

# Personal Identity and Teleportation

Mehrotra, Anay (IC) and Mittal, Anubhav (IC)

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École Polytechnique Fédérale De Lausanne (EPFL)

**Supervised by**

Esfeld Michael-Andreas, Philosophy of Science  
Lazarovici Dustin, Philosophy of Science

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### **Abstract**

Identity plays a crucial role in our lives, the judicial system and the entire field of ethics rely on having a concrete notion of identity. Further, for us to attribute feelings towards any fellow human or animal, we have to associate some actions and experiences to them. To this end, it is vital to identify a person across time. In everyday scenarios, we have no trouble in assigning identities to people, and recognizing individuals with the same identity over space and time. Although, despite its seemingly intuitive nature, precisely defining identity is a challenge. In this paper, we develop an explicit structure for any definition of identity, and review popular approaches to defining identity. To analyze these views, we develop some new thought experiments, besides, to introducing well-known ones such as teleportation and fission.

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# 1 Introduction

In our day to day lives, we do not give a second thought while asserting that we are fundamentally different from all other humans, and yet identical to our past selves. But what sets us apart from others? And why do we maintain our identity from infancy to adulthood? In most situations, identity is a natural concept to humans. Yet, as we will see, the answers to these questions are not obvious. An extreme view is that we do not share our identity with our past selves or our future selves. But this is contrary to our intuition, and not very satisfactory. In order to define identity, we would like a criterion to determine whether two entities share the same identity. Before presenting such criterion, we formalize the notion of identity.

At a higher level, identity is a relation,  $R$ , on two entities which says whether they are same or not. Before defining identity, let us analyze its properties. Since a person has the same identity as itself, it is clear that identity should be a reflexive relation, i.e.,  $aRa$  for all entities  $a$ . Consider two people, Adam and Baker. If Baker has the same identity as Adam, then does Adam have the same identity as Baker? Say, Baker is Adam's future self. Baker is not perfectly identical to Adam, Baker has formed new memories, and has forgotten some old ones. But, if we say that Baker has the same identity as Adam, there is no reason for Adam not to have the same identity as Baker. As such we believe that identity should be a transitive relation, i.e., for all  $a$  and  $b$ ,  $aRb$  implies  $bRa$ . Now, consider Clark the future version of Baker. Clark shares the same relations (such as psychological and biological) with Adam as Baker does, the only difference is that these are now weaker connections. Clark has formed additional memories and has forgotten some more memories compared to Baker. Now, if Adam has the same identity as Baker and Baker has the same identity as Adam, then it is natural to claim that Adam is identical to Clark. This suggests a transitive relation. However, this is a special situation, in particular, all the people live at distinct times, and both the oldest, Clark, and the youngest, Adam are related to the Baker. As such, we conclude that for all people  $a, b$ , and  $c$ , at times  $t_1, t_2$ , and  $t_3$ , such that  $t_1 \leq t_2 \leq t_3$ , if  $aRb$  and  $bRc$ , then  $aRc$ . Note since we involve the notion of time, we cannot recover the usual transitive property using the reflexive property. Let us call this the *weak transitive property*. It is standard in literature to assume that identity satisfies the usual transitive property, i.e., for all  $a$  and  $b$ ,  $aRb$  and  $bRc$  implies  $aRc$ . In hindsight, it is not obvious to us that identity satisfies the transitive property under all circumstances. The fission experiment discussed in section 2.2 motivates this apprehension. Nevertheless, to be consistent with the other literature we begin by assuming identity satisfies the usual transitive relation. Thus, any definition of identity should be an equivalence relation.

Having a loose structure of the relation, we would like to determine a specific relationship. To this end, let us analyze our day to day interpretation of identity. We usually assign the notion of identity to conscious entities. From this, one could say two persons are identical if they share the same biological essence. This seems like an apt definition, after all, one does share a biological essence with both their past and their future selves, and their biological essence is different from that of any other individual. But, on close examination we see that a person's biological entity morphs every day, shedding old cells and growing new ones. Given enough time all the cells the body are replaced. As such, how can we say a person is identical to the formal self? We further explore this idea in section 2.1, and follow up with other definitions after it. For now, we proceed to some thought experiments which are great tools to challenge these definitions.

