Vranas asks us to imagine a situation in which the very act of trying makes an agent so self-aware that they repeatedly fail to exercise their ability:

> Suppose that if I tried to win the award for best singer I would become so nervous and I would sing so poorly that I would fail; but suppose further that in fact I sing without trying to win (I don't even know that I am being considered for the award), and thanks to my ability I sing so well that I do win. Then I can win the award (since I do win thanks to my ability), although if I tried to win I would always fail (Vranas, 2010 p116).

Therefore, despite the repeated failures, we can still say that that agent has the ability. This is enough to conclude that Vihvelin's arguments concerning the abilities of time travellers are wrong (according to Vranas). However, is it enough to protect IA from the repeated failures argument? We can apply similar arguments to the problem. Although IA does not make reference to trying, we can still imagine everyday situations in which an agent has the *relevant inputs*, but they fail to exercise their ability repeatedly. That is, we can translate the arguments from Vranas into input terminology. Recall, again, IA:

> **IA** S has the ability to A iff S possesses the inputs relevant for A-ing.

I suggest that some of Vranas' argument can be applied here. This is because there are everyday abilities that an agent always fails to exercise which can also be translated into IA:

> (19) S has the ability to sing iff S possess the inputs relevant for singing.

(19) is still true despite the stipulation the S fails every time she attempts to sing – under IA she still has the ability to sing because she possesses the relevant inputs. For example, control over her vocal chords, requisite training etc. I do not think we would deny that S *can* sing despite the failures. That is, we can imagine a case, similar to the one that Vranas presents, in which the relevant inputs persist and this is what gives them the ability regardless of how many times they fail. Perhaps, like Vranas suggests, the agent is nervous, perhaps they have a particularly sore throat, perhaps, even, they have a medical condition which inhibits their singing when under extreme stress. As I have noted in previous sections, we even could say that the nervousness or the sore throat *masks* the ability that the agent nonetheless has.

So what is it about time travel scenarios that make it difficult to accept the same conclusion? I argue that we should not treat the two scenarios differently. If we conclude that the agent has the ability in the non-time travel example despite repeated and persistent failures, then we should conclude the same in time travel scenarios. Returning to the Brittany case, we can say that she does have the ability to kill her younger grandfather and that this is not as unusual as one might initially think. Given that we can think of other, every day, non-time traveller cases in which the agent repeatedly fails to exercise their ability, the time travel case should not be seen as an oddity. Brittany has the relevant inputs, the rest does not matter.

We might be unsatisfied with this response because we are still left having to accept abilities that we will always fail to exercise. This brings me to the second solution I offer: biting the bullet by denying that this is a problem for the input analysis in the first place. Given that the input analysis specifically says that we should not focus on the outputs of abilities, the problem of repeated failures can't even get off the ground to begin with: each repeated failure is an *output*. My analysis tells us that we should not worry about the outputs, even if the output will always be 'failure'. Therefore, I deny that this is a problem in the first place. As long as the agent possesses the relevant inputs, then they are good to go regardless of the output. We also see this in Lewis (1976, p150). We do not tend to consider whether someone will succeed when we evaluate ability. Our everyday ability ascriptions are concerned with the Ability and Opportunity factors (skill-based and context-based inputs). As Lewis writes:

> [Tim's] failure by no means proves that he was not really able to kill Grandfather. We often try and fail to do what we are able to do. Success at some tasks requires not only ability but also luck, and lack of luck is not a temporary lack of ability. Suppose our other sniper, Tom, fails to kill Grandfather's partner for the same reason, whatever it is, that Tim fails to kill Grandfather. It does not follow that Tom was unable to. No more does it follow in Tim's case that he was unable to do what he did not succeed in doing (Lewis, 1976 p150).

I agree with Lewis and IA provides us with a way to understand abilities without looking to whether the agent successfully exercises that ability. It does not matter how many time the agent fails, it does not matter if they *never* succeed, the relevant inputs are what are necessary for abilities.[56]

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[56] Even if you are not convinced by the two main arguments I outlined in this section, there is a swath of literature that covers the repeated failures issue within time travel, the focus is on the question: 'what stops the time traveller from changing the past?' The standard line is to say that some sort of commonplace reason will stop the time traveller (Lewis 1976, p150). Brittany's gun jams, she slips on a banana peel, a noise distracts her etc. Something will happen which prevents the successful exercise of the impossible action. Therefore, Brittany trying multiple times will entail more and more coincidences. This has led some philosophers like Paul Horwich to suggest that time travel entails long strings of *improbable* coincidences (Horwich, 1987). A lot of the literature notes that these issues are not as bad as they initially seem. See, for example, Nicholas J. J. Smith (1997, 2005), Ted Sider (2002), Philip Dowe (2003). The consensus amongst these philosophers is to say that the 'commonplace reasons' (Lewis, 1976 p15) or coincidences that stop time traveller auto-infanticide or grand-patricide attempts do not make time travel *simpliciter* less likely or improbable. For example, Smith writes (responding to Horwich's arguments that coincidences make time travel less likely):

> I argue that even if local backward time travel did entail long strings of slips on banana peels and other such coincidences, that would not show that such time travel is improbable, and will occur at most extremely rarely. It would show *only* that such time travel has not occurred in our vicinity, and will not occur in our vicinity within the next few generations—a far weaker conclusion (Smith, 1997 p367).

Thus, even if unconvinced by my initial arguments, there is a lot of literature as to why repeated failures is not as big a problem as we might initially think.

3.2 The Problem of the Impossible

The second (related) objection to IA is that it affirms time travellers have abilities that it is impossible for them to exercise. We know that in order to maintain the logical consistency of time travel, we must conclude that time travellers will not actually carry out these impossible actions. But I am nonetheless arguing that they *can* due to the possession of the relevant inputs. That is, the following sentence is true:

(20)   A time traveller has the ability to kill their infant grandfather because they possess the relevant inputs.[57]

(20) is true despite the impossibility of the agent succeeding to exercise this ability. However, a potential problem arises: having committed to this analysis of ability, it may appear that I have to commit myself to all sorts of impossible abilities In other words, if I am suggesting that time travellers *can* do the impossible even though they will not, then am I also suggesting that other agents have the ability to do the impossible? The intuition here, and I think a big reason why philosophers are less inclined to accept the abilities of time travellers, is that no one can do the impossible given what we ordinary mean by 'can'. This is the intuition that Vihvelin (1996) shares which leads her to argue that no one can do something they will always fail at. Additionally, it is the word 'impossible' that people find difficult to accept. The very nature of impossibility seems to preclude ability (for example modal accounts define ability in terms of what is *possible*). Therefore, the problem is that abilities which are impossible to exercise do not feel like genuine cases of ability.

There are two questions related to this problem. First, if it is impossible for a time traveller to exercise a given ability, does this undermine the claim that the time traveller has the ability? Second, if I do ascribe these so-called 'impossible abilities' to time travellers, do I then commit myself ascribing other impossible abilities to non-time travellers? I address each question in turn.

Some philosophers do argue that there are intuitive cases of impossible abilities. For example, Jack Spencer (2017) argues in favour of impossible abilities, suggesting that there are cases ('G-cases') in which an agent has an ability that is metaphysically impossible to exercise. However, I suggest a different course of action.[58] I suggest that rather than thinking of the abilities of time travellers as cases of impossibility and working backwards, we should be thinking of them as cases of abilities which happen to be impossible. In other words, when assessing whether a normal agent has an ability, we do not first ask whether exercising that ability is impossible. We do, however, ask whether the agent has certain inputs. We should not treat time travel cases any differently. In fact, it would be *ad hoc* to do so. As I have been saying, the very act of time travelling should not alter

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[57] Where relevant inputs can be split into *skill-based* and *context-based* and we can imagine that the time traveller is very skilled with their gun and the conditions are perfect at the time of the attack etc.

[58] Many philosophers have since responded to Spencer's original 2017 paper. For example, Anthony Nguyen (2020) argues that if we accept Spencer's cases we need to give up various well-set, intuitive principles. Noah Gordon (2021) also provides arguments against G-cases.

one's abilities. Given this, the fact that exercising certain acts is impossible should not factor into our ability ascriptions. Starting from the fact that the exercising of the ability is impossible is counterintuitive to how we actually analyse and ascribe abilities. Specifically, we do not ask whether someone has an ability by considering whether they always fail to exercise this ability (again, this is also supported by Lewis 1976).

To support this argument, I turn again to Kiourti's (2008) concerns with Vihvelin's account of ability. We have already seen in §2.2.5.2 that Kiourti argues Vihvelin commits herself to a modal fallacy in asking whether the time traveller *can* kill their younger selves or infant grandfather by first assuming that they do fail:

> If it is the case that I will die in 2045, then on pain of contradiction I cannot (permanently) kill myself in 2036. But from the fact that I happen to suffer some mishap and fail in my suicide attempt in 2036 it doesn't follow that I was *unable* to succeed. To conclude from the fact that something will not happen that I am therefore *unable* to do it is to commit what is often called the fatalist's mistake (Kiourti, 2008 p344).

Given this, the problem of the impossible cannot even get off the ground. I argue, like Kiourti, that we cannot move from the fact that the time traveller's successful exercising of their ability is impossible (that they *will not* exercise this ability) to them being *unable* to exercise this ability. The problem of the impossible is inconsequential when we are discussing the abilities of time travellers. If someone were to think that this problem is detrimental to my theory, then they are committing Kiourti's modal fallacy:

> Vihvelin crucially keeps the *outcome* of Suzy's attempt fixed. For, even if the outcome lies in the personal past of Suzy, this is the single fact that cannot be held constant in the evaluation of (KV).[59] Whether we are talking about time travel scenarios or normal cases, we surely cannot apply Vihvelin's ability principle to evaluate an agent's ability to do [A] by (implicitly) asking what would happen if she tried to do [A] *and failed*. Then, one of the things (amongst others) that would be the case if it was the case that S tried and failed to do [A], is that S failed to do [A] (Kiourti, 2008 p350).

I suggest that even if the exercising of the ability is impossible, this does not entail that the agent does not have the ability. We know that they have the ability via the input analysis.

Turning now to the potential implication of ascribing impossible abilities to time travellers – the second strand of the problem. Do I now have to commit myself to ascribing all sorts of impossible actions to agent? My answer: maybe, on the condition that the agent has the relevant inputs. Remember that for IA, we are looking at the relevant input in order to analyses abilities. Does an agent have the relevant inputs to do other impossible things? For example, to make 2+2=5? Or to square a circle?

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[59] Where (KV) is the following principle: 'If Suzy tried to kill Baby Suzy, she would fail' (Kiourti, 2008 p345).

I argue yes. If the agent has the relevant inputs, then they do have the ability and I do not think that this is far-fetched or odd. Again, there is literature that suggests an agent can have the ability to do something which is impossible. To explain this we only need look to my input analysis. Recall my 'relevant input' formalisation from chapter two:

> **Relevant Inputs** an input is 'relevant' insofar as it has some sort of explanatory relevance for having the ability.

Take, for example, the ability to square a circle. What are the relevant inputs that would explain the ability to square a circle? Specifically, what would the skill-based and context-based inputs look like? In terms of context-based inputs I could imagine that I have a pen and paper. In terms of skill-based perhaps we can go as far to say that I am a professor of shapes at some world-leading, top 5 shape-centred university and I am leading the field of square and circle studies specifically. Do both of these context-based and skill-based inputs explain my ability to square a circle? Well, presumably yes. We can add as many non-trivial inputs as we want to make the claim more convincing, perhaps I have created some mechanical drawing device that, when inputting the right equations, draws shapes (this would be a context-based input). Although, given the impossibility of squaring a circle, we know that I will fail with every attempt, but we can say that given the relevant inputs, this is an ability I have. In support of this, we can imagine a step-by-step method based on the relevant inputs for squaring a circle (and doing other impossible acts). That is, to help digest this claim more, we can stipulate that I have grabbed a pencil and paper, started the machine, and written some mathematical equations on the board. Rather than thinking about squaring a circle or killing one's younger grandfather as an instantaneous action, we should be thinking of these abilities in terms of their relevant inputs which can be broken down into steps which, I argue, makes the claim I am making more plausible.

In addition, I suggest we can appeal to some of the claims I have made in previous chapters about these abilities. For example, I noted that we often talk about agents, to use Lewis's terminology, 'having what it takes' to do something without them ever having done that thing before. In chapter two, I gave the example of Mo Salah having what it takes, having the *ability*, to score over 30 goals in a Premier League season despite not having done that. This is consistent with a lot of everyday assessments of ability, we often talk about people having what it takes to do certain things despite them never actually doing them. Again, IA captures this way of talking about abilities. The reason we talk about Salah's ability that he is yet to exercise is because he is a really good footballer, he is consistent and performs well in matches. This is characterised in terms of his relevant inputs. That is, despite never scoring more than 30 goals in one Premier League season, we can say that he has this ability because of possessing the relevant inputs that *explain* this ability. Similarly, we can talk about my ability to square a circle in a way which highlights that given my relevant inputs, I *have what it takes*. Again, even if I never succeed in exercising this ability we should not be looking at the output to determine whether I have this ability.

To further explain the situation, I borrow an example from Brian Garrett (2019):

> Suppose that Grandson will die in 2060. Can I kill him tomorrow, assuming that I have the wherewithal to do so? The answer seems to be, unequivocally, yes. The stipulated fact

that he will die in 2060 implies, of course, that any attempted homicide tomorrow will fail. But, as noted, 'will not' does not imply 'cannot', so it does not follow that any homicide attempt tomorrow must fail (Garrett, 2019 p177).

We know that in both the squaring circle case and the Grandson case the agent will fail to exercise the ability in question. This is because in the Grandson case there is the stipulation that the Grandson will die in 2060 (and it is impossible that he both die tomorrow and die in 2060) and squaring a circle is impossible. Regardless of the impossibility, I am arguing that in both cases the agents have the ability (given the assertion of the relevant inputs that I possess). The failure to kill Grandson is not because they lack the ability, as Garrett illustrates 'will not' does not imply 'cannot'. The same thing is happening in the squaring circles case and the Brittany time travel case outlined in §3.1.

Ultimately, the problem of the impossible falls short at being a significant issue for IA. I have argued we should not be looking to the *outputs* in order to discern whether an agent has the ability. This is similar to the points I brought against the problem of repeated failures and something Lewis also argues. In the words of Kiourti, if we do go from the case of impossibility to non-ability we are 'reduced to claiming that the attempt *must* fail because it *does* fail' (Kiourti, 2008 p351). If an interlocutor still thinks that the problem of impossible is an issue for IA, then one would disagree with IA as a whole. IA does not take concern with the outputs and therefore problems associated with the outputs are not problems for IA. This brings me to the final point about the two problems I have discussed thus far.

3.2.1 Avoiding the problems altogether?

Although I have defended my view from both the problem of repeated failures and the problem of the impossible, given what IA tells us about abilities we can combat these problems another way. Both of these problems are concerned with the *outputs* of abilities. Since IA tells us that we should not be looking to the outputs, we can avoid these output focused problems. Specifically, the problem of repeated failures suggests that abilities which entail repeated failures are not abilities. Failures are outputs and under IA, the outputs do not tell us anything about the ability. Similarly, the fact that abilities are impossible to exercise is also about the outputs and again, IA ignores the outputs.

I think the issue here is that the problem of repeated failures and the problem of the impossible are based off of intuitions. These problems exist because it feels *strange* to ascribe these sorts of abilities to agents; it feels counterintuitive. I do not have a particularly illuminating solution to this problem other than to say that sometimes intuitions are wrong.[60] Despite me personally thinking that intuitively, time travellers have these abilities, I can understand how it is a difficult pill to swallow. The more that we talk about these abilities and the more we talk about time travellers,

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[60] Philosophers have also noted that intuitions about time and time travel can be contradictory. See for example Rennick (2021) and Lathan, Miller and Norton (2019, 2020a, 2020b, forthcoming). There has been recent research to suggest that people do have opposing intuitions surrounding these topics. If intuitions about time and time travel are contradictory, then someone is wrong.

the less strange it will feel. Recall, that the philosophy of time travel is something which is still relatively new in the grand scheme of things and so it will take time to adjust to new ways to imagine abilities. Nonetheless, I do think that this is the correct way to talk about abilities, IA is able to capture what is integral and potent for abilities (the effort and the contextual factors) without needing to look to the outputs.

Thus, neither the problem of repeated failures nor the problem of the impossible are technically problems for IA, insofar as they both focus on the outputs of attempts, which are irrelevant for determining ability under my analysis. One thing these problems do is put pressure on IA if our intuition is that these problems undermine an agent's ability. Despite this, as I have suggested above, intuitions can be wrong and intuitions can change. I argue that IA gets ability ascriptions right and given IA focuses on inputs, we can ignore problems that stress the *outputs*.

3.3 The Problem of Outputs as Inputs

The final problem I consider is 'the problem of outputs as inputs'. This problem is specific to IA and I think it provides the strongest challenge to my input analysis of ability. Again, recall the formulation of IA:

> **IA** *S* has the ability to *A* iff *S* possesses the inputs relevant for *A*-ing.

Accordingly, I have the ability to dance iff I possess the inputs relevant for dancing. As I have already explained, the relevant inputs fall into two possible categories: context-based and skill-based. Context-based inputs are the external factors that factor into abilities; the weather is an example. Skill-based inputs are the agents' internal factors that give rise to the abilities, which may include previous experience or practice. The problem arises when we consider what we actually mean by previous experience or practice. Does this *really* translate as 'previous success'? Specifically, do I have to smuggle in previous outputs in order to get to the skill-based inputs that are so integral for my account of ability ascriptions? If this is the case, IA seems to just be an output theory of ability in disguise. However, this is not a good look for the *input* analysis of ability.

In a nutshell, in order to possess the inputs required to have an ability under IA, we might think that a relevant input might include 'previous successful exercise of the ability'. In other words, if I were to tell an input based story for the ability to ride a bike, I might be inclined to consider 'having ridden the bike before' as an input. However, this input is actually an output in disguise. Therefore, we are unable to use previous success as an input because to do so would undermine the whole input focused theory. Given this, what are the skill-based inputs?

I suggest that there are two ways to solve this problem. The first is a slightly cheeky 'let's just change how we describe inputs' solution. Instead of saying that previous success should be considered a relevant input we should instead suggest things like 'has practiced before' or 'understands the mechanics behind the ability'. Returning to the bike example, let us get to grips with the explicit relevant inputs. We can split them into context-based and skill-based, for example:

-   Context-based: having access to a bike.

- Skill-based: movement of legs to pedal, accurate balance, practice.

The language we use is pertinent to how we are to understand the relevant inputs. I like using the word 'practice' to describe a relevant input because 'practice' does not entail that the agent has succeeded before. They may have succeeded, they may not. But importantly the agent has put the relevant effort in. I think this way of thinking about things also aligns nicely with how we acquire abilities in the first place. Presumably the first time an agent tries to ride a bike, they cannot because they do not have this ability; they do not have the relevant inputs. What does the agent have to do to cultivate this ability? Practice. It does not matter how many times the agent fails, the way that the agent acquires the ability is by practicing. Indeed we can say that given the relevant inputs (both context-based and skill-based) we might assume that the agent will succeed in carrying out the action, but importantly this is not what is necessary for me having the ability to ride a bike.

The problem of sneaking previous successes or outputs into the relevant inputs is solved by altering the language which is used. We do not have to talk about previous successes when we are discerning the relevant inputs. What really is important is the previous experience, not the previous success. In other words, previously opening a door might sometimes be a relevant input for Farhad's ability in (21) (below), but it need not always be a *necessary* one. 'Prior experience' might consist of prior practising, or a whole series of previous failures. And there are many things I plausibly can do that I've never done before – like recite the alphabet backwards, or jump out of a plane or run a Dungeons and Dragons campaign. So, while previous outputs might be among the relevant inputs, I would argue that they plausibly are not required: they are not necessary. This is consistent with me still being interested in whether the inputs were present, not whether that attempt succeeded.

However, you might not be convinced by the first response, therefore I offer a slightly different way of looking at this problem. This solution involves thinking more about the distinction between inputs and outputs.[61] Imagine that the following sentence is true under IA:

(21)   Farhad has the ability to open a door.

(21) is true under IA in virtue of Farhad possessing the relevant inputs for opening a door. What are these relevant inputs? Context-based: having access to a door, the door not being locked, it being a particularly light door. Skill-based: working limb, sufficient strength to pull the door, and *having opened a door before*. This latter input is an output in disguise. This is because 'having opened a door before' means that in a previous attempt, Farhad successfully opened the door. This is an 'output' based input. We are using a previous output (i.e. previous success) as an input for the ability in question. Does this really matter though?

Perhaps we can think of it this way: the input of 'previous success' was once an output, but that was for a different instance of an ability. Now, it is an *input* even if the input is that of previous success. If we track back to the previous instance of this ability - whereby the 'having opened a door' output arose - we can find the relevant inputs for that ability as well. They might include the

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once an 'output', input of 'having closed the door before'. The point is, for IA all we need are relevant inputs for that specific ability. I am still maintaining that the outputs are not what is necessary for an ability. That is, whether Farhad does open the door or whether there is a chance that Farhad opens the door in this instance is not why he has this ability, it is still the relevant inputs.

I think both of these solutions provide good answers to the problem. The first gives us a nice way of looking at abilities that maps onto how we talk about abilities in our everyday lives. I have the ability to play a Bach sonata on the flute despite my multiple failed attempts when learning and despite me never getting it *perfect*. I have this ability in part *because* of my practice, not because of exercising it perfectly once. In addition, it is reasonable to think of 'previous success' as an input, but not a *necessary* input and it is the experience that is necessary.

3.4 Chapter Conclusion

To conclude, I have discussed three of which I consider to be the biggest problems to my analysis of ability. The first two problems suggested that IA is wrong in saying that agents have certain abilities. Specifically, abilities in which the successful exercise is impossible and therefore every attempt will fail. In providing responses to these two problems, I ultimately bit the bullet and concluded that these problems are output-focussed. Given that IA is concerned with the inputs of actions, we can seemingly ignore problems with failing or impossible abilities. The other potentially more problematic issue is our use of *outputs* as *inputs* i.e. whether 'previous success' should be considered an input. However, I illustrated that we can consider *outputs* as epistemically useful inputs, despite these inputs not being *necessary*.