Often seemingly reasonable definitions such as the biological essence are not satisfactory for many circumstances. To evaluate our views we examine them against thought experiments. Specifically, we consider the teleportation experiment described by Derek A. Parfit (1987), and Dennett, D.C. (1981), titled *Where am I?*.

Parfit describes a teleportation device. A person enters the device, which on the press of a button scans and destroys all the cells in the person's body. This information is then transmitted to another device at the speed of light. On receiving the information, the other device then creates a replica of that person atom for atom. The replica is physically identical to the person entering the device, and as far as the replica believes it is the same person as the original. The replica has the same memories and physical characteristics as the person entering the machine. Arguably, they are more closely linked than any person is related to their childhood-self. In our view, the replica retains the identity of the original, and therefore the person entering the machine survives as the replica. However, biological view says the contrary. While Parfit raises questions for the biological perspective, Dennet initiates a more fundamental inquiry into identity. What defines a person, to begin with? Or as he frames it, *Where am I?* Dennet tells us about a scenario where his brain and body are separated, and each nerve connection between them replaced by a pair of radio transceivers, one attached to the brain and the other to the nerve ends in the empty cranium. Now, which of these is Dennet? Is it the brain, which he calls *Yorick*, or is it the body which he calls *Hamlet*? Nothing has fundamentally changed about him, except for the fact that his brain now has a different spatial location than his body. As such Dennet can go about his daily life not realizing any difference. In our view, it is certain that Dennet survives, however, if he is *Yorick*, or *Hamlet*, or a combination of the two is not clear. Further, Dennet introduces *Hubert*, a computer sharing all the memories and defining characteristics of *Hamlet*. Now, both *Hamlet* and *Hubert* do not have a physical connection with the body, Hamlet. Dennet asks which of these, if any, is closer to Dennet? Is it *Hamlet*, due to its prior association with Dennet? Or are both of them equally related?

Having an overview of identity, and a loose constraint on its structure we proceed to discuss popular views on identity. To further scrutinize these views we will introduce extensions of these experiments while discussing the views.

## 2 Views on identity

### 2.1 Biological view

The biological view is one of the most basic views and is one of the first to come to the mind when defining identity. It considers a person's the biological organism the essence of the individual. We follow the *Biological criterion of Personal identity* as defined by Olson, E.T. (1999):

If  $X$  is a person at  $t_1$ , and  $Y$  exists at any other time  $t_2$ , then  $X = Y$  if and only if  $Y$ 's biological organism is continuous with  $X$ 's biological organism

This view is also called *animalism*. Although the view is intuitive and seems appropriate, it quickly runs into problems as we put some thought into it. After all, moral responsibility, prudential concern, etc, can be justified even in the absence of biological continuity. Further, since biological actions are themselves defined as physical and electrodynamic interactions, we see no reason to limit ourselves to biological continuity. To give an intuitive appeal, consider Parfit's teleportation experiment. Let the person entering the teleporter be Adam, and the replica created be Baker. Now, say Adam committed a crime before entering the teleporter. Would Baker be innocent?

As we discussed in the section 1 we believe that Baker has the same identity as Adam, and as such should be guilty. However, as physical continuity is broken, the biological view says Baker does not have the same identity as Adam and therefore is not responsible. Considering both the vague definition of the view and the non-intuitive outcome, we feel biological view is not an apt description of identity.

## 2.2 Psychological View

For a long time, the Psychological view had been the most popular view of identity, the reason being that it addressed most of the traditional concerns and objections (Some of them are mentioned below) satisfactorily. In fact, in a sense, the definition of this view on identity is almost tailor-made to avoid these concerns. Parfit says and we quote,

$X$  at  $t_1$  is the same person as  $Y$  at  $t_2$  if and only if  $X$  is uniquely psychologically continuous with  $Y$ , where psychological continuity consists in overlapping chains of strong psychological connectedness, itself consisting in significant numbers of direct psychological connections like memories, intentions, beliefs/goals/desires, and similarity of character.

There are multiple components in the definition, which address specific concerns, we expand on these as we go along. Butler, J. (1771) made an important objection to using memories to define a person's identity - *that memory presupposes identity*, i.e., having a memory of an event does not make it *yours*, and you only remember it because it is *yours*. This can be overcome by defining q-memories, which are general memories and not necessarily about something that happened to "you". Another objection was made by Reid, T. (2007), that memories fade over time, so we may not have direct memories of our earlier lives. This can be addressed by the *continuity* of memories, where you can remember an earlier version of your self, who then himself has memories of an earlier stage, and so on, forming a continuous chain. Then, there are other issues concerning the persistence of one's identity through a loss of memory, which breaks the psychological connection. To avoid this, the concept of 'strong' psychological connection is defined which, along with memory, consist of some other psychological traits, as mentioned in the quote above.

We now place this view in front of some thought experiments to develop an intuitive understanding. Consider the teleportation experiment, where Adam enters the teleport, which then destroys him atom by atom, and copies the information to another location to create an exact copy of Adam, say Baker. Although Baker is not biologically continuous with Adam, both of them share a strong psychological connection. Therefore, Psychological view claims that Baker has the same identity as Adam. This is intuitive to us as no individual, not even Baker, can differentiate between the two.

This seems all well and fine, until we change the experiment a little, so that Adam's body is not destroyed. Now, both Baker and the current Adam, are psychologically connected to Adam who entered the teleportation device. However, they do not share a psychological connection among themselves. The psychological view claims that both Baker and Adam share the same identity as the person entering the teleport, and at the same time are not identical to each other.

This violates transitivity of identity. We claim that this problem has no trivial solutions. If in the original teleportation experiment we say Baker has the same identity as Adam, then since there is no external effect on Baker in the modified experiment, both of them should still be identical with each other. Further in the modified experiment, since the success of the teleportation doesn't affect the Adam exiting the machine, Adam exiting the machine must have the same identity as Adam entering the machine. Now, by transitivity Adam exiting the machine must be identical to Baker.

Our claim that (spatially) "local" invariance of Baker and Adam, between the two experiments imply they retain the same identity in both experiments is crucial here. We would see in the Anthropological view, that it is possible to retain transitivity of identity by dropping this claim. Meanwhile, we note that we do not have any justification for transitivity to hold either. Similar explanations follow for the Dennet's experiment. The first part, where he wonders if Yorick or

Hamlet is Dennet, can simply be attributed to the different point of views of the same person. However, when we go to the second part where Hubert is introduced, the definition again is unable to provide a satisfactory answer, as both Yorick and Hubert are psychologically continuous with the person before, leaving no non-arbitrary reason to say if one of the two is the initial person, and the other is not.

## 2.3 Narrative View

Narrative view differs from the Psychological view by how it identifies a person. The previous section addressed the notion of identity by asking ‘What makes a person  $X$  at time  $t_1$  the same as person  $Y$  at time  $t_2$ ?’, this is what Schechtman, M. (1996) calls the re-identification question. This question allows us to compare two spatio-temporally separated entities. However, it does not offer any insight into a particular entity. It doesn’t tell us which are the integral aspects of the entity and which ones are accidents. The Narrative view takes a more expressive approach by describing an individual by their evolving story.

Specifically, Narrative view in addition to defining identity, also attributes actions, experiences and characteristics to a person. According to the Narrative view, a person develops their unique identity by combining their life experiences into an evolving self-told story of their life. An action or experience belongs to a person if it is appropriately attributed to the self-told story of their life (MacIntyre, A., 2013; Schechtman, M., 1996). To have an identity, an entity has to be an active agent, who experiences actions and events, and weaves them together in a coherent self-told story. An entity to which all events are passive does not unify the experiences into one account and does not have an identity.