Having explained and analysed three problems with IA, I now turn to using IA to build a compatibilist account of freedom.

Chapter 4: The Input Account of Freedom

> "There is no such thing as a little freedom.
> Either you are all free, or you are not free"
> *Walter Cronkite*

Ability and freedom are two intersecting topics within the literature surrounding free will. It is commonly assumed that in order to have freedom, one must also have certain abilities.[62] Speaking on the relationship between ability and freedom, John Maier writes:

> Questions about abilities have figured most prominently in debates over compatibilism. 'Compatibilism' is used in many ways, but let us understand it here as the thesis that the ability to perform actions one does not perform is compossible with the truth of determinism which we may take to be the view that the facts about the past and the laws jointly determine the facts about the present and all future moments… Insofar as compatibilism, so understood, has been explicitly defended, these defences have made appeal to theories of ability, notably the conditional analysis and its variants, as well as the dispositionalist analysis favoured by the new dispositionalists (Maier, 2022).

From the above, we can see the ubiquity of talking about abilities in the context of freedom. In chapter one, I showed, with reference to time travel cases, that an ABO-compatibilist account of freedom needs to contend with two existing problems: Frankfurt cases and the Consequence Argument *and* that philosophers of time travel tend to speak negatively about the abilities and freedom of time travellers. Then, in chapters two and three I focused on explicating and analysing my new account of ability that is able to account for the abilities of time travellers. Now that I have resolved the issue of ability, I can begin to combine what I established in chapters two and three with an account of freedom.

In what follows, I present a compatibilist account of freedom, combining my ability analysis from chapter two, with the ability to do otherwise.

I begin this chapter by outlining the approach of my closest rivals: The New Dispositionalists. The New Dispositionalists are compatibilists who also wish to maintain the ability to do otherwise (ABO) in their accounts of freedom. I begin with an abridged taxonomy of disposition and the relationship between dispositions and abilities (§4.1). In doing so, I focus on expounding two different analyses of dispositions (one conditional and one habitual). The latter half of this section moves to explaining the use of dispositions within the literature surrounding freedom, specifically discussing the use of dispositions to explicate a compatibilist account (§4.1.2). Next, I show why these compatibilist accounts do not work in time travel scenarios (§4.1.3). I discuss similar criticisms I brought to existing ability analyses in chapter two, and show that the New Dispositionalists are also too output-focussed.

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[62] In §1.1.2, I discussed some reasons for using ability conditions for freedom. I employ the ability to do otherwise, but as we will see going through my account of freedom is compatible with different ability conceptions of freedom.

Having rejected the approach of the New Dispositionalists, in section two I begin to build the Input Account of Freedom (IAF). IAF defines the ability to do otherwise in terms of inputs. I illustrate how, if we apply IAF to traditional, ability requirements for freedom, we arrive at an analysis that is (i) compatible with determinism, (ii) input friendly, and (iii) accommodates the freedom of time travellers. In addition, I show that if we do want to maintain some elements of the New Dispositionalist theories, we can also do this by appealing to inputs, but this is not a requirement of my account. I conclude the chapter by providing some examples from both time travel and non-time travel scenarios to show how the analysis works in practice. Ultimately, I argue that IAF provides us with an ABO-compatibilist account that is intuitive and can accommodate existing problems for ABO-compatibilists and that IAF allows us to be more optimistic about the freedom of time travellers in particular.

4.1 The Rise and Fall of the New Dispositionalists

In this first section, I give an overview of two prominent analyses of dispositions: 'conditional' and 'non-conditional'. I provide examples of both of analyses and I show why both of these analyses are problematic for time travellers. Specifically, I look at one conditional analysis from Kadri Vihvelin (2004, 2013) and one non-conditional analysis from Michael Fara (2008).[63]

In the second half of this section, I begin to discuss the New Dispositionalist strain of compatibilism and I show how the analyses discussed in §4.1.1 are used to build these accounts. I choose to focus on the 'New Dispositionalists' because they are a prominent strain of compatibilists who wish to maintain ABO in accounts. Given that I am also producing a compatibilist account that maintains ABO, the New Dispositionalists are my biggest rivals. Ultimately, I show that the New Dispositionalists are unable to capture the freedoms of time travellers.

4.1.1 Analyses of dispositions

Analyses of dispositions tend to combine two things: a manifestation and a stimulus condition(s). I begin by discussing conditional analyses culminating in Vihvelin's (2004, 2013) adapted conditional analysis before moving to Fara's habitual (2008), non-conditional analysis.

 4.1.1.1 Conditional analyses

In order to arrive at Vihvelin's amended conditional analysis of dispositions, I must first lay some groundwork. Vihvelin takes a sort of Lewisian approach to dispositions:

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[63] I am narrowing the scope of analyses due to relevance. Fara and Vihvelin are both champions of the New Dispositionalist strain of compatibilism and each provide a different analysis of dispositions. Vihvelin provides a conditional analysis, while Fara provides a non-conditional analysis. When I discuss Fara and Vihvelin as my biggest rivals, their analyses of dispositions are implicit in their accounts of compatibilism.

Lewis argued, with his usual careful attention to the claims of common sense, that the details of this "unlovely mouthful" are all necessary. I think he is right about this, and I also think that his account is as close to being right as any analysis currently in the literature (Vihvelin, 2013 ch6 p183).[64]

As a result, I begin by discussing the simple conditional analysis of dispositions and its problems before describing the ways in which Lewis attempts to solve these problems with his reformed conditional analysis. Following Lewis (1997), the simple conditional analysis can be presented as follows:

CD Something x is disposed at time t to give response r to stimulus s iff, if x were to undergo stimulus s at time t, x would give response r (Lewis, 1997 p143).

Accordingly, a glass is disposed at time t to break (r) when dropped (s) if and only if, if the glass were to be dropped (s) at time t, the glass would break (r). This analysis can also be applied to agents: Luke is disposed at time t to get angry (r) when hit (s) if and only if, if Luke were to be hit (s) at time t, Luke would get angry (r).

However, CD has come under much criticism due to its inability to account for certain cases.[65] Here I discuss three types of counterexamples to CD: finking, masking and antidotes.[66] Arguably, a good analysis of dispositions must be able to accommodate or at least account for these three types of counterexamples.

Cases of finking occur when a disposition's stimulus condition also happens to be the thing that causes the disposition to go away. That is, x does undergo stimulus s at time t, but the manifestation does not occur. However, as long as the stimulus does not occur, x would still maintain the disposition. As Lewis writes:

A finkishly fragile thing is fragile, sure enough, so long as it is not struck. But if it were struck, it would straight away cease to be fragile, and it would not break (Lewis, 1997 p144).

These are counterexamples to CD because the object or person still has the disposition to give response r to stimulus s, but if it were to undergo stimulus s, it would not produce response r. Specifically, the left-hand side of the biconditional is true, but the right-hand side is false, making the whole biconditional false.[67]

Next, I turn to cases of masking. Masking happens when the conditions for manifestation obtain, the manifestation does not occur, but the agent or object retains the disposition. Let us imagine

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[64] By 'unlovely mouthful', Vihvelin is referring to Lewis' *reformed conditional analysis* (RCD) and not the simple conditional analysis. I will get to RCD a bit further on.

[65] We saw in §2.2.5.2 that the conditional analysis of ability has also come under scrutiny.

[66] Although I am focussing on Lewis, C. B. Martin (1994) first drew attention to the problems facing CD with Lewis building on and clarifying the comments from Martin.

[67] Lewis adapts the conditional analysis to be able to account for cases of finking.

that I am holding a normal fragile glass which, if I were to drop it, would break. We can explain this relationship by saying that the glass has the disposition to break if dropped. However, let us now imagine that I wish to send this glass in the post to my friend. Given that I know the glass has this disposition to break if dropped, it would be reckless of me to send the glass in the post without any protection. Thus, in virtue of knowing this, I wrap the glass in bubble wrap to protect it on its journey.[68]

Due to the safety packaging, it is false that if I were to drop the glass, it would break. The stimulus condition occurs, but the manifestation does not (assuming I have wrapped the glass well). Given the presence of the bubble wrap, it would be strange to say that the glass has *lost* the disposition to break if dropped. After all, I have not changed the internal make-up of the glass. Therefore, we can conclude that the glass maintains the disposition to break if dropped and that the bubble wrap acts as a *mask* of this disposition.

Cases of masking are counterexamples to CD because, under CD something has a disposition iff, if it undergoes the stimulus, the manifestation occurs. However, in cases of masking the manifestation does *not* occur under the stimulus but the object or agent still retains the disposition.

The third strain of counterexamples to CD are known as 'antidotes'. Alexander Bird (1998) introduces the idea of antidotes in the following way:

> Many dispositions have what I call antidotes. An object x is disposed to display response r under stimulus s. At time t it receives stimulus s and so in the normal course of things, at some later time t', x gives response r. The time gap between t and t' is what allows, in finkish cases, for the loss of a disposition. An antidote to the above disposition would be something which, when applied before t', has the effect of breaking the causal chain leading to r, so that r does not in fact occur. Thus one can ingest a lethal dose of poison, yet not die if a suitable antidote is administered soon enough (Bird, 1998 p228).

The main gist of antidote cases is that if an 'antidote' is applied quickly enough then the manifestation of the disposition will not occur despite undergoing the stimulus. When explaining cases of finking, Lewis (1997) describes the presence of a sorcerer who changes the internal make-up of a glass once it is struck such that the glass does not break. Therefore, the striking of the glass actually causes the manifestation *not* to occur. Bird takes this example and applies it to the antidote counterexample:

> Another way of protecting the glass once it is struck is to find an antidote to striking. The sorcerer, being a brilliant physicist, may be able to administer shock waves to the struck glass which precisely cancel out the shock of the original striking, hence saving the glass from destruction (Bird, 1998 p228).

In Lewis's finking cases the disposition disappears once the stimulus is administered. The finkishly fragile glass is rendered non-fragile upon being dropped. However, in Bird's cases the disposition

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[68] The bubble wrap example is inspired by Mark Johnston (1992).

remains but the manifestation does not occur. This is another counterexample to CD since the glass will not break upon dropping. The manifestation does not occur if the stimulus is administered. However, the glass's disposition still remains; an *antidote* has been applied to stop the manifestation.

When facing these counterexamples, others have attempted to produce conditional analyses that are able to accommodate these issues.[69] Lewis's adapted or 'reformed' conditional analysis (RCD) takes into account cases of finking:

> **RCD** Something x is disposed at time t to give response r to stimulus s iff, for some intrinsic property B that x has at t, for some time t' after t, if x were to undergo stimulus s at time t and retain property B until t', s and x's having of B would jointly be an x-complete cause of x's giving response r (Lewis, 1997 p157).

In order to avoid cases of finking, Lewis suggests that an object or person has to possess an intrinsic property for a sufficient amount of time; that property has to last until after t. In finking cases, undergoing the stimulus prevents the manifestation of the disposition. However, RCD can accommodate this because in cases of finking the object or person is not retaining an intrinsic property for a sufficient amount of time and this is why they are not producing response r.

Although Lewis claims that his analysis can overcome finking, he fails to discuss whether his reformed conditional analysis can also accommodate cases of masking and antidotes. Michael Fara (2005) argues that RCD cannot accommodate cases of masking and Alexander Bird (1998) says that RCD cannot accommodate antidote cases. I turn to each of these claims now.

First, masking. Returning to the bubble wrapped glass, we know that the glass retains the same intrinsic properties throughout, it has just been affected by an external source. Nothing about the glass *itself* has been changed. The dispositional fragility of the glass remains. Therefore, it is true that the glass retains an intrinsic property B for a sufficient amount of time. But it is not true that the manifestation occurs under the stimulus. Therefore, the stimulus and retention of the intrinsic property do not cause the manifestation in this case. If I were to drop the glass wrapped in packaging, it would *not* break. Lewis's RCD is unable to account for cases of masking. In Fara's words:

> Lewis's sophisticated conditional account has a false instance too. For although the cup has an intrinsic property - weak crystalline bonding, say - which (in the relevant sense) "accounts for" its disposition to break when struck, Johnston's example shows that if the cup were struck then even if it were to retain that property still it would not break (and so, a fortiori, it would not break because of being struck and having that property). Lewis's analysans is false while the analysandum is true (Fara, 2005 p49).

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[69] In chapter two, we saw philosophers like Vihvelin (1996) and Davidson (1973) adapting the conditional analysis of abilities in the face of counterexamples, the same goes for CD: Lewis (1997), Malzkorn (2000) and Vihvelin (2013).

Second, Bird's (1998) antidote cases. Antidote cases occur when something undergoes the stimulus and then an 'antidote' is applied immediately in order to prevent the manifestation from happening. For example, the sorcerer strikes the glass and then administers shock waves that cancel out the striking and the glass remains unbroken despite being struck. Bird writes:

> In the antidote cases the antecedent [of RCD] is satisfied but not the consequent. For the causal basis of fragility remains and the glass is struck. But the causal basis and the striking are not jointly a glass-complete cause of breaking, since the glass does not break (Bird, 1998 p228).

In other words, in the antidote cases the glass retains the intrinsic property for a sufficient amount of time. Like in the case of masking, nothing about the internal make-up of the glass has been changed *and* the glass undergoes the stimulus. Therefore, the combination of retaining this intrinsic property and undergoing the stimulus do not cause the glass to break. Importantly, the glass retains the disposition. RCD cannot account for these cases.

Now that I have provided the groundwork, I can discuss Vihvelin's analysis. Vihvelin agrees with Lewis to a certain extent and argues that Lewis gets most of the way to a viable analysis of dispositions. However, she concedes that RCD is not perfect:

> It is generally agreed that Lewis's account solves the problem of finks, at least so far as so-called intrinsic dispositions are concerned, but some people think that Lewis's account is defeated by the problem of masks… Masks… are like finks insofar as they either prevent ("mask") the behavior that is the characteristic manifestation of a disposition, but they are unlike finks insofar as they don't cause the object to either lose or acquire the disposition (by losing or acquiring some intrinsic property that is the causal basis of the disposition) (Vihvelin, 2013 ch6 p184).

Given this, Vihvelin argues that we can combine the best features of Lewis's analysis with the best features of another analysis of dispositions from David Manley and Ryan Wasserman known as 'PROP' (2007, 2008, 2012).[70]

For context, in their paper 'On Linking Dispositions and Conditionals' Manley and Wasserman present a number of new counterexamples to existing conditional analyses of dispositions. Manley and Wasserman acknowledge the multitude of problems associated with conditional analyses, and yet they still wish to maintain the intuitive relationship between conditionals and dispositions.

> …Even if the promise of a conditional analysis is illusory, it is hard to believe that there is no interesting connection between conditionals and ordinary dispositional ascriptions. The connection need not be reductive, but it should at least explain, for example, the way that ordinary beliefs about dispositions guide action. When we learn that something is fragile, we treat it with care because we know that many kinds of rough behaviour would lead to

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[70] Where 'PROP' stands for 'PROPORTION'.

breaking. A theory of dispositions that dismisses this connection is simply abnegating its explanatory burden (Manley & Wasserman, 2008 p73).

The relationship between stimulus conditions and manifestations is prescriptive. It informs how we act and react in our lives. However, Manley and Wasserman *also* acknowledge that the relationship is not as simple as certain analyses make it out to be. There will always be situations in which manifestations do not occur under the specific stimulus conditions. However, what we do know is that there is a *reason* why we ascribe stimulus conditions and manifestations to certain objects or people. The two conclude that this is because in a reasonable number of situations the manifestation of the disposition *does* occur under the specified stimulus. We hold glasses gingerly knowing that the glass will presumably break if we drop it. Given this, Manley and Wasserman arrive at the following analysis of dispositions:

> **PROP** N is disposed to M when C if and only if N would M in some suitable proportion of C-cases (Manley & Wasserman, 2008 p76).

Accordingly, a glass is disposed to break when dropped if and only if the glass would break in some suitable proportion of C-cases (dropping cases). The definition of 'suitable proportion' will vary from case to case. Manley and Wasserman suggest that chemists working with delicate test-tubes and builders working with slabs of concrete would ascribe different definitions to fragility and therefore each of their 'suitable proportion of C-cases' will be different.

We now have two analyses of dispositions: Lewis's RCD and Manley and Wasserman's PROP. We already know why we cannot just stick with RCD on its own and Vihvelin argues that PROP equally has its problems. Although Vihvelin thinks that PROP has a nice simplicity to it, she suggests that this is at the cost of two things which are important for dispositions – 'internal causal structure and non-contextual restriction on the conditions that count as test-cases for the disposition' (Vihvelin, 2013 ch6). Unlike RCD, PROP does not explicitly mention the fact that objects and agents have dispositions in virtue of their intrinsic properties and PROP is very liberal as to what counts as a 'test-case', such that it becomes difficult to get to the truth conditions of the relevant counterfactuals. Vihvelin asks us to consider flammability:

> A dry well-made match is flammable—disposed to light when and because it is struck— and we ordinarily think that we know this fact by knowing the truth of some relatively specific counterfactual, or range of counterfactuals, about the match— if we were to strike it in reasonably optimal surroundings (oxygen, not too rainy or windy, no one standing by with a bucket of water, etc.), it would (probably) light (Vihvelin, 2013 ch6 p185).

Vihvelin argues that according to PROP, we need to know far more counterfactuals in order to discern that the match is in fact flammable:

> We must know that the match would light, not just at nearby worlds where its surroundings are favorable and it is struck, but also that it would light in a suitable proportion of all of the nomologically possible worlds where it is struck. We must know that the match would light a suitable proportion of the time if it were struck in pouring rain, on the surface of

the moon, in a sandstorm in the desert, at the top of Mt. Everest, and so on (Vihvelin, 2013 ch6).

Ultimately, for Vihvelin PROP does not capture the nature of dispositions because dispositions tend to have relatively stable internal properties according to which we act based on our knowledge of these intrinsic properties. We know that the match is flammable, and we know what would happen if we wetted the match. We know that if Declan is disposed to get angry when Manchester United lose, we perhaps should not be around him when they lose. As a result, Vihvelin suggests a combination of RCD and PROP.[71]

> **RCD-PROP** x is disposed at time t to give response R to stimulus S iff, for some intrinsic property B that x has at t, for some time t' after t, if x were in a test-case at t and stimulus S occurred and x retained property B until time t', then in a *suitable proportion of these cases*, S and x's having of B would be an x-complete cause of x's giving response R (Vihvelin, 2013 ch6 p188).

In combining RCD and PROP, Vihvelin is able to take the good parts from both theories whilst avoiding the problems. Vihvelin takes Lewis's suggestion that dispositions have intrinsic properties such that they react to certain stimuli in a certain way, and also Manley and Wasserman's suggestion that dispositions need not manifest every time it undergoes the stimulus (as is the problem in cases of masking/finking/antidotes).

How does Vihvelin's analysis work in practice? Let us again imagine the case of a fragile glass:

> A glass (x) is disposed at time t to break (r) if dropped (s) iff, for some intrinsic property B that the glass (x) has at time t, for some time t' after t, if the glass (x) were in a test-case at t and the dropping occurs (s) and the glass retains property B until time t', then in a suitable proportion of these cases, dropping the glass (s) and the glass (x) having of B would be an x-complete cause of the glass (x) breaking (r).

Admittedly, it is not the simplest of analyses to unpack (Vihvelin herself acknowledges that the attractive simplicity of PROP is lost on this analysis). So, let us take each of the elements in turn. First, we know from RCD what it means to retain an intrinsic property for a sufficient amount of time (from t to t'). Second, by 'test-case' Vihvelin is not meaning Manley and Wasserman's 'C-cases', she means cases which we count as relevant to testing each disposition. Third, Vihvelin also uses the idea of an 'x-complete cause' which we have seen in Bird, and in Lewis's account. To be clear, Lewis describes an 'x-complete cause' as follows:

> We can introduce a restriction of that notion: a cause is complete in so far as havings of properties intrinsic to x are concerned, though perhaps omitting some events extrinsic to x. For short, 'an x-complete cause' (Lewis, 1997 p156).

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[71] Vihvelin labels Lewis' analysis LCA for 'Lewis' Reformed Conditional Analysis', but I will stick with RCD.

We understand from both Vihvelin and Lewis that an 'x-complete cause' for the glass breaking is a combination of dropping the glass (the stimulus condition) *and* having this intrinsic property. What this means is that these two elements will bring about the manifestation of the disposition: they *cause* the manifestation to occur. If the glass just had one of these things, for example if the glass just had the intrinsic property B, then the manifestation would not occur because the intrinsic property alone is not an 'x-complete cause'.[72]

As I have mentioned previously, a good analysis of dispositions should be able to accommodate the main counterexamples to the simple conditional analysis. Due to the reliance on RCD and retention of an intrinsic property we can see how it can accommodate finking cases (because the object or agent needs to retain the disposition for a sufficient amount of time). Masking and antidotes cases are similarly accounted for under this analysis, since Vihvelin is not suggesting that the manifestation needs to occur every time. Again, we have the 'suitable proportion' element which allows for cases in which the manifestation does not occur under the stimulus. Therefore, Vihvelin presents an adapted conditional analysis which *is* able to account for the counterexamples to CD.

I will consider some weaknesses of Vihvelin's approach further on, but first I consider an alternative.

4.1.1.2 Non-conditional analyses

In this sub-section, I discuss Michael Fara's (2005) non-conditional 'Habitual Analysis' (HD). Note that even though both Vihvelin and Fara are proponents of the New Dispositionalists, they have differing accounts of dispositions.[73] Fara presents HD as follows:

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[72] I take 'x-complete cause' to mean something along the lines of a cause (or causes) that form the basis for the object or person (x)'s disposition. For Vihvelin, the x-complete cause is jointly the stimulus condition S and the object or person retaining an intrinsic property B for a sufficient amount of time (similar to Lewis's RCD).

[73] Although I chose to focus on Fara in this section, there are other non-conditional analyses. For example Barbara Vetter (2013, 2014, 2015) presents a modal analysis. Vetter claims that things just *are* disposed – 'the glass is disposed to break', 'the drainpipe is disposed to leak'. She thinks this is because dispositions entail a corresponding 'can' statement: the drainpipe is disposed to leak because it *can* leak etc. Therefore, she characterises her theory of dispositions using the following two claims:

> (1) A disposition is individuated by its manifestation alone: it is a disposition to M, fullstop.

> (2) Its modal nature is that of possibility, best characterized (to a first approximation) by 'x can M' (Vetter, 2014 p134-35).

I suggest that Vetter's analyses also fall fouls to the problems associated with both Fara and Vihvelin's analyses (which I detail in §4.1.3). It is perhaps even more obvious in Vetter's account how time travellers are unaccounted for given that some time traveller dispositions will never manifest. I discuss this more

> **HD** "N is disposed to M when C" is true iff N has an intrinsic property in virtue of which it Ms when C (Fara, 2005 p70).

Accordingly, "a glass is disposed to break when dropped" is true iff the glass has an intrinsic property in virtue of which it breaks when dropped. Dispositions, after all, belong to or are about the object/person they are ascribed to. Therefore, looking to the intrinsic properties of objects/people in order to ascribe dispositions seems like a smart move.[74]

Fara notes that HD makes accurate predictions about the truth-values of disposition ascriptions:

> Not only does sugar dissolve when put in water, for example, it also has an intrinsic property in virtue of which this is so; that is why, according to the Habitual Account, it is correct to say that sugar is disposed to dissolve when put in water. And I am not disposed to turn to dust when I read the word "abracadabra". Why? Because whatever my intrinsic properties may be, I don't turn to dust when I read that word (Fara, 2005 p70).

Therefore, HD does not give us strange results when analysing dispositions. Fara claims that the main reason to prefer HD over certain conditional accounts is because HD can solve the masking problem. As I have already explained, the main fault of Lewis's RCD is that the masking problem remains. Fara asks us to consider the following case of masking:

> A large barrel is perched precariously at the top of a steep hill, and someone is standing ready to push it. Just as they begin to push, however, someone else comes in and leans against the barrel, preventing it from rolling. This seems clearly to be a case in which (i) the barrel is disposed to roll when pushed, (ii) the barrel is being pushed, and yet (iii) the barrel is not rolling, and so it seems clearly to be a counterexample to any view according to which the disposition ascription
>
> - The barrel is disposed to roll when pushed
>
> entails the conditional
>
> - If the barrel were pushed, then it would roll (Fara, 2005 p71-2).

In this case the barrel's disposition to roll when pushed has been masked by the person preventing it from falling, and therefore the manifestation (rolling) does not occur. However, HD is able to accommodate these sorts of cases because habitual sentences ('the barrel rolls when pushed') are perfectly consistent with there being circumstances where the barrel does not roll when pushed.

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further on, but dispositional analyses are often too 'output-focussed' in that the way dispositions tend to be characterised are by their manifestation under a certain stimulus. The time traveller's disposition to kill his grandfather in the past will *never* manifest.

[74] We also know that both Lewis and Vihvelin appeal to intrinsic properties.

There is no conditional basis to HD and so the rolling does not conditionally depend on the pushing. Therefore, even if the barrel is pushed and it does not roll, the barrel still has the disposition under HD. In Fara's words:

> In short, the barrel has some intrinsic feature in virtue of which it rolls when pushed. And that is just to say, according to the Habitual Account, that the barrel is disposed to roll when pushed. There is no problem of masking for the Habitual Account of disposition ascriptions (Fara, 2005 p72).

Let us return to the bubble wrap example. In this case the glass has been wrapped in some sort of protective material in order to prevent the glass from breaking. The sentence 'the glass breaks when struck' is false in this circumstance due to the protective material, however the glass still has the disposition to break. HD is able to explain these circumstances because the sentence 'the glass breaks when struck' is still true despite circumstances when it doesn't break when struck. The glass still retains some sort of intrinsic property (molecular make-up or structure) that entails it breaks when struck despite the presence of the material protecting it (the *mask*). For the sentence 'the glass breaks when struck' to be true, all we need is that it usually breaks when struck (where we understand 'usually' in a way consistent with PROP):

> For instance, for the habitual 'John smokes, if he is nervous' to be true, it is not required that John always smokes when he is nervous. The same holds for habituals, or generics, involving natural kinds, like 'Benzene burns when put into fire'. Fara argues that because habituals and generics tolerate exceptions, such an analysis can account for the counterexamples involving mimicking and masking (van Rooij & Schulz, 2019 p3064).

Finally, Fara considers cases of finking and suggests that HD is also able to accommodate these sorts of cases. Let us turn to Martin's original example of 'electro-finks'. Imagine a rubber wire has been attached to an 'electro-fink'. This device ensures that should the wire be touched by a conductor then the wire would conduct electricity. We know that rubber is *not* disposed to conduct electricity. However, due to the presence of the electro-fink the rubber wire is now able to conduct electricity:

(22)   Rubber wires do not have the disposition to conduct electricity if touched by a conductor.

However, due to the presence of the electro-fink we actually arrive at the following:

(23)   If the rubber wire were touched by a conductor, then the wire would conduct electricity.

This is *only* true if the wire is touched by the conductor. The wire by itself does not have the disposition to conduct electricity. When the wire is touched by the electro-fink, it alters the make-up of the rubber wire, such that when it is touched by a conductor it conducts electricity. Here we have a situation in which the wire is not disposed to conduct electricity when touched by a

conductor, but in actual fact when it is touched by a conductor, due to the electro-fink, it does conduct electricity.

Again, Fara argues that these sorts of cases are unproblematic for HD. Even if the sentence 'the wire conducts electricity when touched by a conductor' is true, this is not because of anything about the original rubber wire – rubber wires are not habitually disposed to conduct electricity in virtue of their internal make up. The sentence is true because of something external to the rubber wire: the electro-fink (Fara, 2005 p76).

Similarly Fara's analysis can deal with antidote cases. Antidotes are applied after the stimulus condition occurs to then nullify the manifestation. Under HD, the disposition still remains because, again, the internal structure of the object or person has not changed. Despite the manifestation not occurring, we can still conclude that the disposition is maintained – something external has been applied to prevent the manifestation, but this is nothing to do with the object itself.

Concluding this section, Fara argues that his non-conditional analysis of dispositions not only provides a viable and realistic way of analysing dispositions but is also able to overcome the variety of problems associated with traditional analyses.

In this section, I outlined both Vihvelin's conditional analysis and Fara's habitual analysis. Next, I show how both use dispositions to cultivate a compatibilist account of freedom.

4.1.2 Dispositions and free will

4.1.2.1 Dispositions and abilities

In this sub-section I identify the similarities between abilities and dispositions which form the foundations of both Vihvelin and Fara's accounts of compatibilism. Owing to the relationship between abilities and dispositions, these compatibilists understand the ability to do otherwise in terms of dispositions. As I am discussing abilities in conjunction with dispositions, some of this discussion may sound familiar to chapter two.

As a starting point, dispositionalists speak about the similarities between dispositions and abilities. Vihvelin (2004) describes the relationship as follows:

> There are some striking similarities between abilities and dispositions. We have empirical knowledge of both. Abilities, like dispositions, don't typically pop into existence only on the occasion of their exercise or manifestation. Nor do they go out of existence simply because a person is not exercising them. A person may lose her ability to speak French if she doesn't speak French for many years, but she does not lose this ability every time she stops speaking French. Finally, abilities, like dispositions, entail the corresponding 'can' claim. Someone with the ability to play piano is someone who can play piano even when

she's not playing it; someone with the ability to speak French can speak French even when she's speaking English instead (Vihvelin, 2004 p431).

The latter point is the one of most interest to me: if I have a disposition to *A*, there is a sense is which I *can* do *A*. Due to the connection between abilities and dispositions, Vihvelin produces what she calls the 'Bundle view'. She suggests that 'we have the free will we think we have by having some bundle of [general] abilities and by being in suitably friendly surroundings; when this is so, we have not only the [general] but also the [specific] ability to do otherwise' (Vihvelin, 2013 chapter 6).[75]

Take the following two sentences:

(24)   Petunia has the ability to play football.
(25)   Petunia is disposed to play football.

Vihvelin suggests these two sentences imply that:[76]

(26)   Petunia can play football.

Broadly, this follows because of the connection between dispositions and abilities. Specifically, Vihvelin thinks this is the case because the following principle is true:

ABD to have an ability is to have a disposition or a bundle of dispositions (Vihvelin, 1996 p431).

The reason why sentences (24) and (25) express the same implication is because, for the New Dispositionalists, having an ability just *is* having a disposition. Accordingly, if I have the ability to ride a bike, I have the corresponding disposition to ride a bike.

A similar thought has been expressed by Michael Fara (2008):

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[75] Here, I am substituting Vihvelin's 'wide' and 'narrow' terminology for my 'specific' and 'general' terminology from chapter two. In Vihvelin's words:

Think of 'narrow' abilities as those abilities you have in virtue of what's beneath your skin; think of your 'wide' abilities as those abilities you have in virtue of what's beneath your skin *and also* your surroundings. To have a wide ability to do something is to have the narrow ability to do it, but not vice versa. When we say that someone has the narrow ability to do something – ride a bike, for instance – we mean that she *'has what it takes'* to ride a bike (Vihvelin, 2011).

[76] Barbara Vetter (2014) makes a similar sort of equation by claiming that dispositions entail a corresponding 'can' statement: '[a disposition's] modal nature is that of possibility, best characterized (to a first approximation) by 'x can M' (Vetter, 2014 p134-35).

Whenever an agent is disposed to act in a certain way, she has the ability to act in that way; and whenever her disposition is masked, so too is her ability. There is something wrong with saying that I am disposed to drink coffee when I am tired but that I do not have the ability to drink coffee. But this is compatible with there being occasions on which, for one reason or another, I am tired but do not drink coffee; I might, for example, discover that I have no coffee on hand. These are occasions on which my disposition, and my ability, is masked. Sometimes one finds oneself in a position in which one does not succeed in doing what one is able to do, even if one tries (Fara, 2008 p844-45).[77]

Here Fara is highlighting that, due to the connection between dispositions and abilities, masking affects both abilities and dispositions. Therefore, if my disposition is masked, so is my ability. Imagine I am disposed to get angry when shouted at. For Fara, it follows that I also have the ability to get angry when shouted at. He thinks that it would be odd to say that an agent has the disposition to *A* without saying they have the corresponding ability to *A*.

Given the equation of abilities and dispositions, can we apply similar problems with analyses of dispositions to abilities? We have already seen that masking is a problem for CD (the simple conditional analysis):

CD Something *x* is disposed at time *t* to give response *r* to stimulus *s* iff, if *x* were to undergo stimulus *s* at time *t*, *x* would give response *r* (Lewis, 1997 p143).

As a reminder, this is because we can imagine situations in which something is reliably disposed to produce response *r* under stimulus *s*, but owing to a 'mask', it fails to produce this response (think: glass wrapped in bubble wrap). Therefore, not only do dispositional analyses themselves have to contend with masking (we saw this when outlining both Vihvelin and Fara's contemporary analyses), but also when equating abilities and dispositions we must contend with the issue of masking. Hence, Fara's argument that when a disposition is masked, so too is the ability.

To further illustrate this consider Jenna:

Jenna is disposed to get angry when something in her life goes wrong. Because of this disposition, Jenna has been prescribed medication that helps calms her down. One day Jenna is out walking and trips, spilling her coffee on the floor. In a previous life, Jenna would have gotten very angry at this mishap, but owing to the medication she is on, this disposition does not manifest.

Jenna's case is another case of masking, if she stopped taking the medication her disposition would return. Thus, this is a disposition that Jenna still has, but the medication is *masking* this disposition. In turn, it follows that if she is disposed to get angry, so too does she have the ability and if this disposition is masked, according to Fara, so is her ability to get angry.

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[77] Similar ideas are expressed in Lewis: 'Success at some tasks requires not only ability but also luck, and lack of luck is not a temporary lack of ability' (Lewis 1976 p150).

Speaking of masking, Vihvelin offers a connection between general and specific abilities and dispositional masking. Returning to the glass example, when the glass is wrapped in bubble wrap the glass remains breakable because it has the *general* ability to break – it has the Ability or internal factors. But there is a sense in which it lacks the *specific* ability to break – it lacks the Opportunity factors. Therefore, the masking robs the glass of the specific ability to break, but it maintains the general ability. Thus, we can speak of the masking of abilities as well as dispositions.

The starting point for the dispositionalist is to imagine that abilities just are dispositions or to speak of one in terms of the other. In chapter five, I offer some problems with this claim whilst comparing my account with the New Dispositionalists. However, for the purposes of expounding the New Dispositionalist approach, I am taking this claim to be reasonable.

4.1.2.2 The New Dispositionalists

Fara and Vihvelin belong to a strain of compatibilists known as the 'New Dispositionalists'. These compatibilists take analyses of dispositions and apply them to the debate about freedom. Although slightly different in the way they present their analyses of freedom, both Fara and Vihvelin rely on the relationship between abilities and dispositions as a basis for their accounts. In the following sub-section, I expound both of their accounts.

First, Vihvelin. Vihvelin uses the equation of abilities and dispositions combined with a variant of the ability to do otherwise to come to her version of compatibilism. First, she notes that having freedom is having a bundle of *intrinsic* dispositions:

> **Intrinsic Dispositions Thesis** To have one of the [general] abilities in virtue of which we are agents with free will is to have some intrinsic disposition or bundle of intrinsic dispositions (Vihvelin 2013 ch6 p175).

Then, Vihvelin combines this idea with her version of ABO – the ability to make choices on the basis of reasons:

> But I haven't said anything yet about the ability that many think is at the heart of free will—the ability to choose… Let's call this "the ability to choose on the basis of reasons", and let's leave it vague how, exactly, it should be understood (Vihvelin, 2013 ch6 p188).

There are a couple of things to briefly unpack with these passages. The first is that Vihvelin focuses on *general abilities* as the ones relevant for having intrinsic dispositions. General abilities are those abilities we have in virtue of possessing the skill-based inputs alone (or internal factors).[78] The

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[78] I am not going to spend much time discussing intrinsic and extrinsic dispositions and the relationship between these and general and specific abilities. The distinction between intrinsic and extrinsic, as I noted in footnote 38, is pretty contentious and I do not want to get bogged down in the nitty gritty of intrinsicality. For my purposes, all we need to know is that Vihvelin thinks that intrinsic dispositions and general abilities broadly map onto each other.

second, is that for Vihvelin freedom is just a special sort of ability. Vihvelin herself defines freedom as the 'ability to make choices on the basis of reasons', which is essentially just a fancier way of spelling out ABO. Finally, Vihvelin notes that some abilities might equate to a *bundle* of dispositions. That is, certain abilities have more dispositions working to form the singular ability. Vihvelin points out that freedom is more complicated than just having a singular disposition and for her, freedom requires said bundle.[79]

The second main player in the New Dispositionalists is Michael Fara (2008, 2005). Fara also takes the relationship between abilities and dispositions as a starting point for compatibilism. As a result, Fara arrives at the following analysis:

> **Fara's Dispositional Analysis** An agent has the ability to A in circumstances C if and only if she has the disposition to A when, in circumstances C, she tries to A (Fara, 2008 p848).[80]

In formulating this analysis, Fara notes the similarity between his dispositional analysis and the simple conditional analysis (CD).[81] However, Fara understands the problems associated with CD and notes that these are not problems for his dispositional analysis:

> This shortcoming for the conditional analysis has no bearing on the dispositional analysis of abilities. Since dispositions can be masked, the dispositional analysis correctly predicts that abilities can be masked as well. Indeed, as I have presented it, the dispositional analysis is *motivated* by consideration of the fact that abilities can be masked. The failure of the conditional analysis to account for cases of masked abilities is exactly analogous to the failure of conditional analyses of dispositions to account for cases of masked dispositions. If ascriptions of dispositions were understood simply as conditionals, then the dispositional analysis of abilities would be equivalent to the conditional analysis, and so would be incorrect. But ascriptions of dispositions should *not* be understood simply as conditionals (Fara, 2008 p850-851).

Therefore, Fara claims that this way of analysing dispositions is superior to CD (despite appearing similar) because it can accommodate the issues with CD discussed in the previous section. Regarding freedom, for Fara if an agent has the ability to do otherwise, so too does she have the disposition.

Before I move on to how Vihvelin and Fara's account are *compatibilist* in nature, I briefly turn to something that is mentioned in both accounts: trying. Vihvelin talks explicitly about *trying*:

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[80] Similar to Vihvelin, Fara takes *trying* to be an important factor in his analysis of freedom. IA and IAF do not make any reference to trying. I consider this as a possible problem for my account in chapter five.

[81] **CD** something x is disposed at time t to give response r to stimulus s iff, if x were to undergo stimulus s at time t, x would give response r (Lewis, 1997 p 143).

For a highly interesting subset of our narrow abilities, to have the narrow ability to do X is to have an intrinsic disposition to do X in response to the stimulus of one's trying to do X. I have the narrow ability to speak English, to walk a straight line, to deliberate for the purpose of figuring out what to do (but not, alas, to sing in tune) by having the intrinsic disposition to do these things in response to the stimulus of my trying to do them (Vihvelin, 2013 ch6 p175).

Fara's dispositional analysis also mentions trying: only if she has the disposition to *A* when, in circumstances *C*, she tries to *A*. As I will go on to explicate when outlining my approach, IA and IAF make no explicit reference to trying in the analyses. Recall my formulation of IA:

IA S has the ability to A iff S possesses the inputs relevant for A-ing.

The reason why IA does not mention 'trying' is to account for both general and specific abilities, in particular abilities in which the Opportunity factors (or external factors) are lacking. For example, my ability to play the flute is an ability that I have regardless of whether or not I have a flute present, regardless of whether I try to the play the flute or not (this is an ability I have because of the relevant inputs). However, IA can also encompass *specific* abilities despite not referencing trying because of the inclusion of skill-based inputs which map onto these Opportunity factors. Indeed, the agent can try to carry out an ability, but whether they have this ability is dependent on the relevant inputs. Thus, IA does not reference 'trying' in the account.

Having expounded both Vihvelin and Fara's accounts of compatibilism, the next step is to illustrate how thinking about abilities and dispositions in this way can make a case for compatibilism. The New Dispositionalists argue that dispositions are compatible with determinism. This is because having unmanifested dispositions is compatible with my actions being determined. I can be disposed to do otherwise than I do, despite not *actually doing otherwise*. Recall that determinism is the thesis that a combination of the laws of nature and past facts entail our actions. If we understand abilities in terms of dispositions then we can still have the ability to do otherwise even if this 'doing otherwise' is unexercised or unmanifested.[82]

To support this, Vihvelin provides the following example of unmanifested dispositions:

…The monk who has taken a vow of silence retains the ability to speak because he remains disposed to speak, in response to the "stimulus" or "trigger" of his trying to do so… the monk still has what it takes to speak—that's why he must handle himself carefully, to make sure that he doesn't speak inadvertently (Vihvelin, 2013 ch6 p171).

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[82] In chapter 1, when outlining the problems associated with ability, freedom and time travel, I showed that incompatibilists think that PAP is not compatible with the possible truth of determinism. That is, if PAP is true, then the ability to do otherwise is necessary for moral responsibility. Compatibilists thus must show how the ability to do otherwise is compatible with determinism in order to also show that moral responsibility is compatible with determinism. However, incompatibilists simply need to show that it is not.

Because we can have dispositions that are never manifested, it follows that we can also have abilities that are never manifested. Therefore, like the monk's ability and disposition to speak is unmanifested, so are abilities (and therefore dispositions) to do otherwise.

Again, ability analyses of freedom are popular; with the 'ability to do otherwise' being prevalent in many compatibilist and incompatibilist accounts of freedom. Ability freedom requirements are also often used to motivate incompatibilism (we saw some of these arguments in chapter one, §1.2.1.1).[83] If dispositionalists can produce a compatibilist theory that demonstrates that the ability to do otherwise (or any other ability conceptions of freedom) is compatible with determinism, then the incompatibilist challenge is subdued.

Fara also highlights the compatibility of the ability to do otherwise (understood in terms of dispositions) and determinism:

> Suppose determinism is true, and suppose that, at some time t, I take a sip of coffee. It follows from determinism and the facts that, at t, it was nomologically impossible for me to do other than take a sip of coffee, and that, at t, it was nomologically impossible for me to *try* to do other than take a sip of coffee. Does it follow, given the dispositional analysis of abilities, that, at t, I lacked the ability to do other than take a sip of coffee? Does it follow, that is to say, that, at t, I lacked a certain disposition, the disposition to do other than to take a sip of coffee when I try? (Fara, 2008 p861)

Fara concludes that this is not the case. The reason why we do not lack the ability to do otherwise is because of these unmanifested dispositions that are compatible with determinism.

Some might object that this conception of doing otherwise is not enough to account for freedom. Unmanifested dispositions may be compatible with determinism, but is this really capturing our existing intuitions about the ability to do otherwise? That is, even if I have the unmanifested disposition to do otherwise, my act is *still* determined (assuming that determinism is true). For example, if causal determinism is true, it was determined, given the laws and the past that I was going to do a PhD in philosophy. Therefore, I was never actually going to do otherwise *despite* me having the disposition to do otherwise (which is unmanifested). Although it is true that these unmanifested dispositions to do otherwise are compatible with determinism, the fact that determinism still entails that your actions are determined could be a tough pill to swallow.

However, I take it to be enough for the New Dispositionalists that the ability to do otherwise is (i) plausibly necessary for freedom and (ii) compatible with determinism (if we are to understand abilities as dispositions). Even though I do not personally adopt the dispositionalist strategy, I do think that the fact that the New Dispositionalists are able to maintain a version of the ability to do otherwise in their accounts is a huge positive of the theory (and something I also endeavour to maintain).

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[83] The main incompatibilist challenge is the Consequence Argument (van Inwagen, 1983): if determinism is true, then we do not the ability to do otherwise because our actions are caused by the laws of nature and past events. There are is no 'ability to do otherwise'.

If we are to understand abilities in terms of dispositions it follows that the ability to do otherwise, or the ability to make choices on the basis of reasons, or *any other ability requirement for freedom*, is compatible with determinism.

4.1.3 The New Dispositionalists and time travel

Thus far, I have explained two analyses of dispositions and how they feature into compatibilist accounts of freedom. I have discussed both Vihvelin and Fara's dispositional accounts in detail and illustrated how these compatibilists maintain ABO. Now, I show that the New Dispositionalists cannot account for the freedom of time travellers, given that time travellers will not exercise certain abilities. Recall that in chapter two, I argued that two prominent types of ability analyses (modal and conditional) are *output-focused*. This is because the focus of these analyses is on the possibility or actual successful exercising of an ability. Given that there are things that time travellers will *never* do (kill their infant grandfathers), analyses that put an emphasis on the *outputs* get the wrong answer. As I argued in chapter two, I think it is mistaken to take outputs as necessary for having an ability. Here, I apply similar criticisms to the New Dispositionalists.