Consider an unrelated, “accidental” replica of me which doesn’t fit into my coherent story. Even though the replica is physically and psychologically indistinguishable from me, since it doesn’t belong to my story, it doesn’t share my identity. It would seem that the view dictates a person entering the teleporter perishes while the duplicate is a new entity. However, this ignores the connection between the two, the person entering the teleporter does fit into the coherent story of the replica, for example, the person entering the machine wanted to be teleported and so the result of this action, the replica is a part of their story.

Now suppose Adam enters the teleporter, which destroys Adam atom by atom, and copies the information into two replicas, say Baker and Clark. Should the Adam be concerned about the experiences of Baker or Clark? That is, are their experiences properly attributed to the self-told story of Adam?

It seems reasonable to assume that “I am uniquely determined by the self-told coherent narrative of all my experiences and actions thereof”. However, it is not clear to us why such a story have to be self-told. Why can’t a third-person person tell the narrative? What happens if the narrative is false? To address the former, we could allow for hypothetical (untold) narratives, i.e., accept narratives without explicitly recounting them. But, as Shoemaker, David (2016) points out, in such a situation the role of the narrative is unclear. The later is not well grounded, since, claiming that the narrative is false amounts to believing in something more accurate than the narrative. So this question is not applicable to the narrative view. However, the view allows for a situation where everyone claims to be the Queen of England. But if everyone is the same person, the notion of identity, though well defined, doesn’t serve any purpose.

More importantly, narrative view describes a person’s extending narrative. But continuing this narrative over time requires to identify the person at the new time step. Thus, as Shoemaker, David (2016) points out, Narrative view itself relies on an answer to the re-identification question. We have to find a suitable criterion for the re-identification question before appealing to the Narrative view.

This problem is related to the circular definitions of identity and memory in primitive Psychological view. Anthropological view tries to resolve this by introducing a third person’s narratives similar to quasi-memories in Psychological view.

## 2.4 Anthropological View

Anthropological view suggests that identity is culturally defined and is not “given” independent of the society. It addresses our concerns with the Narrative view by combining third-person narratives into a broader cultural view. In this section, we follow the Anthropological view described as the “person-life view” in Schechtman, M. (2014). On a high-level, Anthropological view characterizes identity as a combination of social and psychological factors. Schechtman expresses identity as a combination of the following, first, “the physical and psychological capacities and internal structures”, second, “the kinds of activities and interactions that make up the individual’s daily life,”, and, finally, “the social and cultural infrastructure of personhood” (Schechtman, M., 2014). The first two factors follow from the coherent story of a person, i.e., from the Narrative view. These three factors are deeply intertwined forming a tangle of characteristics. But in Schechtman’s view it is not a specific selection of these characteristics but rather the “the tangle itself” (Schechtman, M., 2014) which forms a person’s identity.

Having a description of the Anthropological view, let us return to our concerns in the Narrative view. “Why can’t the narrative be told by a third-person?”. The Anthropological view requires third-person narratives, settling our first concern. “Why happens if the narrative is false?”. The view tries to address this by combining third-person narratives. But what happens if everyone gives a false story? In such a situation, the Anthropological view doesn’t resolve the concern. We suggest averting this issue by discarding the narratives and instead believing in something more real, say the narrative of the universe, or god, or some such entity not involved in the construct itself. In this case, if this entity says, that everyone is the Queen of England, then everyone is. There are legitimate concerns with such a description, but let us pursue it further.

We turn to Dennet’s experiment first, where the mind and the body, Yorick and Hamlet respectively, are spatially separated while maintaining a causal connection. Specifically, Hamlet does what Yorick thinks, Yorick knows what Hamlet sees. Now we ask whether Dennet still exists? If he does, then is he Yorick, or Hamlet, or both? If the society and Dennet are not aware of this development, the daily life of “Dennet” and his interactions with the society are unchanged; then the Anthropological view would say that Dennet is a combination of Yorick and Hamlet, just as he always was. However, if the society knows that York and Hamlet have been separated, then the identity of Dennet depends on the particular social and psychological conditions of Yorick and Hamlet. Since no one ever saw Yorick in the first place, it is reasonable to claim social and biological factors for this entity will be close enough to Dennet’s to say that the Dennet survives.