Let us look at how Vihvelin and Fara's analyses of dispositions and freedom interact with time travel scenarios. Recall both analyses of dispositions:

> **RCD-PROP** *x* is disposed at time *t* to give response *R* to stimulus *S* iff, for some intrinsic property *B* that *x* has at *t*, for some time *t'* after *t*, if *x* were in a test-case at *t* and stimulus *S* occurred and *x* retained property *B* until time *t'*, then in a *suitable proportion of these cases*, *S* and *x*'s having of *B* would be an *x*-complete cause of *x*'s giving response *R* (Vihvelin, 2013 ch6 p188).

> **HD** "N is disposed to M when C" is true iff N has an intrinsic property in virtue of which it Ms when C (Fara, 2005 p70).

Recall the case of Tim the time traveller, and his ability to kill his grandfather in the past. Applying RCD-PROP to this case - and analysing abilities in terms of dispositions - we arrive at the following:

> (27)   Tim is disposed at time *t* to kill his grandfather in response to some stimulus *S* iff, for some intrinsic property *B* that Tim has at *t*, for some time *t'* after *t*, if Tim were in a test-case at *t* and stimulus *S* occurred and Tim retained property *B* until time *t'*, then in a *suitable proportion of these cases*, *S* and Tim's having of *B* would be an Tim-complete cause of Tim killing his grandfather.

We can imagine the response and stimulus being something like: Tim is disposed to kill his grandfather upon seeing his grandfather. However, it is not quite as simple as this. With this disposition comes the caveat that Tim is time travelling. Therefore, despite Tim potentially retaining an intrinsic property for a sufficient amount of time (from *t* to *t'*), we lack the sort of 'test-cases' that Vihvelin is talking about because there are not test cases in which Tim successfully

kills his grandfather.[84] For Manley and Wasserman, this is the 'suitable proportion of C-cases' aspect of their analysis. Lacking these test-cases or 'C-cases' is troubling because it seems that dispositions require some sort of *reliability* to produce a response to a certain stimulus. The reason why in Tim's case we do not have this reliability is because Tim is never going to succeed in killing his grandfather in the past, given our model of time travel. Therefore, we can conclude that Tim does not produce the response to the stimulus in a suitable proportion of cases in which he undergoes the stimulus (seeing his grandfather). This is because Tim will never produce the response and that response holding (i.e. Tim's grandfather stays dead).

We can see a related for time travellers in Fara's analysis:

(28)   Tim is disposed to kill his grandfather in circumstances *C*, iff Tim has an intrinsic property in virtue of which Tim kills his grandfather in circumstances *C*.

Again, this proves problematic for Tim because Tim is never going to kill his grandfather. Therefore, assuming that we are restricting worlds to *close* possible worlds, he will not have an intrinsic property in virtue of which he kills his grandfather in circumstances *C* (because he will always fail).[85] Both Vihvelin and Fara's analyses are, to use my terminology, a bit too 'output-y'. That is, they put emphasis on the disposition actually manifesting.

Again, similar to my criticisms of existing analyses of ability, existing analyses of dispositions are too output-focussed to be viable analyses for the abilities of time travellers. This is because there are abilities that time travellers always fail to exercise, despite these being abilities which, I argue, they intuitively have. Output-focussed theories of ability get the wrong answer when assessing these specific abilities of time travellers.

Both Fara and Vihvelin's compatibilist accounts build on their analyses of dispositions. Therefore, we can say that under their analyses of dispositions time travellers just do not have certain dispositions given that the focus is still on *outputs*: whether the disposition will manifest. Is the time traveller disposed to kill their grandfather? Presumably not, given that this is a disposition that would *never* manifest.[86]

Despite the plausibility of the previous case, we know that both Vihvelin and Fara's analyses do account for masking scenarios. Both cultivated their analyses in light of the problems facing the

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[84] I am generally inclined to think that the 'retaining intrinsic property' part of this analysis (and the Lewisian reformed conditional analysis) fits with my conception of inputs. We can say that Tim has the relevant skill-based inputs to kill his grandfather, and these are not lost when he travels back in time. Skill-based inputs are internal to the agent and thus could map quite nicely onto this idea of intrinsic properties.

[85] I am choosing to restrict worlds to nomologically similar, close possible worlds, as I am following what is prolific in the literature. When assessing ability, Vihvelin focusses on worlds closest to ours as these are the most relevant (Vihvelin, 1996 p319-320). If we are equating abilities and dispositions, I suggest we should also be restricting our analyses of dispositions to nomologically similar/close possible worlds.

[86] It makes sense that Vihvelin's account of freedom is *output-focussed* given how she also understands abilities.

simple conditional analysis. However, as I have shown the new analyses still do not work in time travel scenarios. This is because the manifestation of the time traveller's disposition *will never* occur. This is not true in the case of the bubble wrapped glass. The bubble wrapped glass will still break in a suitable proportion of cases in which it is dropped (assuming that the bubble wrap is not permanently affixed to the glass). However, in the time travel case there is no situation in which the manifestation happens. We also know from Vihvelin's analysis of ability –

> **VA** an agent *S* has an ability *A* iff, if *S* tried to *A*, *S* would or at least might *A*

- that she thinks the possibility of success is important. Seeing as Vihvelin is equating abilities and dispositions, we can assume that something similar would be said about dispositions.

We could push back on this point because Vihvelin does consider agential dispositions that never manifest:

> We believe that there is a sense in which a person with the ability to do [*A*] can do [*A*] even when she's not doing [*A*], and even if she never does [*A*]. The monk who has taken a vow of silence remains able to speak; he can speak, even though he never does (Vihvelin, 2013 ch6 p171).

But this disposition's manifestation is not *logically impossible.* Presumably, there is a close possible world in which the monk does talk. But there is *no* possible world in which the time traveller does and does not successfully murder his infant grandfather. This is where the discrepancy lies, and given Vihvelin's analysis of ability*,* I think Vihvelin would conclude something similar about the dispositions of time travellers. More explicitly, we can conclude the time traveller does not have the disposition.

Therefore, the current disposition discourse does not seem particularly favourable to dispositions which have a logically impossible manifestation. I think this is wrong, and although the New Dispositionalists maintain ABO in their compatibilist accounts, they fail to capture these time traveller abilities.

4.1.4 Conclusion

Thus far, I have expounded a group of compatibilists who use the similarities between abilities and dispositions to talk about freedom that is compatible with the possible truth of determinism - the New Dispositionalists. I consider the New Dispositionalists my closest rivals because they, like me, are compatibilists who maintain ABO (or versions of ABO) in their accounts. However, I argue that, unlike me, they are unable to adequately capture the freedom of time travellers. In arguing this, I drew on similar criticisms I brought to existing analyses of ability. Analyses of dispositions are ultimately too output-focussed and theories of compatibilism who use analyses of dispositions are also output-focussed. This is a problem because, as we know, time travellers will not succeed in exercising certain abilities which, I argue, they have nonetheless.

In the next section, I cultivate my account of freedom which is *input-focussed*, compatibilist and also adopts ABO. In doing so, I illustrate that we can maintain a lot of what is intuitive about freedom (ABO) and also capture the freedom of time travellers.

4.2 The Input Account of Freedom

Having shown how the New Dispositionalists fall short at accounting for the freedom of time travellers, I can now begin to develop my own account of freedom. My account combines the Input Analysis of ability (IA) with the ability to do otherwise. I label my account of freedom the 'Input Account' (IAF). First, I outline my account, giving some motivation for each step, then I illustrate how this account works in practice. Finally, I show that, even though it is not necessary for my account that we equate dispositions and abilities, if you are particularly attracted to this part of the New Dispositionalists' approach, my account is able to accommodate this. However, this step is not required as we can get to ABO via the inputs alone.

My process for forming IAF is relatively simple:

(i)   An agent has an ability iff the agent possesses the relevant inputs (from IA).
(ii)   To have free will is to have the 'ability to x' (where 'x' stands for 'do otherwise', 'make choices on the basis of reasons (Vihvelin, 2004)', 'intend otherwise (Jaster 2021)' etc).
(iii)   Therefore, to have free will is to have the relevant inputs to x (from i, ii).

As discussed in chapter one, §1.1.2 my theory is both *compatibilist* and it stipulates ABO as a necessary condition for freedom. This, I contend, is a positive part of the New Dispositionalists and something I also wish to maintain in my account of freedom.

In the next section, I discuss each of the steps for forming IAF.

4.2.1 The steps for forming IAF

In chapter two, I formalised IA as follows:

> **IA** *S* has the ability to *A* iff *S* possesses the inputs relevant for *A*-ing.

Broadly, we can separate inputs into two sub-categories: context-based and skill-based. Context-based inputs map onto the external factors involved in ability ascriptions and skill-based map onto the internal factors. For example, my ability to fly a kite depends on whether I possess a kite to fly (context-based), whether there is sufficient wind (context-based), and whether I have practiced flying a kite (skill-based). Importantly, I need not succeed in flying the kite to have the ability. I label the 'success' or 'failure' elements of ability analyses 'outputs'. Analyses which take doing *A* as a measure of having the ability to *A* focus on the outputs rather than the inputs. This much should all sound familiar.

Next I suggest that having free will requires an 'ability to x', where 'x' can be substituted for 'doing otherwise', 'intending otherwise', 'choosing on the basis of reasons', and so forth (step (ii)). As I

have already made clear, I personally adopt the ability to do otherwise requirement for freedom. I think it is intuitive *and* it forms the basis of many accounts of freedom. However, as I show, my account of freedom can encompass different ability requirements for freedom.

Finally, I suggest that we should understand this ability to do otherwise – or intend otherwise etc – in terms of inputs (step (iii)). Again, this step should sound pretty straightforward given that the ability to do otherwise is an *ability*. Encompassing all three steps, I arrive at the following, input analysis of freedom.

> **IAF** an agent *S* is free to *A* only if *S* possesses the inputs relevant to *x*.

Having outlined IAF and the steps I take to form it, I can now begin to unpack the analysis and how this analysis encompasses the freedom of time travellers and other agents. Let us first look at how 'the ability to x' works in terms of inputs before examining some examples that elucidate my account of freedom.

4.2.2 'Ability to x' as inputs

To have an ability is to possess the relevant inputs. Again, without labouring the point, here is IA:

> **IA** *S* has the ability to *A* iff *S* possesses the inputs relevant for *A*-ing.

Therefore, a time traveller has the ability to kill their infant grandfather iff the time traveller possesses the inputs relevant for killing their infant grandfather.

Following this, given that freedom is understood as an 'ability to x'[87], I arrive at the Input Account of Freedom:

> **IAF** an agent *S* is free to *A* only if *S* possesses the inputs relevant to *x*.

Where 'x' is substituted for 'do otherwise than *A*', 'intend otherwise than *A*' or 'make choices on the basis of reasons'.

IAF is kept purposefully broad to allow for different freedom formulations. I take each of the freedom formulations under consideration and input them into IAF in order to show how this analysis works in practice.

First, the traditional 'ability to do otherwise' condition for freedom.

> **IAF₁** an agent *S* is free to *A* only if *S* possesses the inputs relevant to do otherwise than *A*.

Imagine that Tim wishes to go back in time to kill his infant grandfather, according to IAF₁ he is free only if he possesses the inputs relevant for doing otherwise than killing his infant grandfather.

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[87] With 'x' being substituted for 'doing otherwise', 'intending otherwise', 'making choices of the basis of reasons' etc.

Does he possess the inputs relevant for having this ability? We can imagine a situation in which he does. Perhaps Tim has a sudden change of heart, or upon seeing his younger grandfather in the past feels slight remorse, he has the physical and mental capacity to refrain from shooting his younger grandfather. Context-based, perhaps he sees another target and prefers that one to his grandfather, perhaps there is a nice coffee shop nearby that momentarily distracts him. The list of inputs can go on, and these are the inputs that form Tim's ability to do otherwise than kill his infant grandfather. Therefore, Tim is free in this scenario.

Now, a brief comment. This ability to do otherwise than kill his grandfather is *not* an impossible ability. The only ability that *is* impossible to exercise is Tim's ability to kill his grandfather. Therefore, I do not need to make the same case for impossible abilities as I did in chapter two. The ability to do otherwise which is relevant for Tim's freedom, is not impossible. Therefore, presuming Tim has the relevant inputs to do otherwise, I do not need to defend the claim that *this* specific ability is impossible.

We can use my concept of inputs to solve both the ability problem and the freedom problem. In this scenario all we need for Tim to be free to kill his grandfather in the past is that Tim has ability to do otherwise via the relevant inputs. It may initially be strange to say that Tim is free to kill his grandfather despite him never killing his grandfather. To support the claim I am making, we can imagine other examples in which we are free something that we never do. I am free to do an interpretative dance in the middle of the pub, to walk to Bristol next week, to write and perform a stand-up comedy routine about my most recent break-up. So, even though it may initially seem strange to say that Tim is free to do something he never does, we can think of everyday examples that support this argument. However, I contest that (i) this is an ability Tim has (from chapter two) and (ii) that he is free to kill his grandfather because he has the ability to do otherwise.

Now let us consider a variant of ABO: Vihvelin's 'ability to make choices on the basis of reasons':

> **IAF₂** an agent S is free to A only if S possess the inputs relevant to make the choice to A on the basis of reasons.

For Vihvelin, freedom is 'just a special case of an ability' (Vihvelin 2004, p431) and for her, as abilities are understood in terms of dispositions, to choose on the basis of reasons is to have a disposition or bundle of dispositions:

> Remember the baby. She has the ability to act, in certain limited ways, and she also has a kind of ability to try to act. We might even say that she has a kind of ability to choose… But she doesn't have the kind of ability to choose that we have; she doesn't have the ability that we exercise when we make choices on the basis of reasons, or on the basis of what we take to be reasons, or on the basis of our values or value-judgments, or on the basis of our values, reasons, and reasoning. Let's call this "the ability to choose on the basis of reasons" (Vihvelin, 2013 ch6 p188).

IAF₂ works the same as IAF₁, except the sort of ability involved is different:

MRBD The ability that is necessary and sufficient, so far as abilities go, for being a member of the class of morally responsible agents (that is, for being a person) is the narrow ability to choose on the basis of reasons (Vihvelin, 2013 ch6 p190).

I modify Vihvelin's account by saying that to have this ability is to possess the relevant inputs. Again, I'm in real danger of labouring the point too much, but I can choose on the basis of reasons if I possess the relevant inputs for choosing on the basis of reasons. These will vary from context to context, depending on what you are choosing (on the basis of reasons). However, possessing the relevant inputs is what gives you this ability and bundle of dispositions and therefore what gives you the freedom.

Let us now unpack what choosing on the basis of reasons actually means and how we are able to encapsulate this by looking to the relevant inputs. From the above quote, we know the following:

Let's call this "the ability to choose on the basis of reasons", and let's leave it vague how, exactly, it should be understood (Vihvelin, 2013 ch6 p188).

Given that Vihvelin leaves the exact understanding of the 'ability to choose on the basis of reason' vague, I am choosing to understand this ability in terms of inputs. This leaves us with establishing what the relevant inputs are for choosing on the basis of reasons. Vihvelin suggests that the ability to choose on the basis of reasons is a *complex ability* made up of simpler abilities. Exactly what these simpler abilities *are*, is controversial:

What are these simpler abilities? This is a complicated and controversial matter, due to controversy about the nature of values, reasons, and reasoning as well as controversy about what it is that we are talking about, when we talk about moral responsibility (Vihvelin, 2013 ch6 p189).

However, she argues that if you agree that we have this ability, then you should also agree that we have this complex ability *only if* (Vihvelin's emphasis) we have some sort of combination of intrinsic dispositions. Again, Vihvelin suggests that working these out dispositions is controversial, but accepts that there are some which can be identified:

… the disposition to form and revise beliefs in response to evidence and argument; the disposition to form proximate intentions (intentions to act, here and now) as the causal upshot of one's desires and beliefs about how to achieve those desires; the disposition to deliberate for (p.190) the purpose of deciding what to do in response to one's proximate intention to make a rational (defensible, justifiable) decision about what to do; the disposition to decide what to do as the causal upshot of one's trying, by deliberating, to do so (Vihvelin, 2013 ch6 p189).

In identifying these dispositions, Vihvelin also gives us some useful relevant inputs. Therefore, relevant inputs for choosing on the basis of reasons could include: forming and revising beliefs in response to evidence and argument, deliberating for the purposes of deciding etc. The relevant

inputs will vary from situation to situation, so let us briefly look at a specific example to discern the relevant inputs.

Again, imagine that Tim travels back in time to kill his younger grandfather. Under Vihvelin's requirement for freedom, is Tim free?

> (29)   Tim is free to kill his younger grandfather only if Tim possess the inputs relevant to make the choice to kill his grandfather on the basis of reasons.

In order to get to the relevant inputs in this scenario, we can take some of the dispositions Vihvelin identified in the above passage. Tim can choose, there is nothing about Tim himself that has been changed by his time travel journey. We can also stipulate that Tim has the requisite belief forming processes, he can deliberate, and he can ruminate. Therefore, we can conclude that Tim *does* have the relevant inputs for choosing on the basis of reasons. Indeed, as I have stated elsewhere, it would be odd to say that time travel alters the very internal make-up of Tim.

Admittedly, unpacking this ability requirement for freedom is not as easy as unpacking ABO, but I argue that it still fits with my input-based analysis.

The final iteration of 'ability to x' I consider is Jaster's 'ability to intend otherwise' (2021). Plugging this iteration into IAF looks, we get:

> **IAF₃** an agent S is free to A only if S possess the inputs relevant to intend otherwise than A.

Again, the expansion of IAF₃ works the same as the previous two iterations. In order for an agent to be free, they need to possess the inputs relevant for intending otherwise. Therefore, to be free to drink coffee, one must also possess the relevant inputs for intending otherwise than drinking coffee. Similar to IAF₂ we also need to ask what the relevant inputs for intending otherwise look like. On some views of intention intending to A entails the belief that you are going to A. In other words, if I intend to make pasta for dinner tonight, I must possess the belief that I am going to make pasta tonight (see, for example: Grice 1971, Audi 1972, Harman, 1976).[88]

Jaster herself notes that 'intending otherwise' is ambiguous. If S intends to A, S could have intended otherwise, could mean that S could have intended to do something other A, for example B. Or it could mean that S could have intended to not-A. Or, finally, it could mean that S could have not intended to A (Jaster, 2021 p7). In terms of my *input* approach, I do not think that the relevant inputs are going to be significantly different to the relevant inputs for ABO. We can imagine the inputs for 'intending otherwise' looking similar to the inputs for 'doing otherwise':

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[88] There are various other accounts of intention, which differ on their requirements and role. I am not going to delve into the topic here, for more information see, for example Anscombe (1963) and Davidson (1978), Bratman (1987), and Setiya (2022).

(30)   Tim is free to kill his grandfather in the past only if Tim possesses the input relevant to intend otherwise than kill his grandfather in the past.

Therefore, Tim is free to kill his grandfather, because he could have intended to do otherwise. He may not actually do otherwise, but he has the relevant inputs to intend to do otherwise. These relevant inputs may include: Tim has a sudden change of heart, or upon seeing his younger grandfather in the past feels slight remorse, he has the physical and mental capacity to refrain from shooting his younger grandfather. Context-wise, perhaps he sees his arch nemesis nearby and only has one bullet in his gun and thus changes target, perhaps there is an artisan bakery in the vicinity and Tim cannot resist freshly baked pastries. Therefore, although Tim actually intends to kill his grandfather, we can still say that he could have intended otherwise due to the aforementioned inputs.

Given that I adopt ABO, in the next section I discuss some everyday (and time travel examples) using only *IAF₁*. The aim of this section has been to show that the input account is not confined to one freedom requirement and this, I argue, is a big positive of IAF.

Before I discuss some examples that help expound IAF, I end this section by outlining how IAF is a *compatibilist* theory of freedom. The reason why IAF is a compatibilist theory is, like the strategy employed by the New Dispositionalists, we can imagine a situation in which an agent has the unmanifested ability to do otherwise because of possessing the relevant inputs. To see this, let us take a look at a quick example. Imagine that Julia is debating what film to watch tonight. Given the truth of causal determinism, there is only one possible film that Julia will watch: *Up*. However, Julia still has the ability to do otherwise in this circumstance because, according to IAF, she has the relevant inputs to do otherwise. Even if causal determinism is true, this unmanifested ability still means that Julia is free. The relevant inputs could include Julia's love of action films, or maybe Julia has seen *Up* recently, or that Julia has a change of heart and fancies watching a television show instead. Despite Julia watching *Up* that night, these relevant inputs form Julia's *unmanifested* ability to do otherwise.

4.2.3 Freedom, inputs, examples

Having now laid out the process for formulating the input account of freedom, I next offer some examples in order to motivate the account further. I first discuss some cases involving non-time travellers, before moving onto how my account accommodates the freedom of time travellers.

> *Case 1* Thomas plays rugby every weekend. This weekend Thomas is playing in a rugby match. Thomas has the ability to play in this rugby match because of the skill-based and context-based inputs. His skill-based inputs include: years of practice and training, physical optimisation, control of bodily movements. Additionally, the context-based inputs include, the weather being good and the pitch not being water-logged.

How do we explain Thomas' free will in this case? First, we can say that in order to have free will Thomas has to have the ability to do otherwise. Thomas *can* do otherwise than play rugby because

he has a combination of skill-based and context-based inputs relevant to doing otherwise. A small subset could include; Thomas having a change of heart, or Thomas preferring to stay at home instead of going to the rugby match. Thus, we can conclude that Thomas has the ability to do otherwise because he possesses the relevant inputs. Therefore, Thomas is free.

> *Case 2* Thomas plays rugby every weekend. This weekend, like all weekends before Thomas is meant to be playing in a rugby match. However, in this circumstance a fellow member of Thomas' team has threatened Thomas' life if he does not turn up to the match on the weekend.

In this case, Thomas is still free because he has the ability to do otherwise. Thomas in case 2 *does* have the relevant inputs. Thomas does not just lose his relevant inputs because of the threat to life. Thomas' brain and body are still connected such that he can cause his body not to move and stay at home instead, he has full control of his mind and his will. Thus, he still can do otherwise, this doing otherwise may be forming a different intention or desire or even moving his body in a different way, all of which is accounted for via the relevant inputs. In addition, even if Thomas does not do otherwise, we can still say that he has the ability, it is just unmanifested.

> *Case 3 Frankfurt-style* Jenny wants Graham to kill Jenny's ex-husband so the two of them can be together. Graham agrees, but Jenny is unconvinced that Graham will *actually* carry out the action. Therefore, Jenny – unbeknownst to Graham - puts a mechanism in Graham's brain that will detect whether Graham is going to decide to do otherwise than kill Jenny's ex-husband. If so, the mechanism will change his mind, forcing him to kill Jenny's ex-husband. As it happens, Graham decides to kill Jenny's ex-husband of his own accord and therefore the mechanism does not come into play. [89]

The mechanism acts as a counterfactual intervener; intervening in the counterfactual scenario in which Graham is about to decide otherwise. Graham could not do otherwise than kill Jenny's ex because of the mechanism in his brain and yet he still chose to kill Jenny's ex-husband freely.

The way that IAF can accommodate this case is to say that the counterfactual intervener acts as a *mask*. This is because, although Graham has all the relevant inputs, they have been masked by Jenny putting a mechanism in his brain. His relevant inputs - the physical capability to stop his arms from reaching for the gun, the mental capacity to have a change of heart – are prevented from manifesting by the mechanism. Therefore, Graham does have the ability to do otherwise, but this ability has been masked.[90]

Now let us turn to a slightly different case in which it feels like the agent is not free and which is captured under IAF and IA:

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[89] I discuss how IAF and IA can combat the Frankfurt challenge in more detail in §5.2.1.1 when solving the reasons for pessimism outlined in chapter one.

[90] We see similar sorts of ideas in Vihvelin (2004, 2013) and Fara (2008).

Case 4 Peter has implanted a mechanism in Katie's brain turning her into a killing machine. The mechanism forces Katie's movement and actions, relieving her of control. Peter controls the mechanism and the mechanism controls Katie.

Is Katie free? More specifically, does Katie have the relevant inputs to do otherwise in this case? The intuition here is no because of the mechanism forcing her action and I think that this intuition can be captured under IAF and IA. We can say something similar to when I was capturing Carrie's fear of heights under IA. The relevant inputs that Katie may have had have been overridden by the mechanism. This mechanism therefore inhibits Katie's ability to do otherwise. Cases of non-freedom can thus also be captured under IAF.

Case 5 Tim is a time traveller and has been preparing to go back in time and kill his infant self. He has many reasons for doing, mainly because of some intense regret of many life choices. Regardless, Tim believes he can and is free to kill his younger self. In order to carry out the action, Tim trains and plans his attack.

This case is slightly different to the grandfather killing cases we have been looking at thus far, but it should not be treated any differently. Like the grandfather case, Tim will also fail to kill his younger self because to succeed would entail an impossible situation of the time traveller both being alive and not being alive at the same time. Given that Tim will fail to kill his younger self, does this mean he is not free to do so? As we have already seen, under IAF I argue that Tim is free to kill his younger self even though he will always fail. This is because I argue that Tim has the relevant inputs to do otherwise. I have argued that Tim has the relevant inputs to kill his younger self and he has the relevant inputs to do otherwise. Tim might have a change of heart, the weather might be too bad, and Tim might have forgotten to put bullets in his gun. Therefore, Tim is free to kill his younger self.

To conclude, we can see from the cases that it is relatively easy to discern whether or not the agent in question is free: all we need to do is look to the relevant inputs, inputs that have some sort of explanatory relevance when it comes to abilities.

4.2.4 Dispositions and inputs

Thus far, I have discussed how my new account of freedom can encompass *both* the freedom of time travellers and the ability to do otherwise. I noted in §4.1.3 that the New Dispositionalists would find it hard to encompass the freedom of time travellers, given that there are things that time travellers just will not do.

However, although involving dispositions in my input account of freedom is not a necessary step – I get to ABO via inputs - if you are attracted by this element of the New Dispositionalists theories, we can imagine ways to think of dispositions as inputs.

As we discovered in §4.1, the New Dispositionalists analyse abilities in terms of dispositions:

> **ABD** To have an ability to act is to have a disposition or bundle of dispositions (Vihvelin, 2013 p171).

> Whenever an agent is disposed to act in a certain way, she has the ability to act in that way; and whenever her disposition is masked, so too is her ability (Fara, 2008 p844).

Therefore given that we understand abilities as inputs, we can also understand dispositions as inputs. We can come an input analysis of dispositions by combining IA with the equation from the New Dispositionalists:

> **ID** an agent *S* has a disposition to *A* iff *S* possesses the relevant inputs for *A*-ing.

From what we have discussed regarding the relationship between dispositions and abilities, the move from IA to ID should not sound controversial. In what follows, I provide some insight into how understanding dispositions as inputs may work.

We saw in §4.1.3 that traditional analyses of dispositions are 'output-y'. This is the same criticism I brought against traditional analyse of abilities in chapter two. More specifically, conditional and modal analyses of abilities take some sort of success as necessary for having an ability (even if we are looking to possible words to ascertain the success). This spells issues for time travellers because they will never succeed in exercising certain abilities. However, if we think about dispositions in terms of their inputs, we may be able to speak about dispositions of time travellers that will never manifest. Again, by switching the focus of analyses from outputs to inputs, we can get to the dispositions of time travellers.

Consider the case of a glass that has been *permanently* wrapped in bubble wrap. We could say that the glass's disposition has been *permanently masked*.[91] It follows that every time the glass is dropped, the glass does not break. Therefore, following Vihvelin there are no suitable proportion of cases in which the glass breaks when dropped.

> **RCD-PROP** *x* is disposed at time *t* to give response *R* to stimulus *S* iff, for some intrinsic property *B* that *x* has at *t*, for some time *t'* after *t*, if *x* were in a test-case at *t* and stimulus *S* occurred and *x* retained property *B* until time *t'*, then in a *suitable proportion of these cases*, *S* and *x*'s having of *B* would be an *x*-complete cause of *x*'s giving response *R* (Vihvelin, 2013 ch6 p186).

The glass does still retain the intrinsic property for a sufficient amount of time given that nothing about the glass *per se* has been altered. But it is false that, in a *suitable proportion of these cases*, the stimulus and the glass having this intrinsic property is a glass-complete cause of the glass breaking; the glass will never break. Similarly, Fara's analysis comes out false in these circumstances:

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[91] To be clear, I am supposing that it is logically impossible for the bubble wrap to come off the glass; there are no possible worlds in which the glass is *not* wrapped in bubble wrap. I am assuming this case to be analogous to the time travel case.

> **HD** "N is disposed to M when C" is true iff N has an intrinsic property in virtue of which it Ms when C (Fara, 2005 p70).

The glass does not have an intrinsic property in virtue of which it breaks when dropped because the glass does not break when dropped - the glass *never* breaks when dropped. Although the glass may have various intrinsic properties that give it the property of fragility, these intrinsic properties have been permanently masked by the bubble wrap.

I think the common intuition here is that the glass still retains the disposition to break when dropped, it is just that the manifestation of this disposition will never occur. But we can see that nothing about the glass itself has been changed; the glass remains, for all intents and purposes, fragile. How then do we explain why the glass retains this disposition despite the manifestation never occurring?

Comparing the glass to Tim's case, I have argued that Tim has the ability to kill his grandfather. I argue that Tim has the ability due to Tim possessing the relevant inputs. Given the relationship between abilities and dispositions, we could say that Tim also has the disposition. Furthermore, Tim has the disposition despite the disposition never being manifested. Despite Tim's disposition never manifesting, if we wanted to maintain the equation of dispositions and abilities, we can go about it the same ways as abilities.

Therefore, if we understand abilities in terms of their inputs, we also understand dispositions in terms of their inputs.

In chapter two, I argued that Tim has the ability to kill his younger grandfather because Tim has the relevant inputs. These inputs include skill-based inputs such as the fact that Tim is a good shot, or that Tim has planned the attack meticulously etc. In addition, there are context-based inputs like Tim's grandfather being an easy target, and the absence of a breeze. I also argued that Tim both has the general ability and specific ability in this circumstance (indeed, you cannot have the specific ability without having the general ability). This is because Tim has both the Opportunity (context-based inputs) and the Ability (skill-based inputs). It does not matter if Tim fails to exercise this ability, I argue that this is an ability he has.

Given this, we can say something similar about Tim's disposition to kill his younger grandfather. Despite Tim's disposition never manifesting (he will fail every time), Tim has the relevant inputs. The same relevant inputs from Tim's ability case can be applied here (owing to the equation of abilities and dispositions).

4.2.4.1 A brief digression: Disposition Impossible (2012)

To support the use of dispositions in IAF, I take a brief digression into the world of impossible dispositions. In chapter three, I introduced the 'problem of the impossible' as a potential criticism of IA. In a nutshell, this problem is that it seems counterintuitive that agents would have abilities that are impossible to exercise successfully. Here, given the relationship between abilities and

dispositions a similar criticism can be applied. In addressing this problem, I use the work of C. S. Jenkins and Daniel Nolan who coined the phrase 'disposition impossible':

> Given that dispositions need not be manifested, need it even be possible for them to manifest? Can something be disposed a certain way despite the fact that it not only does not but cannot ever manifest that disposition? (Jenkins & Nolan, 2012 p732)

Jenkins and Nolan argue that there are cases where '*x* is disposed to *A* in circumstances *C*' is true where at least one of '*A*' or 'circumstances *C*' are impossible. Leaving time travel to one side for the moment, let us look at an example from Jenkins and Nolan (2012 p738) to clarify this. It is reasonable to suppose that someone is disposed to be surprised if they were to see a square circle. Therefore, we can suppose that the following is true:

(31)   Dylan is disposed to be surprised upon seeing a square circle.

As a result, Jenkins and Nolan argue:

> We take it that it is metaphysically impossible for there to be a round square object. Therefore, if everything we have said so far in this section is true, then there are some true claims of the form "[*x*] is disposed to [*A*] in C" where C is metaphysically impossible, and there are some false claims of this kind. This would be enough to establish that some such claims are non-trivially true in the sense we are interested in (Jenkins & Nolan, 2012 p738).

From Jenkins and Nolan, we are able to conceive of dispositions with impossible manifestations or impossible manifesting circumstances. These dispositions should not be straightforwardly thrown out as cases of genuine dispositions. Therefore, given this, the fact that the manifestation of the time traveller's disposition is impossible should not be a reason to disregard it.

Another way to look at the situation is as follows. In chapter three, I proposed I am not looking at the ability of the time traveller to kill their infant grandfather as a case of impossibility, but as a case of ability. Here, I suggest a similar thing. I am *not* saying that the time traveller is disposed to do the impossible; what I *am* saying is that the time traveller has a disposition which just happens to have an impossible manifestation. Note the difference between the two statements. The first works backwards starting from the impossibility and concluding that the time traveller does not have the disposition. The second begins with considering the disposition and then discovering that the manifestation is impossible, but this discovery should not undermine what we already know about the disposition.

Again, I briefly turn to Ira Kiourti's (2008) criticisms of Vihvelin (1996) because we can apply the same reasoning in support of what I have said thus far. We know Vihvelin argues that although time travel is logically possible, there are things that time travellers cannot do. In arguing this, she employs a weakened conditional analysis of ability illustrating that time travellers cannot kill their younger grandfathers because they will *always fail*.

Importantly, Kiourti argues that Vihvelin's argument fails because she holds the *outcome* of the time traveller's action fixed. That is, in order to argue that time travellers cannot kill their grandfathers, she first assumes that they will not kill their grandfathers – that they will fail. The consistent, repetitive failure to achieve grand-patricide or auto-infanticide attempts is what generates the falsity of Vihvelin's counterfactual: 'if Tim tried to kill his infant grandfather, he would or at least might succeed'. Vihvelin concludes that *because* Tim always fails, the counterfactual is false. Kiourti argues: 'whether we are talking about time travel scenarios or normal cases, we surely cannot apply Vihvelin's ability principle to evaluate an agent's ability to do X by (implicitly) asking what would happen if she tried to do X *and failed*' (Kiourti, 2008 p350). Because of the similarities between abilities and dispositions we can apply this criticism to the unmanifestable dispositions of the time traveller.

We should not conclude that the time traveller does not have the disposition *because* the manifestation is impossible. If we do conclude this, we are holding fixed that the manifestation is impossible: we are holding the *output* fixed. This is not how we evaluate abilities and dispositions. Consider the following case: imagine the disposition to smile at the sight of blueberries. Now imagine that in the world I live in, blueberries do not exist. Therefore, my disposition to smile at the sight of blueberries never manifests. Presumably, I do not conclude that I do not have the disposition to smile at the sight of blueberries because this disposition will *never* manifest. Instead, we might conclude I do not have this disposition because there is something about myself that means that this is not a disposition that I have. For example, I do not know what a blueberry is, I have never seen one before, I only ever scowl at fruit, and there is nothing *internal* that seems to point towards this disposition. Therefore, applying Kiourti's criticism of Vihvelin's ability analysis to the concerns about impossible dispositions we are able to once again bring the focus back to the inputs, back to what is important for dispositions and abilities.

Given this, we can conclude that not only do time travellers have abilities that happen to have an impossible 'success' output, but also time travellers have unmanifestable dispositions in virtue of the manifestation being impossible. Jenkins and Nolan argue that dispositions can have impossible manifestations and I suggest that these are the sorts of dispositions involved in time travel scenarios. Specifically, Tim *is* disposed to kill his younger grandfather.

In sum, I have been arguing that Tim the time traveller is disposed to kill his grandfather because he possesses the relevant inputs. However, this disposition has an impossible manifestation. Given this, one might find my claim that this is a disposition the time traveller has counterintuitive. Despite this concern, I think that these are dispositions that time travellers have. The question then, is how do we analyse dispositions if not in virtue of their manifestations? I answer: inputs.

This leads to the final step in adopting an input approach to dispositional accounts of freedom: how we understand the abilities involved in freedom as dispositions.

I have already discussed my reasons for adopting 'ability to x' requirements for freedom (of which I personally adopt the standard ABO). Therefore, if we are to understand freedom as an 'ability to x' and we understand abilities in terms of dispositions, the final step is to understand 'ability to x' as a 'disposition to x'. For example, if I have the ability to do otherwise, so too do I have the

disposition. Thus, if you adopt an ability based requirement for freedom, this can also be understood in terms of dispositions (owing to the equation from the New Dispositionalists).

We already know (from §4.2.2) that I argue 'ability to x' conceptions of free will are to be understood in terms of their inputs - with 'x' being substituted for an ability based requirement for free will. Assuming the equation of abilities and dispositions, then an agent has the ability to do otherwise, they also have the corresponding disposition to do otherwise. If an agent has the ability to choose on the basis of reasons, they also have the corresponding disposition (or bundle of dispositions) to choose on the basis of reasons. If an agent has the ability to intend otherwise, they also have the corresponding disposition to intend otherwise.

We can apply all the arguments from §4.2.2 to get to the relevant inputs for having the disposition to x. Again, because we are equating abilities and dispositions, all the same relevant inputs can be applied. I am not going to go through them one by one again.

Overall, if you are attracted by the New Dispositionalist stipulation that abilities should be equated with dispositions, my account of freedom can accommodate this. However, if you are not convinced by the equation, then this step is not a requirement of my account – we can get to ABO without using dispositions.

4.3 Chapter Conclusion

In this chapter, I turned to the second aim of this thesis: to provide a compatibilist account of freedom that can accommodate the freedom of time travellers. In doing so, I first outlined my main rivals: the New Dispositionalists. The New Dispositionalists are compatibilists who also want to maintain versions of ABO in their accounts. However, I argued that these compatibilists fall short when it comes to the freedom of time travellers. This is because, like existing ability analyses, analyses of dispositions are too *output-focussed*.

As an alternative, I presented the Input Account of Freedom (IAF). IAF takes the Input Analysis of Ability (IA) and applies it to the sorts of abilities involved in freedom. Notably, ABO (and others). Given that the ability to do otherwise is an ability, we can analyse it in exactly the same way we do other abilities like riding a bike. We do this by appealing to the relevant inputs. I provided some examples from both non-time travel and time travel scenarios in order to show that IAF is not simply an account for time travellers, but works for all agents.

All in all, I argue that IAF is a reasonable, compatibilist alternative to the New Dispositionalists that also provides us with a way to speak about the freedom of time travellers and draws upon what I have already established regarding *inputs*. In the next chapter, I critically compare the New Dispositionalists and IAF, whilst providing some more reasons to prefer IAF over the latter.

Chapter 5: Abilities and Freedom for Time Travellers: But At What Cost?

"Power. You have it, as do all *dov*.
But power is inert without action and choice"
Paarthurnax, *The Elder Scrolls V: Skyrim*

In this final chapter, I first take stock of what has been established thus far and then critically compare IAF with the New Dispositionalists. Second, I return to the two main reasons for pessimism surrounding abilities and freedom for time travellers outlined in chapter one and show how my analyses of ability and freedom can overcome these concerns. Ultimately, I conclude positively; we really do not need to be so doom and gloom about the abilities and freedom of time travellers.

In section one, I begin by giving a quick recap of the past few chapters (§5.1.1) before critically comparing IAF with the New Dispositionalists (§5.1.2). In critiquing the New Dispositionalists, I specifically look at Barbara Vetter and Romy Jaster's (2017) concerns with equating *dispositions* and *abilities*, as well as Randolph Clarke's (2009, 2015) more general concerns with the New Dispositionalists. I show that my account can sidestep these concerns, but also has issues of its own.

In section 2, I return to the strands of reasons for pessimism outlined in chapter one and discuss how what I have established so far begins to offer some optimism regarding both the internal and external reasons. First, I discuss how IA and IAF can combat the traditional concerns about the abilities and freedom for time travellers, looking at Frankfurt scenarios and the Consequence Argument (§5.2.1). And second, I discuss how IA and IAF can combat the internal reasons for pessimism, turning my attention to how my arguments fit into the current discourse (§5.2.2).

Ultimately, I conclude that switching the attention to inputs is a novel way at approaching abilities and freedom. The input analyses are useful tools for assessing everyday abilities by thinking about what actually is important for these things; the effort, the context, the agent's own skills. I suggest that there is further discussion to be had about this topic, but overall that I have presented new analyses that aids with the problems facing compatibilists and time travellers alike.

5.1 A Quick Recap and Some Problems

5.1.1 A quick recap

Throughout the last three chapters I have outlined and defended my accounts of abilities and freedom, the latter of which makes use of the former in spelling out the ability to do otherwise. What follows is a brief recap.

First, the input account of abilities:

IA an agent *S* has an ability *A* iff *S* possesses the relevant inputs for *A*-ing.

At the heart of IA is the fact that it does not matter whether the agent succeeds or fails at exercising their ability. What are important are the inputs, the elements that go into an action. I broadly split inputs into 'skill-based' and 'context-based' with 'skill-based' pertaining to internal factors e.g. the agent's effort or their bodily make-up and 'context-based' pertaining to external factors e.g. the weather, proximity.

When applied to the case of Tim the time traveller we are able to say that Tim has the ability to kill his younger grandfather. We know that Tim will never succeed in killing his grandfather, but under IA this guaranteed lack of success does not negate Tim's ability. This is in line with the uneasiness we might feel saying that Tim does not have the ability despite *everything* that Tim has going for him (Tim's skill-based *and* context-based inputs).

However, accepting IA as a viable and useful analysis of ability does not entail that one has to accept that agents can do all sorts of fun impossible things (as much as one might like this to be true). To combat this potential problem, I say: just look to the inputs. Do I have the relevant inputs for squaring a circle? Or for making 2+2=5? I argue no. I think the difference for the time travel case is that it really seems, for all intents and purposes, that Tim should have the ability to kill his younger grandfather because he has all the 'stuff' that would usually enable him to successfully exercise that ability. Thus, IA does not allow for all sorts of impossible abilities, it accounts for *abilities* full stop.

The next step in my argument was to use IA to formulate the ability to do otherwise (ABO) requirement for freedom. I take ability to do otherwise as necessary for freedom (despite Frankfurt's concerns). Given ABO's popularity, if my compatibilist view can accommodate ABO, then that is a big advantage of my view. I outlined a group of compatibilists who also wish to maintain ABO (or versions of ABO) in their accounts: The New Dispositionalists. I consider these compatibilists to be my closest rivals.

The final move I made was to combine IA with the ability to do otherwise. According to IA, abilities are analysed in terms of relevant inputs. Thus it follows that the ability to do otherwise is analysed in terms of relevant inputs – the ability to do otherwise is just a special sort of ability after all. Therefore, I arrive at the Input Account of Freedom (IAF):

IAF an agent *S* is free to *A* only if *S* possesses the inputs relevant to *x*.

Whereby 'x' can be substituted for 'doing otherwise' or other similar formulations, such as 'choosing on the basis of reasons' (Vihvelin, 2004, 2013) or 'intending otherwise' (Jaster, 2021). This is kept purposefully ecumenical, because although I am in favour of the ability to do otherwise conception, other analyses also work. Therefore, I am free to go to the office on Tuesday, only if I possess the relevant inputs for doing otherwise or intending otherwise or choosing on the basis of reasons. These inputs can be unmanifested.

Having established both an account of abilities and a framework for freedom I then turn to applying this to Tim. I have already shown that Tim is *able* to kill his younger grandfather. Now, I show that Tim is also free to kill his grandfather on his time travel journey. Tim is free because Tim has the ability to do otherwise. He has this ability because he has the relevant inputs. Therefore, even though time travellers, like Tim, will not kill their younger grandfathers, Tim is still free.

Having taken stock of the situation, I can now begin to critically compare the New Dispositionalists with IAF. I predominantly follow Vetter and Jaster's (2017) concerns, but also draw on some arguments from Clarke (2009, 2015).

5.1.2 Problems for the New Dispositionalists

5.1.2.1 Issues with the equation of abilities and dispositions

The equation of dispositions and abilities forms the heart of dispositional accounts of compatibilism. Due to the relative recency of the literature on dispositions, abilities and freedom there is not a large number of arguments to draw on, but the literature that does exist is not optimistic. At the centre of these arguments are Barbara Vetter (2017, 2019), Romy Jaster (2017, 2020) and Randolph Clarke (2009, 2015). Overall, although in chapter four I suggested that if you were attracted by the equation of dispositions and abilities, then you can build this into my account, the arguments in this sub-section provide reasons as to why we might avoid making this step and just stick with IAF *simpliciter*.

In short, the issue lies in thinking abilities and dispositions can be analysed in terms of each other. In the words of Vetter and Jaster:

> The basic idea of the new dispositionalism is just this: Abilities are a kind of dispositions, and so the failure of a simple conditional analysis for abilities is just a special case of the failure of the simple conditional analysis for dispositions. Whatever explains the failure in the case of dispositions—Fara prefers a non-conditional analysis, Vihvelin (2013) a supplemented version of Lewis's reformed conditional analysis—may also be used to explain the counterexamples in the case of abilities. As an analysis of abilities, the new dispositionalism may remain silent on an analysis of dispositions; what matters is that we can understand abilities as a kind of dispositions (Vetter and Jaster, 2017 p4).

Vetter and Jaster present the key dispositional compatibilist move as follows:

> **ND** An agent has the ability to [*A*] iff she has the disposition to [*A*] when she tries (intends, chooses, or wants) to [*A*] (Vetter and Jaster, 2017 p4).

The first problem that Vetter and Jaster identify stems from the fact that dispositional compatibilists use this analysis to build a compatibilist theory of freedom. Thus, the abilities under consideration are those relevant for freedom: namely agential abilities. However, this analysis is not particularly compelling when it comes to other types of abilities (ones which are not pertinent

for freedom). For example, the ability to form a judgement or even abilities like the ability to see, smell, touch (perceptual abilities). This is because, where agential abilities rely on trying to exercise the ability, perceptual abilities do not rely on trying. For example, my ability to see the colour red does not rely on me trying to seeing the colour red, it relies on some cognitive response to a stimuli (i.e. seeing something red provokes a cognitive response). The general idea is that equating abilities and dispositions is only persuasive for a subset of abilities. Analyses of ability should be able to capture all abilities, therefore this analysis is not a good analysis.

This specific argument does not hold much weight because the dispositional compatibilist are *not* concerned with abilities that are *not* relevant for freedom. Thus, ND being unable to capture things like perceptual abilities is not hugely worrying. Vetter and Jaster also acknowledge that this objection has limited force: 'since ND is a claim about abilities for intentional actions, these are not strictly counterexamples to the account' (Vetter and Jaster, 2017 p7).

What is potentially more worrying is that there may be agential abilities – abilities relevant for freedom – that ND fails to capture. Thus ND might fail to capture the exact abilities that it *needs* to capture to be used in analyses of freedom.

Imagine the following scenario:

> Louise is a world-renowned poet. She has written hundreds of poems and multiple books over a career spanning four decades. As a poet, she certainly has the ability to write poetry, and probably the ability to write pretty good poetry given the status of her career. However, every time she sits down and *tries* to write poetry, Louise fails. Her poetry does not stem from her sitting at desks and trying to write. Her creativity and ability stems from her experience and inspiration taken from the natural world.

It follows, according to Vetter and Jaster, that Louise's ability to write poetry does not stem (or is not triggered) by Louise *trying* to do so. Although we can confidently say that Louise has the ability, it is not the case that she is also disposed upon trying. Vetter and Jaster suggest that these sorts of abilities are not captured by ND and that these are agential abilities relevant for freedom. It is true that Louise has the ability to write poetry but false that she is disposed to write poetry when trying.[92]

In addition, we can imagine other situations in which we, strictly speaking, have the ability to do something, but we lack the disposition. For example, I have the ability to burn my house down (relevant inputs including: matches, flammable fluid, a slight morbid curiosity), but I would not say I was *disposed* to do this. Dispositions appear more ingrained in agents, they seem to require more development. I am compelled by this objection from Vetter and Jaster, I agree that abilities and dispositions do not map onto one another as it might initially seem. If Vetter and Jaster are right that there are abilities relevant for freedom that are not captured by the dispositional analysis, then this is a big problem for the New Dispositionalists.

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[92] Peter Vranas (2010) suggests something similar that the very act of trying may result in lack of success.

Vetter and Jaster next turn their attention to cases in which trying is the right kind of trigger, but the agent does not have the disposition, despite having the ability. It is common that a disposition may not manifest under the correct stimuli.[93] Because of this, contemporary analyses of dispositions often have some reliability condition. That is, these analyses (broadly) suggest that the manifestation of the disposition will happen in a suitable or reliable proportion of cases in which it undergoes the stimulus.[94]

To this point, Vetter and Jaster write:

> … The degree of reliability that is required of an ability can vary widely, and there are some clear cases where reliability is not required at all. Creative abilities provide a case in point again. An innovative artist may not be disposed to produce innovative art under any conditions; it may be a once- or twice-in-a-lifetime achievement (Vetter and Jaster, 2017 p7).

Vetter and Jaster suggest that it is true that Usain Bolt has the ability to run 100m in 9.58 seconds, but Bolt does not reliably produce the time. In fact, most of the time Bolt ran the 100m he was running slower. He clearly does have the ability to run 100m in 9.58 seconds – he has run that fast! But it is false that Bolt is disposed to reliably run 100m in 9.58. This is another case in which an agent has the ability but lacks the disposition.

Vetter and Jaster are concerned that ND does not seem to capture the abilities we would expect it to capture and generalises the complex relationship between abilities and dispositions. It is a benefit of IA and IAF that it does not fall prey to these objections.[95] I am able to get a compatibilist accounts with ABO without these downsides.

We can tell input-based stories for the cases that Vetter and Jaster present against the equation of abilities and dispositions. Let us first consider Louise the poet. Recall that for Vetter and Jaster, Louise's case proved problematic because her ability to write poetry does not stem from her *trying* to do so. Therefore, Louise is *not* disposed upon trying to write poetry. However, we can explain Louise's ability in terms of her relevant inputs as Louise's ability, under IA, is not determined by her *trying*. Rather, we determine Louise's ability by the relevant inputs. These include skill-based

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[93] Cases of masking, finking and antidotes (which I discussed in §4.1.1) provide examples in which a disposition's manifestation does not occur under the stimulus. For example, a glass' disposition to break could be masked if we wrapped the glass in bubble wrapped resulting in the glass failing to break when dropped.

[94] For example, in §4.1.1.1 I noted that Manley and Wasserman (2007, 2008, 2012) present a 'proportional' analysis in which they claim that a disposition must manifest in a suitable proportion of situations in which the object or agent undergoes the stimulus.

[95] Of course, one would need to contend with these problems if you do want to adopt the equation of abilities and dispositions. As I mentioned in §4.2.4, you can incorporate dispositions into my account, but it is not a requirement. Given that it is not a requirement, I will not defend my account from these criticisms.

inputs (Louise is a sad person, she is focused, she is creative) and context-based inputs (she attends a lot of poetry conventions, access to visual stimuli, she has a good poetry teacher)

Second, let us consider the Usain Bolt example. Under IA, Usain Bolt's ability to run 100m in 9.58 seconds can be analysed in terms of his relevant inputs. These relevant inputs can include things like requisite training, good muscle to fat ratio, functioning legs and arms, good weather conditions. These relevant inputs just are what it is for Bolt to have the ability to run this time. Due to not requiring the equation of abilities and dispositions in my account, we need not complicate this response any further. All we need are the relevant inputs.[96]

IA is able to capture the abilities that the equation between abilities and dispositions misses. I argue that the versatility of IA is a positive of it and that owing to the problems with the equation of abilities and dispositions, this makes IAF a more attractive ABO-compatibilist theory.

The equation of abilities and dispositions is a significant problem for the New Dispositionalists in particular and something which IAF does not succumb to. In §5.2, I return to the reasons for pessimism outlined in chapter one and illustrate that ABO-compatibilists have to contend with both Frankfurt cases and the Consequence Argument. I show, with reference to Christopher Evan Franklin's (2011) arguments, that the New Dispositionalists may have trouble responding to Frankfurt. In doing so, I also argue that IAF provides us with an intuitive response to Frankfurt that is satisfactory for those who wish to maintain ABO in their accounts of compatibilism. I do this by appealing to the notion of *masking*.

5.2 Combatting the Reasons for Pessimism

In chapter one, I presented two reasons for the pessimism surrounding abilities and freedom for time travellers. The external reasons suggest that any account of freedom has to contend with traditional problems associated with compatibilism and the ability to do otherwise. In particular, I looked at two existing issues for ABO-compatibilists: Frankfurt cases and the Consequence Argument. The second strand of reasons were internal to the philosophy of time travel. I suggested that philosophers who write on time travel struggle to reconcile the abilities and freedom of time travellers with existing intuitions about these concepts. I have argued throughout this thesis that we can combat both of the strands to the problem by turning our attention to *inputs*. Now that I have established (i) my account of abilities and (ii) my account of freedom and I have defended both of these from some potential problems, I can finally show how both of these give us reasons to be optimistic about these two concepts and can combat some of the concerns that give rise to both reasons for pessimism outlined in chapter one.

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[96] I think that Vetter and Jaster provide the most convincing criticisms of the equation of abilities and dispositions. Others that have also commented on this include Randolph Clarke (2009, 2015), who offers some more practical concerns with the equation. Clarke suggests that there are structural differences between abilities and dispositions that undermines the equation. For example, Clarke argues dispositions are '*triadic*': something x has a disposition to manifestation M in circumstances C. Whereas abilities are '*dyadic*': an agent has an ability to A (Clarke, 2015 p898).

5.2.1 IA, IAF and the external reasons

5.2.1.1 Frankfurt and ABO-compatibilists

In chapter one, I showed that Frankfurt's attack on PAP has left ABO-compatibilists making concessions about the ability to do otherwise being necessary for freedom and moral responsibility. Given that I am developing an ABO-compatibilist account of freedom for time travellers, I need also contend with Frankfurt cases.

At the core of a Frankfurt case is an agent who cannot do otherwise because something is preventing them, and yet they make the decision to act without the thing preventing them from doing otherwise coming into effect. The take-home is that we can be free and therefore morally responsible despite not having ABO.

In the previous section, I briefly noted that Frankfurt cases prove problematic for the New Dispositionalists. Now, before outlining how both IA and IAF can overcome the challenge from Frankfurt, I first outline why the New Dispositionalists fail to adequately respond to Frankfurt's challenge. In particular, I look at the arguments from Christopher Evan Franklin (2011). Next, I illustrate how my account can sidestep the challenge from Franklin, as well as using the New Dispositionalist notion of masking to account for ABO in Frankfurt's original cases.

Freedom as the ability to do otherwise, as we already know, is hugely influential and popular within the literature. Therefore, I argue that any theory of compatibilism or incompatibilism that maintains ABO has an advantage over those who give up ABO. This, as I have suggested, is a big positive of the New Dispositionalist accounts of compatibilism and something I also maintain in my account. However, the New Dispositionalists have been met with much criticism since these sorts of ideas started floating about, not just in virtue of the equation of abilities and dispositions, but also in their response to Frankfurt cases.

We have already seen that ABO-compatibilists have to contend with Frankfurt cases, this includes the New Dispositionalists like Vihvelin and Fara. First, Vihvelin argues that in order to refute PAP, you need to show that the agent could not have done *anything* else. Specifically:

> What is needed to refute PAP and sustain Frankfurt's claim that alternatives are unnecessary for responsibility is… a story in which Jones does X and is responsible for doing X, but we must concede that Jones is unable to do anything, even deliberate, decide, or choose, other than he actually does (Vihvelin, 2013 ch4 p95).

In arguing this, Vihvelin draws on a common criticism of Frankfurt's cases: that the agent in question could actually have done otherwise.[97] Frankfurt only tells us stories in which the agent cannot do otherwise when 'doing otherwise' is a bodily action. That is, in Frankfurt cases the agent

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[97] Vihvelin was not the only compatibilist who took a stance *against* Frankfurt's examples. See Joseph Klein Campbell (1997, 2005), Michael Smith (1997) and Michael Fara (2008) for others who argue that Frankfurt was wrong. Additionally, see Maria Alvarez (2009) for similar arguments against Frankfurt's attack on PAP.

in unable to move their body in such a way that they do not carry out the act in question. But according to Vihvelin, there are other sorts of 'acts' involved in moral responsibility which are unaccounted for under Frankfurt's framework. For example, the agent could mentally do otherwise even if their bodily movements are unable to refrain from being in such a way that carries out the act. The agent can deliberate on refraining from the act, or think about things other than the act. All these things fall under the umbrella term 'doing otherwise'. Thus Frankfurt cases can only show much; that the agent cannot avoid carrying out act A. But they *can do otherwise than A*, they can think about *B*, deliberate on *C* etc.

Regarding her dispositionalist account of freedom, Vihvelin argues she can overcome the challenge from Frankfurt because choosing on the basis of reasons is a bundle of *intrinsic* dispositions. In the Frankfurt cases, the counterfactual interveners do not alter the dispositions on an agent. That is they are not meddling with the agent's intrinsic, internal dispositions. Instead, the counterfactual interveners force some kind of *physical* response. Given this, Vihvelin argues that the agent in the Frankfurt case can still choose on the basis of reasons because they maintain a bundle of intrinsic dispositions which constitutes this freedom and which has not been affected by the intervener.

On the other hand, Fara (2008) suggests that the interveners in Frankfurt cases act like 'masks' of dispositions. Therefore, if the agent did try to exercise his ability to act otherwise or make choices on the basis of reasons then the intervener would act as a mask of this ability because (i) the agent tries to A and (ii) fails to A but (iii) retains the disposition to A:

> We have already seen reason to reject the conditional analysis of abilities, so it is not in general required for the possession of an ability that one succeed in exercising it if one were to try. Why think it is required in the Frankfurt-style case? Why think, that is, that Black's counterfactual intervention does anything more than to *mask* Jones's ability to act otherwise? (Fara, 2008 p854)

In spite of these arguments, Franklin contests that there is a problem with Vihvelin's response to Frankfurt. To explicate this problem, consider the following example from Franklin:

> To see the problem with these contentions consider the following case in which Jones has promised to pick up a friend from the airport, but just before he leaves, is kidnapped, tied tightly to a chair, and held for ransom. Let us assume both that Jones possessed all the necessary conditions (including abilities) for free will and responsibility before being kidnapped, and that the kidnappers are competent so that no matter how hard Jones tries to escape, he will fail. Suppose finally that Jones does his best to keep his promise but fails. Is Jones morally responsible for failing to fulfill his promise? (Franklin, 2011 p95)

The answer is perhaps quite obviously 'no' and the explanation for this is plausibly because Jones could not have done otherwise (did not have the ability to do otherwise) due to the kidnapping. We can also say that Jones' lack of moral responsibility is due to his lack of freedom and his lack of freedom is due to his lack of ability to do otherwise. For Vihvelin and Fara, Jones *did* have the ability to pick up his friend and we can explain this in terms of dispositions which are masked. For Vihvelin, as we have seen, these abilities and dispositions are intrinsic properties. Franklin claims

we can imagine that Jones possessed all the abilities and dispositions and intrinsic properties necessary for picking up his friend from the airport, prior to being kidnapped and it would be strange to think that the kidnapping robbed Jones of these intrinsic properties. Indeed, this is what Vihvelin claims can overcome Frankfurt's original examples – nothing about the agent's intrinsic properties have been altered and this entails that they are still free. Therefore, Jones is still free.

However, Franklin thinks that this is the wrong conclusion to come to. Jones is not morally responsible for failing to keep his promise to his friend. After all, Jones was kidnapped and it would be strange for his friend to blame Jones for not picking him up – in fact he probably would not be a very good friend if he did blame Jones. Yet, Vihvelin is claiming that Jones is *free* despite the lack of moral responsibility.[98]

Vihvelin's response to Frankfurt cases leads to an adjacent problem for her dispositional account of freedom. Specifically, as Franklin argues, Vihvelin assumes that free will is exhausted by abilities (Franklin, 2011 p96). For Franklin, *free will* is grounded in abilities, but *freedom* consists in opportunities. Thus, Franklin provides the following principle:

> **Principle of Alternative Opportunities (PAO)** an agent is morally responsible for an action X only if the agent had the opportunity to do otherwise (Franklin, 2011 p97).

Therefore, in the Jones kidnapping case, the reason why he is not morally responsible for his failure to keep his promise is because he lacked the Opportunity to do otherwise (due to the kidnapping):

> Jones, through no fault of his own, lacks the opportunity to fulfill his obligation. In this case, his being kidnapped and tied to a chair function as obstacles—they rob him of the opportunity to fulfill his promise, while leaving untouched his abilities necessary for fulfilling his promise (Franklin, 2011 p97).

Franklin contests that Vihvelin focusses too much on the *intrinsic* factors. We know that Vihvelin argues that free will is just all about these intrinsic factors, but this ignores certain important Opportunity factors. For Franklin, this is Vihvelin's biggest error: 'that free will extends beyond an agent's abilities to include the agent's opportunities' (Franklin, 2011 p97).

I agree with Franklin that given the response to Frankfurt, we are left with some questions about the focus of Vihvelin's account. Internal dispositions are not the only thing that remains relevant when assessing whether an agent is free, we often do look for the Opportunity factors. To further support this argument against Vihvelin, recall again Tim the time traveller. In chapter four, I argued that owing to IAF, Tim is free is kill his grandfather. I said that Tim is free to kill his grandfather because he has the ability to do otherwise which is understood in terms of relevant inputs. In chapter two, I suggested that these relevant inputs can be split into *skill-based* and *context-based* which, I argued, mapped onto the common 'Ability' and 'Opportunity' factors that are prevalent

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[98] Franklin concedes that free will is *not* sufficient for moral responsibility and thus we can stipulate that Jones also 'satisfies all the epistemic requirements for moral responsibility... Therefore, it should be possible to explain why Jones is not responsible by appealing to his failing to satisfy some aspect of the control condition for moral responsibility' (Franklin, 2011 p96).

in ability analyses. Regarding Tim, we can say that he has a combination of skill-based and context-based inputs (both Ability and Opportunity factors) that form his ability do otherwise than kill his grandfather and therefore he is free. Ultimately, my analysis is able to capture much of the concerns that Franklin has about Vihvelin's focus on internal factors because of the context-based inputs. Therefore, unlike Vihvelin and as was my argument in chapter two, input analyses are not left having to prioritise or makes concessions about which kinds of factors are important for freedom.

First, I argue that the agent has the ability to do otherwise in virtue of their skill-based inputs. I agree with Fara that we can talk about the ability to do otherwise in terms of masking. As Fara writes:

> We have already seen reason to reject the conditional analysis of abilities, so it is not in general required for the possession of an ability that one succeed in exercising it if one were to try. Why think it is required in the Frankfurt-style case? Why think, that is, that Black's counterfactual intervention does anything more than to mask Jones's ability to act otherwise? (Fara, 2008 p854).

Given the salience of the skill-based inputs in my account the agent retains these relevant inputs and therefore retains the ability to do otherwise. In addition, given that my account pays no attention to the outputs, it does not matter that the agent actually does not do otherwise (and, as we know from Franklin's scenario, the agent does not do otherwise), therefore their freedom is retained just in virtue of the relevant inputs. I think that masking works better in these circumstances because, again, the kidnapping does not rob the agent of their skill-based inputs. Rather, these relevant inputs have been *masked*.

I have mentioned the concept of masking in previous chapters and I think it helps to fit with the intuition that a lot of us have with Franklin's case (the intuition that Jones is *not* morally responsible because he cannot *physically* do otherwise). Although it might be true that Jones does have the relevant inputs for doing otherwise (than staying in the chair) and thus keeping his promise to his friend, we can say that the relevant inputs have been *masked* by his current predicament. We can therefore say something like that Jones having been kidnapped, tied tightly to a chair and held for ransom *mask* the relevant inputs for doing otherwise that he does, in fact, retain. To further elucidate this idea, recall my definition of 'relevant inputs':

> **Relevant Inputs** an input is 'relevant' insofar as it has some sort of explanatory relevance for having the ability.

Therefore, Jones's relevant inputs should explain his ability to do otherwise. However, there is the glaring fact that Jones is currently tied to a chair having been kidnapped that we are yet to contend with. In fact, we could say that Jones being kidnapped and tied to a chair more explains his inability to do otherwise in this circumstance. Indeed, this masks Jones's relevant input given its prevalence in this scenario. I think this gives us an intuitive answer whilst also maintaining the integrity of the input analysis. We understand that Jones does have the relevant inputs to do otherwise (i.e. he has the desire to uphold his promise to his friend, and nothing about his internal bodily situation has

been altered), but there is something preventing this from manifesting: the inputs have been masked.

In sum, Franklin argues that Vihvelin's compatibilist response to Frankfurt cases highlights a problem with Vihvelin's account of freedom. Notably, that Vihvelin's response to Frankfurt cases is to say that the agent can still do otherwise because of their *intrinsic* dispositions, but this ignores an aspect of freedom that is important: Opportunity.[99]

Having shown that there are some issues with the New Dispositionalist response to Frankfurt cases – something that all ABO-compatibilists have to deal with - I can turn to how my input analyses accommodates these scenarios.[100]

To be clear on how the input analyses are able to accommodate Frankfurt's concerns, again let us turn our attention to a Frankfurt case:

> Matthew and Olive are drug dealers. The two of them are owed money from one of their associates, Benji. They have said to Benji that he can pay off his debt to them if he murders one of their biggest rivals – Andrew – who has recently encroached on their territory. Benji, in an increasingly desperate situation, agrees, knowing that he will be unable to get the money he owes them. Olive is sceptical of Benji agreeing to murder their rival and, worried about Andrew's recent increase in power, she decides to put some safety measures in place to ensure that the end result is carried out. Given this, Olive makes sure that she is also there on the day Benji intends to murder Andrew. Olive has a knack for discerning what someone is going to do, and if she sees that Benji is going to decide *not* to murder

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[99] Randolph Clarke (2009) also presents a problem by suggesting that the picture the New Dispositionalists offer oversimplifies Frankfurt's initial argument. This is because, if the solution the New Dispositionalists offer – that the counterfactual intervener masks the ability to do otherwise or acts as a fink – works, then it seems like Frankfurt's arguments are relatively easy to overcome. As Clarke writes:

> If the agent in a Frankfurt scenario is responsible for what she does [as the New Dispositionalists argue], then obviously no ability that is required for moral responsibility is missing. What could Frankfurt, and those persuaded by him, have possibly been thinking? (Clarke, 2009 p340).

For Clarke, Frankfurt examples take PAP to require something stronger than what the New Dispositionalists offer: something more than a *general capacity* to do otherwise. Therefore, although the agent in Frankfurt scenarios may have this general capacity according to the New Dispositionalists, they lack the type of ability to do otherwise that is relevant for freedom and moral responsibility. This is what, it seems, is at stake in Frankfurt's scenarios. In Clarke's words:

> And there apparently are abilities of certain types that Jones lacks, because of Black's readiness to intervene. Though Jones might have a capacity to act otherwise, the circumstances are not friendly to his exercising that capacity, and it may fairly be said that it is not up to him whether he exercises it, or that he does not have a choice about whether he does so (Clarke, 2009 p340).

[100] In §4.2.3 when outlining cases to illustrate IAF in practice, one of the examples I produced was a Frankfurt-style case, thus some of this discussion will be familiar, but here I go into more detail.

Andrew, Olive will ensure that Benji does. As it happens, Benji owing to the desperation, does carry out with the murder of Andrew. Olive need not interfere and reports back to Matthew satisfied.

The take home from this case is that Benji murdered Andrew 'freely' and therefore, because it plausibly necessary for moral responsibility that the agent be free, Benji is morally responsible for murdering Andrew. However, Benji is not free because he lacked the ability to do otherwise. The presence of Olive as the 'counterfactual intervener' entails that, if Benji was going to decide to do otherwise, he would not.

Thus far, I have suggested that the agents in both Frankfurt and Franklin's cases have the ability to do otherwise and are therefore free, but this is masked by (i) the counterfactual intervener in Frankfurt's cases and (ii) Jones having been kidnapped in Franklin's case. However, I have not yet commented on the moral responsibility aspect both cases. To be clear, the intuition in Frankfurt's case is that the agent is morally responsible and in Franklin's case that the agent is not morally responsible. I think the answer to this demands further discussion on what we think is necessary and sufficient for moral responsibility. In particular, I think the answer lies in the distinction between general and specific abilities. We might think that a general ability to do otherwise is necessary for freedom, but a specific ability to do otherwise is necessary and sufficient for moral responsibility. Therefore, we could present the options as a disjunction. My account tells us that agents in Frankfurt cases are free because they have the ability to do otherwise. PAP tells you that in that case, they agent is morally responsible. But, in Franklin's case, our strong intuition might be that Jones is not morally responsible. That does not mean that you have to throw out my view (or the view that he has ABO). Instead, it might make us reflect on the idea that while freedom might be necessary for moral responsibility, it mightn't be sufficient. Indeed, while a general ability to do otherwise might underpin freedom, there is scope to explore in future work whether specific abilities are required for moral responsibility.

Finally, returning to time travel. In chapter one, I also discussed recent attempts to develop Frankfurt's original arguments by appealing to the possibility of time travel. Recall, the following passage from Joshua Spencer (2013):

> Suppose that Martin is a time traveler; he travels in a machine that can transport him to various points in earth's history. During one of his many trips, Martin rescued a man from plummeting to his death. Let's suppose that the man rescued was a high-wire walker who was working without a net in a very desolate area with no one else nearby. Martin arrived in his machine just in time to see the man fall from his wire, head first toward the ground. Luckily, Martin quickly found a button labeled "Emergency Safety Net Release". Martin pressed the button and an emergency safety net was deployed across the field underneath the high-wire walker. The walker landed safely in the net and walked away from the situation unscathed. If Martin had not pushed the button and released the emergency safety net, then the high-wire walker would have fallen to his death (Spencer, 2013 p153).

As it happens, the high-wire-walking agent was Martin's grandfather as a younger man. Spencer concludes that Martin is to be held morally responsible for saving his high-wire-walking

grandfather because he did so 'freely', but Martin did not have the ability to do otherwise. This is because if Martin had done otherwise and *not* saved his grandfather, he would not have existed to travel back in time in the first place. Spencer claims that this is stronger than Frankfurt's initial arguments because there is this element of non-existence should the time traveller do otherwise. More precisely, if the time traveller did do otherwise than release the safety net, the time traveller would not have been alive to make the journey in the first place. Thus, if an agent can be free and morally responsible without the ability to do otherwise, PAP is false and ABO should not be considered a necessary condition for freedom (as Martin is free despite not having ABO).

I suggest that the input analyses can also provide a reasonable response to the time travel Frankfurt cases. Specifically, I suggest that in Martin's case the relevant inputs are unmanifested. In Martin's situation I argue that he has the relevant inputs for doing otherwise. Again we can tell an input story about Martin has the mental capacity to deliberate and refrain from releasing the time machine's in-built safety net, some relevant context-based inputs such as the time machine being built with buttons that do not release the in-built safety net, but these are unmanifested. It is a similar situation to Tim, although Tim will not kill his grandfather he nonetheless has the ability. Although Martin will do not otherwise than release the safety net, he nonetheless has the ability. Therefore, ABO can still be retained a plausibly necessary for freedom.[101]

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[101] Another response to Spencer comes from Kelly McCormick (2017). McCormick argues that Spencer's case runs into the 'dilemma objection'. McCormick writes 'either the circumstances that causally contribute to bringing about the relevant action, *A*, [in the Frankfurt scenario] are causally sufficient for A or they are not causally sufficient for A (McCormick, 2017 p383). If the circumstances are causally sufficient then McCormick claims that this provides us with only 'question begging' reasons to reject PAP. However, if the circumstances are not causally sufficient for bringing about A, then this gives us no reason to reject PAP – there is no reason to think that the agent could not have done otherwise. McCormick claims that by avoiding the second horn of the dilemma, Spencer's case falls on to the first horn. McCormick argues that Martin's action *is* causally determined and therefore Spencer commits himself to the following claim:

> **CF** If Martin had not released the safety net, then Martin would not have existed.

Which, McCormick argues, entails the following:

> **CD** Martin's coming into existence as he did in the actual world is causally sufficient for Martin's releasing the safety net (McCormick, 2017 p384).

If Spencer is committed to **CD**, then he runs afoul of the first horn of the dilemma: Spencer merely provides question begging reasons to reject PAP. According to McCormick:

> If (CF) is true then, again, there are no nearby possible worlds in which Martin exists and fails to pull the net. And if there are no nearby possible words in which Martin exists and fails to pull the net, we can say something about a particular class of nearby possible worlds, namely those worlds in which we hold fixed the features of the actual world described in TT all the way up to the point at which Martin comes into existence (McCormick, 2017 p384).

Finally, a brief point on the role masking plays in Frankfurt cases. I have been arguing that masking allows us to talk about the ability to do otherwise in Frankfurt scenarios. In particular, I have suggested that the agent retains the ability to do otherwise relevant for freedom. That is, I suggest that this masked ability (account for via the relevant inputs) is at least necessary for freedom. The question remains as to whether a masked ability is sufficient for freedom and, in addition, whether a masked ability is enough for moral responsibility. I think that in addition to the discussion about moral responsibility from above, additional work needs to be done with regard to masked abilities and the role they play in moral responsibility. Perhaps appealing to general and specific abilities could also help here. That is, perhaps a masked general ability is enough for freedom, but not enough for moral responsibility and what we need is to think about moral responsibility in terms of specific abilities alone. I think masking helps us retain the intuition that the agent in Frankfurt scenarios has the ability to do otherwise, but as we have seen from Franklin's case it does not help us with the intuition that he is not morally responsible. Therefore, I suggest further, future discussion on the relationship between masked abilities and moral responsibility.

5.2.1.2 The Consequence Argument

In addition to Frankfurt's attack on PAP, I also noted that an argument against compatibilism, the Consequence Argument runs as follows:

> If determinism is true, then our acts are the consequence of laws of nature and events in the remote past. But it's not up to us what went on before we were born, and neither is it up to us what the laws of nature are. Therefore, the consequences of these things (including our present acts) are not up to us (van Inwagen, 1983 p56).

If this is true of all agents, then this includes time travellers.

The strength of my input analyses is that we do not look at the *consequences* of the actions, therefore the very nature of the Consequence Argument does not apply in the same way. If, again, we understand the abilities in terms of inputs, then looking at the consequences of these things does not matter. These inputs are perfectly compatible with unmanifested abilities. Therefore, even if there is one course of action (if determinism is true), this is consistent with saying that the agent has the ability to do otherwise, but this is unmanifested. Here, an incompatibilist might respond and say that the relevant inputs are also determined (if determinism is true), so the consequence argument still holds. However, I would respond and say that this does not matter, as long as you have the relevant inputs, *how* you get these does not matter. So long as you have what is necessary for free will, you have free will.[102]

Therefore, McCormick concludes that Spencer shows that the circumstances that contribute to Martin releasing the safety net *are* causally sufficient for this action and therefore he is left having to assume that Martin *does* release the safety net to show why PAP is false.

[102] Interestingly, I have this idea in common with mesh and hierarchical accounts of compatibilism. The way that you get the mesh is irrelevant, what matters is that it you have it. See, for example, Frankfurt (1971).

We can conclude that IA and IAF avoid common problems associated with traditional compatibilist accounts of freedom. Understanding these concepts in terms of inputs provides us with the resources needed to maintain the ability to do otherwise and overcome the Consequence Argument. Therefore the external strand of reasons for pessimism surrounding a compatibilist account of freedom for time travellers is overcome.

5.2.2 IA, IAF and the internal reasons

The second strand of reasons for pessimism discussed in chapter one concerns is that the vast majority of people who write on time travel and freedom come to rather pessimistic conclusions about the abilities and freedoms of time travellers. In this sub-section, I first show how IA interacts with some of the more nuanced accounts of time traveller abilities. Specifically, I show how my account - IA - gets similar, intuitive results to Rennick and Fernandes. Then, I consider how IA and IAF can combats more detrimental concerns about the abilities and freedom of time travellers. Here, I consider the arguments of Vihvelin, Michael Rea and Bokai Yao.[103]

5.2.2.1 Stephanie Rennick and Alison Fernandes

Stephanie Rennick (2015) and Alison Fernandes (2020) present arguments against some specific abilities of a sub-set of time travellers with Fernandes directly building on and responding to Rennick. In the following passages, I first explain Rennick's view and show that my IA gets similar results to Rennick and then explain Fernandes's arguments also showing that IA lines up with her conclusions. I explain that IA gets us the same intuitive results about certain abilities that both Rennick and Fernandes illustrate.

Although agreeing with Lewis in that most time travellers are able to kill their younger grandfather, Rennick argues that there are sub-set of agents who cannot *murder* their grandfathers.

To begin, we are assuming that murder requires an 'intention'. This is non-controversial: in order for Tim to be able to murder his younger grandfather, he must also intend to murder his grandfather.[104] Rennick presents the following condition for intending:

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[103] To be clear, I am not going to be defending IA from potential counterarguments – I did that in chapter three. Instead, I am showing how IA interacts with and overcomes some more nuanced arguments in the travel literature.

[104] This is echoed in the legal system in the murder vs. manslaughter debate. Murder is pre-meditated requiring an intention, man-slaughter is random and does not require an intention. A lot of literature surrounding 'self-defence' also suggests that self-defence is morally acceptable if the attacker is intending to harm their victim. Take the following case from Helen Frowe and Jonathan Parry (2022):

> *Murder:* Attacker is culpably trying to kill Victim because he is jealous of Victim's success. Victim can save his own life only by lethally throwing a grenade at Attacker. (Frowe and Parry, 2022)

Given this case, Attacker is liable to *defensive* harm because Attacker intends to kill Victim.

> **Intention** what is required, minimally, in intending to [*A*] (or intentionally [*A*]-ing) is merely the absence of a belief that you will not [*A*].

Thus, if I intend to get my haircut, I do not possess the belief that I will not get my haircut. The way this works in time travel scenarios is that your average agent presumably would not have read all the literature surrounding the philosophy of time travel. Therefore, these agents will not know that travelling back in time and murdering one's infant self or one's younger grandfather will not yield success. These agents are able to murder their younger self *because* they are able to form the intention to do so and therefore do not possess the belief that they will *not* murder their younger selves.

Compare this to philosophers who have read David Lewis (1976), Stephanie Rennick (2015), and Kadri Vihvelin (1996). Having read these papers, these agents now believe that successfully murdering one's younger self or younger grandfather will not happen. This knowledge means, according to Intention, that they cannot form the intention to murder their younger selves because they now believe that they will not succeed:

> But if Lily herself is a philosopher, and she believes (as she should) that time travellers will not murder their grandfathers, then she believes she will not murder her grandfather. And given such a belief, she will not be able to form the intention to murder her grandfather (Rennick, 2015 p24).

Without the intention to murder one's grandfather or younger self, these philosopher time travellers are unable to do so. One cannot murder without an intention. Rennick concludes that there are 'thing mere mortals can do, but philosophers can't' (Rennick, 2015 p22).

In terms of IA and IAF, we could suggest that philosophers cannot murder their grandfathers (younger selves…) because they do not have the relevant inputs. This is not a problem for my account and as I will show, I agree with Rennick that philosophical time travellers cannot murder their grandfather. We can tell an input-based story for the philosopher's scenario and show that the philosopher does not have the relevant inputs for murdering their grandfather.

In order to get to the same result as Rennick, we can use similar arguments to the ones I made in §2.2.4.1.1. In this section, I argued that IA is able to account for certain inabilities that the conditional analysis (CA) cannot account for. Specifically, when faced with things like psychological aversions, CA falls short at explaining what is going on. This is because under CA an agent has an ability iff they exercise that ability upon trying. Remember Carrie:

> Carrie is an acrophobic, she has an intense fear of heights. For this reason, every time she is above a certain height, she is unable to move. When asked whether she has the ability

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In any case, I assume that murder requires an intention and thus Tim murdering his younger grandfather requires Tim to intend to murder his younger grandfather.

to skydive, Carrie firmly answers "no". However, under CA, Carrie would have this ability since it is true that Carrie would jump out of a plane, if she tried to jump out of a plane.

IA accounts for cases like this because under IA Carrie does not have the relevant inputs (relevant inputs being inputs which have some *explanatory relevance* for the ability). We can apply the same thinking to Rennick's case and say that the philosopher does not possess the relevant inputs for murdering their grandfather. Thus, in the case of Tim the philosopher, suppose Tim has read David Lewis (1976) and therefore, following Rennick, Tim lacks the intention to murder his grandfather. The fact he lacks the intention explains Tim's inability to *murder* his grandfather.

Recently, Alison Fernandes (2020) has built on the arguments made by Rennick, claiming that a time traveller's freedom is impacted by what she calls a 'rational constraint'. Fernandes argues that if Tim knows that he will fail to kill his grandfather, Tim cannot reasonably deliberate on the deed.

To see Fernandes' arguments, let's look at a case:

> Imagine that I am wondering whether I need to eat healthier. In deliberating about the life choice, I weigh up the pros and cons: eating healthy is good, unhealthy food is also good… Given these pros and cons, I ultimately decide that I will start eating healthier.

Fernandes says that the sort of practical deliberation that led to my decision to eat healthier is a 'decision-making process, in which an agent deliberates between different option she takes to be available, and which aims to issue in decisions about what action to perform, or what option is to result' (Fernandes, 2020 p92).

Imagine instead that I know for certain that I am going to eat healthier. Fernandes claims that I am unable to deliberate on the notion of eating healthier if I already knows for certain the outcome of the deliberation. If I 'self-predict' that I am going to eat healthier, deliberating on it is futile. More generally:

> **Deliberation** agent can't reasonably deliberate about whether to [*A*], if she's certain she will [*A*], or certain she won't [*A*] (where [*A*] is an action) (Fernandes, 2020 p92).

This is a similar way to argue for the same conclusion that Rennick does. Assume now that everything is the same apart from one thing; I am also a time traveller. Given that I am currently writing a PhD on the philosophy of time travel, I think we can conclude that I know that if I wanted to travel back in time and kill my grandfather, I would fail. It follows according to Deliberation, I cannot reasonably deliberate about killing my grandfather because I am certain (I know) that I will fail (I will not kill my grandfather).

How is this a problem for my arguments? It is a similar problem to Rennick; if I want my account to encompass the abilities of *all agents* then philosophers fall into this. But there is a similar answer: my account does capture the abilities of all agents; it is just that philosophers do not have the ability to kill their younger grandfathers. This is not a surprising result; in fact I would go as far to say that this is the intuitive result. This intuitive result can still be captured under IA because the

agent's do not have the relevant inputs. To be clear, the reason why one might think this is a problem for my arguments is both Rennick and Fernandes give us reasons to think that at least some time travellers cannot kill their grandfathers and I am arguing that they can. However, as I have noted when discussing their views, there is room for nuance. Under my view, not every type of time traveller has to be able to kill their grandfather, so any problem to this effect is merely apparent.

Overall, although both Rennick and Fernandes suggest that there are a sub-set of agent's who cannot form the intention or rationally deliberate on murdering their grandfathers, this is compatible with the majority of agents being able to murder their grandfathers. After all, people who believe they will fail (philosophers included) do not form the largest group of humans on the planet. Plenty of time travellers are still able to kill their younger grandfathers under IA and the arguments of Rennick and Fernandes do not contradict this.

Having illustrated how we can come to similar conclusions as Rennick and Fernandes using IA and IAF, I now turn to defending my account against some more negative views which I think come to the wrong conclusions.

5.2.2.2 Kadri Vihvelin and Michael Rea

In this next sub-section, I consider how IAF and IA interact first with Vihvelin's arguments and then Michael Rea's (2015) critiques of a time traveller's freedom.

First, I briefly discuss how my analyses of ability and freedom combat Vihvelin's concerns.[105] By switching the focus of ability analyses to inputs rather than outputs we are able to sidestep a lot of Vihvelin's arguments. Vihvelin's arguments combine VA with traditional analyses of counterfactuals. Recall my formation of VA:

> **VA** an agent *S* has an ability *A* iff, if *S* tried *A*, *S* would or a least might *succeed* (following Vihvelin, 1996 p320 (my emphasis)).

Vihvelin argues that according to how we evaluate counterfactuals, there is no world in which the following is true:

> If [the time traveller] had tried to kill [her younger grandfather], she would or at least might have succeeded (Vihvelin, 1996 p320).

We evaluate counterfactuals by looking to the closest possible worlds in which the antecedent is true, and all worlds in which the time traveller tries to kill her younger grandfather are worlds in which she fails to kill her younger grandfather. I have already looked at this case in significant

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[105] I am not going to spend too much time on Vihvelin in this section given that I have already demonstrated throughout this thesis how my analysis provides an alternative to both Vihvelin's analysis of ability and her dispositional analysis of freedom.

detail throughout this thesis. I have argued that we can overcome these concerns because instead of focussing on the *outputs*, I turn the attention to the *inputs*. As a result, I disagree with Vihvelin that the time traveller cannot kill their grandfather (or younger self) given what we ordinarily mean by 'can'.[106] This much should all sound familiar from chapters 2 and 3.

Concerning Vihvelin's views on freedom, I have noted that we maintain much of what is attractive about the New Dispositionalist accounts (predominantly the ability to do otherwise) without the need to adopt the relatively controversial equation of dispositions and abilities.[107] In sum, IAF is an alternative that can avoid some of the criticisms aimed at the New Dispositionalists. In addition, IA also provides us with a way to analyse abilities that also is able to accommodate the abilities of time travellers to kill their younger grandfathers in the past.

Michael Rea (2015) provides some pretty damming arguments against the *freedom* of time travellers. In particular he argues:

> Time travel threatens her very agency, her own free will. Not only hers either. As she thinks the matter through, she realizes to her horror that the freedom of everyone temporally downstream of her arrival is at stake (Rea, 2015 p266).

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[106] More recently, Vihvelin has defended her account of time traveller abilities from 1996, but notes that her conclusion about these abilities is surprising:

> This conclusion is surprising, even shocking. If it's correct, then some of our commonsense assumptions about what a person can do are false. We ordinarily assume that the facts about what a person can do consist of facts about what she is like, on the one hand—facts about her skills and her physical and psychological capacities— and facts about her more or less immediate surroundings, on the other hand (Vihvelin, 2020 p314).

Vihvelin clarifies her arguments by distinguishing again between narrow and wide abilities. Narrow abilities are those which we have via our intrinsic properties, and wide abilities are abilities are those abilities which we have in virtue of intrinsic properties and surroundings. Vihvelin suggests, with respect to wide abilities, that these are shared by intrinsic duplicates in qualitatively identical surroundings across worlds:

> If two people are similar enough in ways we think relevant, we think they have the same narrow abilities. If two people similar enough are in surroundings similar enough, we think they have the same wide abilities (Vihvelin, 2020 p318).

Therefore, Vihvelin claims that her original arguments (in the 1996 paper) are concerned with 'Suzy's' wide ability to kill a particular baby – baby Suzy. Indeed, Suzy may have the wide and narrow ability to kill other babies, but if we are speaking about Suzy's wide ability to kill her baby self specifically, then Suzy would fail. Again, I suggest that due to the relevant inputs, we need not distinguish between narrow and wide abilities, Tim has both the narrow and wide ability to kill his younger grandfather in virtue of possessing the relevant inputs.

[107] I have also noted that if you do want to maintain the equation of dispositions and abilities, then we can by suggesting that dispositions are also analysable in terms of inputs. This is not, however, a needed part of my argument.

However, straight off the bat, Rea an assumption which provides a pretty clear reason for me to reject his view. Rea assumes that freedom and determinism are incompatible:

> I will also assume that freedom is incompatible with determinism. This assumption is not optional. If freedom is compatible with determinism, then there is no reason to doubt that it is compatible with the factors that I take to undermine the freedom of time travellers and of agents existing between the arrival and departure points of a time travel journey. Thus, I take it that considerations that lend support to compatibilism will, as a general rule, also count against at least one of the premises of my arguments (Rea, 2015 p269-270).

As we have seen, I am cultivating a compatibilist theory because I believe that compatibilist ideas best lend themselves to explaining some constraints that time travellers (and everyone) have to contend with. Rea is, like me, assuming eternalism and therefore is assuming that no one can change the past. Hence, we can apply my compatibilist framework to Rea's concerns and just deny that Rea's account applies. We are starting from *different positions*. Rea himself concedes that compatibilists can take issue with his views because we are able to accept that the possible truth of determinism does not preclude freedom – this was illustrated via IAF. Therefore, Rea's argument just do not apply in my case. Rea is an incompatibilist and I am a compatibilist.

5.2.2.3 The best of the rest

In this final section of chapter five, I consider how my accounts interact with some other arguments against the abilities and freedom of time travellers.

In §2.1.1.2, I explained that Bokai Yao (2019) presents a modal account of ability that is still, for all intents and purposes, output-focused. Now I illustrate how Yao uses his account to argue against, what he calls, the 'backwards ability to do otherwise' of time travellers. I then show how we can again use IA and IAF to overcome these concerns.

First, a brief reminder of Yao's analysis. Yao takes the following insight to form the backbone of his account:

> An agent S can ϕ only if it is possible for S to ϕ, holding fixed the past (Yao, 2019 p403).

Building on this insight, Yao then presents the following principle:

> **Fixity Principle** S can at t ϕ at t' in w only if there is a possible world v such that (i) S ϕs at t' in v and (ii) w and v have the same past up to t (Yao, 2019 p403).

It follows that Bill can shake hands with Abraham Lincoln in 1812 in world w, only if there is another world - v - in which Bill shakes hands with Abraham Lincoln in 1812 *and w and v* share the same past. Yao claims that the Fixity Principle entails the following, stronger principle:

SP* Necessarily, for an agent S, if S does not ϕ at t' and $t' < t$, then S cannot at t ϕ at t' (Yao, 2019 p403).

Therefore, for Bill: if Bill does not shake hands with Abraham Lincoln in 1812 and 1812 comes before the present, then Bill cannot, in the present, shake hands with Abraham Lincoln. This follows from the premise that time travellers will not change the past. If it is true in the present that I will not go back in time and kill my younger grandfather in the past, then for Yao it follows that I cannot do this.

From this, Yao claims that 'no agent, including time travellers, ever has the backward ability to do otherwise' (Yao, 2019 p403). Relating this to IAF, the most obvious reason as to why IAF is incompatible with Yao's account is because Yao explicitly says that no one has the *backwards* ability to do otherwise. I have not made the distinction between ability to do otherwise and *backwards* ability to do otherwise. Partly, because I do not think it is needed. I am talking about abilities *simpliciter* and I do not think that we should treat an agent's backwards abilities as any different to an agent's non-backwards ability. If someone has an ability, they have it in the 'present', in the 'past' and in the 'future'.[108] Again, we can challenge the intuition here - that agents cannot do things that they will not do - by appealing to IA and IAF. Even though an agent *does not* do something, this does not entail that they cannot – even if at all possible worlds they also do not do it.

Ultimately, I disagree with Yao's move from what *did* happen to what *cannot* happen. That is, the move from the fixity of the past, to the argument about what people can and cannot do.[109] It does not follow from the fixity of the past that the time traveller is unable to do otherwise. To further elucidate the difference between Yao's view and mine, I return to the Bill example. For Yao, because Bill does not shake hands with Abraham Lincoln in any possible worlds that shares the same past, then Bill is unable to do so. However, according to my account Bill can shake hands with Abraham Lincoln – despite never succeeding – because Bill possesses the relevant inputs (and here we are assuming that he does possess the relevant inputs). Therefore, my account can encompass the abilities of time travellers without having to make moves from what did happen to what can happen.

Instead of appealing to possible worlds, we instead appeal to the agents themselves. After all, abilities are first and foremost *about the agent*. Therefore, we ask whether Bill has the relevant inputs

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[108] People can lose abilities – maybe because they have not practised in a while - but what I mean here is that if someone travels from the present to the past, they maintain that ability. The very act of time travel does not alter it. Indeed, as I have argued before, it would be very strange if time travelling did alter our internal abilities.

[109] Here, we could even cite Kiourti's modal fallacy argument again:

> To conclude from the fact that something will not happen that I am therefore unable to do it is to commit what is often called the fatalist's mistake. It is to regard the actual outcome of my attempt at an action (which is often also due to luck or lack thereof (Lewis, 1976 p76)) as relevant to my ability to perform the action in question successfully (Kiourti, 2007 p344).

for doing otherwise than shaking hands with Abraham Lincoln in 1812. If it transpires that Bill does have the relevant inputs, then Bill has the ability and disposition to do otherwise.

Given this, I suggest we can apply the same reasoning to anyone who argues that time travellers do not have the ability to do otherwise.

In addition to Yao, Neal Tognazzini also has worries about the ability to do otherwise and time travel. Tognazzini illustrates this worry by discussing *Harry Potter and the Prisoner of Azkaban* (Rowling 2001):

> Harry is a wizard who knows how to cast a spell to ward off dark creatures called Dementors (the spell is called a Patronus), and he has a friend named Hermione who has a device called a timeturner, which looks like a charm necklace but which allows its wearer(s) to travel through time. And here's how our story goes (told from the perspective of Harry's personal time): at t_1 Harry's life is threatened by several Dementors, but at t_2 he is saved because someone lurking in the shadows casts a Patronus spell at the Dementors. Hours later, at t_3, he and Hermione use a timeturner to travel back to t_1, where Harry sees himself (his younger self) threatened by the Dementors. At t_2, Harry casts a Patronus spell at the Dementors, thus saving his own life. Just before t_3, Harry and Hermione use the timeturner to travel back to the future, and they arrive just in time to see themselves (their younger selves) disappearing at t_3 to begin their adventures in the past (Tognazzini, 2016 p682-3).

Because Harry saved his own life at t_2, it is true at t_3 that Harry saved his own life, even though the younger version of at t_3 does not know that he saves his own life (in fact, Harry thinks that his father saves his life at t_2). Harry himself says: "I knew I could do it this time because I'd already done it!" (Rowling, 2001 p412). If Harry had failed to save himself from the Dementor attack, then Harry would not have been alive to travel back to save himself in the first place. Harry would have died at t_2 and thus not have existed at t_3 to travel back. The question is whether Harry is free to cast the Patronus spell and save his earlier self from certain death. This is a similar argument that the Grandfather Paradox illustrates. Tognazzini writes:

> On the traditional model of thinking about free will, whether an action is up to someone (i.e., whether it is free) is a matter of whether the person is both able to perform the action and also able to refrain from performing it (Tognazzini, 2016 p683).

Tognazzini argues that Harry is unable to *refrain* from saving his younger self, given that Harry's journey to the past necessarily depends on Harry being saved from dying. Again, we have seen similar arguments throughout this thesis (e.g. Spencer, 2013). Tognazzini presents the following argument:

> 1. (Older) Harry casts the Patronus at t_2.
> 2. Necessarily, (older) Harry casts the Patronus at t_2 only if he travels back in time at t_3 (where t_2 is externally past, relative to t_3).

3. So, if Harry hadn't traveled back in time at t_3, then some fact about the past would have been false.

4. If, in order for S to do A, some fact about the past would have to be false, then S isn't able to do A.

5. Therefore, Harry isn't able to refrain from travelling back in time at t_3.

(Tognazzini, 2016 p684).

For Tognazzini the issue for Harry is that there are facts about the past that may be thought to entail what he does. That is, Harry surviving the Dementor attack in the past presupposes that Harry in the present (older) goes back to save Harry (younger) from the Dementors. Therefore, it seems that Harry is unable to refrain from what he does, and this may be thought to preclude the ability to do otherwise. If Harry did refrain from saving his younger self, he would not have been alive to travel back to refrain from saving his younger self in the first place.

Again, these arguments should sound relatively familiar given the context of the thesis, but Tognazzini gives us a popular example with which we can see visualise the supposed problem. However, again I do not think this is an issue for IAF and IA. We can use similar arguments we brought against Yao and Vihvelin: that we should not be moving from what a time traveller will or will not do, to what a time traveller can and cannot do. These are not issues for IA and IAF because we get to the ability to do otherwise via the relevant inputs. Let us take a look at the example from *Harry Potter and the Prisoner of Azkaban* from the perspective of IAF and IA.

We can imagine that although Harry *will not* refrain from saving his younger self from the Dementors, he nonetheless can because he has the relevant inputs to refrain. Some examples of these relevant inputs may include: Harry's desire not to cast the Patronus, Harry being in control of his arms such that he can pocket his wand, perhaps it is too foggy for Harry to get a proper view of the situation, Harry might be too tired to cast the spell… I could go on. It is inconsequential to Harry's ability to do otherwise (to refrain from saving his younger self), whether Harry *actually does otherwise*. We know that Harry has the ability to do otherwise in spite of him failing to do otherwise, in spite of him never doing otherwise.

Although not an exhaustive sub-set of philosophers who specifically discuss the abilities and freedom of time travellers, I have considered what I take to be the main players and arguments concerning the abilities and freedom of time travellers. Generally speaking, I think IA and IAF can overcome many of the concerns philosophers have had with the abilities and freedom of time travellers. This is because IA and DIF provide new ways to look at abilities and the abilities involved in freedom. We are not asking whether the agent succeeds in exercising the ability when trying, we are looking at whether they have the relevant inputs.

Overall, I think the internal strand of reasons for pessimism can be sidestepped by the input analyses of ability and freedom mainly because we have switched the focus of these concepts. I have provided a novel but intuitive way to understand abilities and the ability to do otherwise.

5.3 Chapter Conclusion

This final chapter had two main aims. First to compare and contrast dispositional accounts of compatibilism with the Input Account of Freedom (IAF) and second to revisit the reasons for pessimism discussed in the latter half chapter one in order to show how what I have discussed thus far can give us reasons to be optimistic about the abilities and freedoms of time travellers.

In comparing IAF to the New Dispositionalists, I showed that IAF does not face the same hurdles. In particular, the equation of abilities and dispositions has come under much. Much of the criticisms stems from philosophers arguing that abilities and dispositions do not map onto each other as neatly as the New Dispositionalists claim and that this means that we cannot use the equation to speak about the abilities involved in freedom. However, I showed that IAF does not face this particular problem because IAF does not rely on the equation of abilities and dispositions. That is, all that is required for IAF is that an agent has the relevant *inputs* for the abilities involved in freedom. However, I also argued that if we are taken in by this move from the New Dispositionalists, then we can understand dispositions in terms of inputs under IAF and only then would we have to defend the account from concerns about the equation of abilities and dispositions. I noted that a lot of problems for the New Dispositionalists stem from this equation and, although I do not think that these problems are particularly detrimental for the New Dispositionalists, these compatibilists still must provide solutions. Comparatively, IAF avoids this hurdle.

In the second half of this chapter, I returned to the two reasons for pessimism outlined in chapter one. In returning to these reasons, I showed how the introduction of inputs allows us to provide means for optimism for both. Regarding the external reasons, I showed how IA and IAF can accommodate the Consequence Argument and Frankfurt's attack on PAP – allowing us to maintain the ability to do otherwise and consequently maintain PAP. These are two problems that have thwarted compatibilists who wish to maintain the ability to do otherwise in their account but the input analyses give us methods to overcome these concerns. I then showed how IA and IAF can provide us with reasons to be optimistic regarding the internal pessimisms. I first showed how IA can come to the same conclusions as Rennick and Fernandes regarding the abilities of a specific sub-set of agents. Thus, maintaining the intuition that murder requires an intention. Then, I showed how the inputs analyses can overcome the concerns of other philosophers of time traveller (e.g. Vihvelin, Rea, Yao and Tognazzini). One of my biggest arguments against these philosophers lies in assuming that just because something will or will not happen it necessarily entails that the time traveller can or cannot do the thing. I have suggested throughout that this is wrong and showed that input analyses avoids this fallacy.

Overall, I argued that the input analyses are viable alternatives to the current discourse. Not only do IA and IAF give us reasons to be optimistic about the abilities and freedom of time travellers, but they also provide us with simple, everyday resources to analyses these concepts.

Concluding Remarks

In this final section, I give some concluding remarks on what my proposal means for the abilities and freedom of time travellers.

The aim of this thesis has been the provide reasons to be optimistic about the abilities and freedom of time travellers by appealing to *inputs*.

As noted in the introduction, I felt there was a distinct lack of *positivity* with regard to the abilities and freedom of time travellers, with many philosophers arguing negatively or semi-negatively. Time travellers are for all intents and purposes agents and like all agents, they are deserving of optimism. Why are we more inclined to accept the freedom of your average non-time traveller and yet find it tough to reconcile the abilities and freedom with time travel? It is true that under eternalism, *no one* can change the past and the future. Therefore, we should not be treating time travellers any differently.

In considering the abilities and freedoms for time travellers, I identified that there were two main reasons for pessimism: external reasons and internal reasons. The external stand of reasons for pessimism stem from traditional problems for compatibilism. I focussed on two famous issues for compatibilists and the ability to do otherwise: the Consequence Argument and Frankfurt's attack on PAP. I illustrated that any account of compatibilism has to contend with these issues. I provided some time travel examples to explicate these issues. The second main strand of reasons for pessimism are *internal* to time travel. Many philosophers who write on time travel are also negative about the abilities and freedom of time travellers. So much so, that the *majority* suggest that time travellers do not have *exactly the same* abilities and freedoms as non-time travellers. Both the external reasons and internal reasons form the basis for this thesis and in the forming my analyses of ability and freedom, I aim to provide more reasons to be optimistic time traveller abilities and freedom.

In the remaining four chapters, I addressed the pessimism by developing a novel account of ability and a compatibilist account of freedom based on *inputs*.

In chapter two, I focussed on the ability side of the coin. I first provided some background, highlighting two prolific analyses of ability: conditional and modal. In discussing these analyses, I argued that the vast majority of ability analyses are *output*-focussed. That is, these analyses take some sort of success as necessary for having an ability. Then, I distinguished between two main senses of 'can': Can_{a+} and Can_a. Can_{a+} suggests that having an ability requires both Ability and opportunity and Can_a only requires Ability factors. Ability factors are the internal elements or the agent's own skills and Opportunity factors are external, contextual elements.

In addition, I argued that output-focussed theories of ability (conditional and modal) prioritise Can_{a+} and *specific* abilities. This is because under output-focussed theories of ability, what is necessary for an ability is whether there is the possibility of the agent succeeding in carrying out the action. Again, under the 'can' of ability+, if an agent has *both* Opportunity and Ability factors then they would *usually* succeed in carrying out the action. However, if an agent *only* has the internal, Ability factors then they will not carry out the action. Returning to the classic piano example: I

have the *general* ability to play the piano in virtue of my internal, skill-based factors alone and I have the *specific* ability to play the piano in virtue of *both* my internal, skill-based factors and there being a piano present (context-based factors). In the first instance, I would not succeeding in playing the piano because I do not have the opportunity, but in the second instance I would. Similarly, the first instance illustrates an ability under Can_a and the second instance illustrates an ability under Can_{a+}. Given this, output-focussed theories have to take the senses of 'can' and the types of ability with which success comes.

The issue, then, is that output-focused theories having to ignore one sense of 'can' and one type of ability: Can_a and general abilities. This feels wrong or at least feels like the least optimised way to analyse abilities. Analyses of ability should encompass all types of abilities and be able to account for the abilities of all agents.

Owing to the maintaining the logical possibility of time travel, there are things that time travellers simply will not do. No one can change the past and therefore if I wished to go back to 1940 to kill my infant grandfather I would not succeed (assuming that he lived to marry my grandmother etc). Given that there are things that time travellers will always fail to exercise it seems that output-focussed theories give us the wrong result with regard to their abilities. That is, under output-focussed theories, time travellers do not have the ability to kill their grandfather despite them, as Lewis put it, having what it takes (Lewis, 1976 p149). To be clear, although I used the abilities of time travellers *as motivation* for my new analysis, part of it is also that existing analyses are just not good enough. The input analysis not only captures the abilities of all agents – time travellers included – but also can encompass *both* senses of 'can' and *both* sorts of abilities.

I think the current perspective is wrong and therefore, I suggest a new approach.

Introducing the Input Analysis. This forms the basis of my answer to both the *ability* and *freedom* questions and as I argue, provides an answer to *both* strands of the problem outlined in chapter one. I formalised the Input Analysis as follows:

> **IA** S has the ability to A iff S possesses the inputs relevant for A-ing.

IA is broad enough to account for all sorts of abilities. This means that if we are talking about my general ability to play the piano, I can understand this via the relevant inputs. If I want to know whether I have the specific ability to play the piano, I can also look to whether I have the relevant inputs. If, for example, I am missing the piano – a 'context-based' input – then we can conclude I do not have the specific ability. If, instead, I possess the relevant 'skill-based' inputs, then we can conclude I still have the *general* ability to play the piano. The same goes for the different senses of 'can'. Under Can_{a+} you need to possess the relevant skill-based and context-based inputs, whereas under Can_a you only need possess the relevant skill-based inputs.

One might think that this makes the input analysis *too broad*. It does not tell us specific things about specific types of ability – at least with output-focussed theories we have a clear cut method of distinguishing abilities from non-abilities. This could mean that under IA, we are left having to ascribe abilities arbitrarily. However, I contest that the fact that my analysis encompasses different

types of abilities is not a problem, and in fact we *do* have a clear cut way of distinguishing abilities from non-abilities: relevant inputs. I defined relevant inputs as inputs which have some sort of explanatory relevance for having the ability in question. This also explains why the skill-based inputs are more *salient* – an agent can have an ability in virtue of their skill-based inputs alone. Therefore, we are not ascribing abilities randomly and without thought. Under IA, we bring the focus back to what it actually means to have an ability. It is not about how *well* we exercise our abilities, or whether we do, in fact, exercise them in the first place. What matters is the *effort*, the bodily movements, the environment in which we are in etc. Therefore, although IA gives me what I think the correct result is for time traveller abilities, it also gets us the right result for agential abilities *simpliciter*.

Ultimately, I suggest that looking at abilities in terms of inputs provides us with an intuitive and novel way to approach issues surrounding ability ascriptions.

In chapter three, I defended my account against three main objections: the problem of repeated failures, the problem of the impossible and the problem of outputs as inputs.

In chapter four, I used what I established in chapter two to produce a compatibilist account of freedom. I identified my main rivals: The New Dispositionalists. These compatibilists, like me, also wish to maintain the ability to do otherwise in their accounts by equating abilities and dispositions. However, I showed that we need not use this equation to get to the ability to do otherwise. This is an ability and like all abilities, we have this ability via the relevant inputs.

I arrived at the following analysis:

IAF an agent S is free to A only if S possesses the inputs relevant to x.

Where 'x' can be substituted for any *ability* requirement for freedom. Personally, I take the traditional 'ability to do otherwise' as necessary for freedom so my version of IAF looks like this:[110]

IAF₁ an agent S is free to A only if S possesses the inputs relevant to do otherwise than A.

Under this analysis of freedom, the time traveller is free is kill their grandfather in the past because they have the inputs relevant for doing otherwise. These inputs are context-based and skill-based and could include the time traveller's desire to refrain, maybe they had a change of heart, or forgot to bring bullets or slipped on a banana peel.

Finally, in chapter 5 I critically compared IAF with the New Dispositionalist account of compatibilism, illustrating that IAF does not fall foul to the same problems regarding the equation of dispositions and abilities. Overall, I illustrated that by looking to relevant inputs we are able to talk positively about the abilities and freedom of time travellers and combat the reasons for pessimism discussed in the first chapter. I suggested that there is more research to be done and

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[110] Vihvelin's version would substitute 'x' for the ability to make choices on the basis of reasons and Jaster's version would substitute 'x' for the ability to intend otherwise.

discussion to be had regarding the relationship between moral responsibility and general and specific abilities.

To conclude, let us briefly return to *Harry Potter and the Prisoner of Azkaban* (Rowling, 2001). We can finally explain, by appealing to the input analyses, why it feels like a lot of these time travellers act as if there are free. For example, in the first half of the film we see Harry, Ron, Hermione chatting to the groundskeeper Hagrid in his home. At the same time, the minister for magic - Cornelius Fudge – and the headmaster Albus Dumbledore are making their way to Hagrid's hut to execute Hagrid's beloved hippogriff Buckbeak. Harry, Ron and Hermione are not allowed to be there and are alerted to Fudge and Dumbledore coming towards Hagrid's hut by some rocks being thrown into Hagrid's hut. Harry, Ron and Hermione leave safely and we, the viewers, think nothing of these rocks until later in the film.

Later, we see Harry and Hermione travel back in time to save the lives of Buckbeak and Sirius Black. At one moment we see 'later' Harry and Hermione hiding in the garden of Hagrid's hut watching their earlier selves conversing with Hagrid. Hermione notices that Fudge and Dumbledore are coming towards Hagrid's hut quickly and their 'earlier' selves are not leaving the hut. She instinctively picks up a rock and throws two into the hut, alerting their earlier selves to Fudge and Dumbledore's imposing entrance and causing their earlier selves to leave the hut.

In this situation, 'later' Hermione does not change the past (we see her exact actions earlier in the film), but equally it does not feel like Hermione was not *free* to make the choice to throw the rock, she does not act as if she is constrained. All of this can be explained via IA and IAF. We can say that this feeling of freedom is because Hermione possesses the relevant inputs for doing otherwise than throwing the rock. Indeed, she can refrain from throwing the rock, or throw something else instead. These relevant inputs could include context-based: access to a different sort of item to throw and skill-based: the desire not to throw the rock, requisite strength for throwing something else. Therefore, we can conclude, owing to the input analyses, that Hermione has the ability to do otherwise and is thus free.

My arguments in this thesis provide intuitive reasons for accepting the abilities and freedom of time travellers and the methods that I have cultivated are applicable in all situations. I have given reasons to be optimistic about the abilities and freedoms of time travellers, something which is currently lacking in the literature. Indeed, by changing the focus of these analyses, I am able to shine some light on what it actually means for someone to have an ability and in addition what it means for someone to be free.

I have cultivated and defended holistic analyses that, I argue, are able to capture the abilities and freedom of all sorts of agents without having to prioritise. Ultimately, we need not be so pessimistic about the lives of time travellers. There is nothing wrong with novel and in fact when you are talking about some of the most exciting agents out there, sometimes novel is best.

To conclude, I leave you with the following thought:

> Simply because someone is different does not mean that they are deserving of less.

"Freedom lies in being bold"
Robert Frost

Olivia Coombes, October 2022

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