Now, let us consider the fission experiment described in the previous section. Specifically, Adam enters the teleporter, which destroys Adam atom by atom, and copies the information into two replicas, say, Baker and Clark. The question is whether Adam survives? If he does, then which one or both, of Baker and Clark, is Adam? Even though Baker and Clark are biologically and psychologically duplicates of Adam, their social interactions would be very different from Adam’s. In such a case, Anthropological view would suggest Adam did not survive, and in fact, Baker and Clark are two new persons. Unlike the Psychological view, in this case, the transitivity of identity holds. However, it makes a different trade off. In particular, consider a teleporter which makes a single copy of Adam, say Baker. Now, Baker is physically and psychologically indistinguishable in both cases, but, still has a different identity. This is inherent to Anthropological view, as it

introduces “the social and cultural infrastructure of person-hood” when defining identity. As such, it may not be suitable to call this a “trade-off”.

So far, Anthropological view seems like an adequate description of identity. However, it doesn’t describe who forms a “society” or “culture”, is it the people with whom the person interacted? Or is it all the entities in the universe? In any case, how different does the life of a person have to be for them to have a different identity? Say, a person is amputated their physical, cultural and possibly psychological lives change significantly, is the amputated person different from their former self? We don’t see a sufficient reason for them to be, but the Anthropological view doesn’t offer any clear answers.

To illustrate this consider the following thought experiment. Adam visits an alien civilization, and makes friends with the aliens, who treat him in a certain way and contribute to his identity. Meanwhile, the outlook of the people on Earth towards Adam is unchanged. As such, it is safe to say if Adam returned to Earth they would still treat Adam close to his former self. Therefore Adam retains his identity throughout the process. Now suppose that on the alien planet Adam swapped his body for a machine, which has tires for legs and cameras as eyes. This is pretty commonplace in alien society, and they don’t significantly change their behaviour towards “Adam”. However back on Earth, the life of Adam would have been drastically different, as measured by how he is treated by the people. Is the machine Adam? The society on Earth has changed its view, so something must be different about the machine’s identity. However, the people Adam lives with, the aliens, still treat him the same, so the machine should be Adam. We could claim that since Adam is so different from regular Humans, that our (human) rules of identity do not apply to him. But this explanation evades the question.

The above example may seem artificial, but consider a member of a tribe, who visits the city and dyes their hair. This is commonplace in the city, but there are many differences in how the tribe would treat them prior and post the event.

We believe Anthropological view has a sound foundation, by using the social environment to describe a person’s identity. But, unless the specifics such as, “Who forms the society?” and “When does a person’s identity change?” are addressed, it only gives us a vague characterization of identity, which does not add much to the intuitive understanding we already have.

## 2.5 Identity does not matter view

This view was first suggested by Parfit, D. (1984), and was further backed by Dennett, D.C. (1981). Simply speaking, as long as there is a psychological continuity and connectedness between me and some other person in the future, it is as good as ordinary survival and this is what matters, not the equivalence identity relation. Parfit calls this Relation-*R*, and goes on to say that this should be our pattern of concern, not identity.

Here, an important subject is that of prudential rationality. Is it rational to consider the effect of my actions my much later self? Parfit addresses this in the following way: First, he argues that as there will be a reduced degree of psychological connectedness between my much later self and me, then there should be a reduced degree of concern towards them. Then here suggests, that this reduced degree of connectedness also implies that this person, my much later self, would be much different from me, and should be treated as such. Then, it is my moral responsibility to care about my much later self, just as it is my moral responsibility to care about any other person. This explanation, however, is not very appealing to us as caring about your future and caring about others are two very different values.

Let us go back to some of the thought experiments mentioned earlier. Consider Parfit’s teleportation experiment. As Baker maintains psychological connectedness with Adam, Adam *survives*



through the experiment; and it does not really matter whether we consider identity or the relation- $R$  as our grounds of concern. The problem arises when the person entering the teleporter, Adam, survives. This is related to Dennett's story, where both Yorick and Hubert, perfect replicas of each other, get a body each. Consider Yorick, equivalent to the Adam, and Hubert to Baker. Although *survival* is not the concern here, ethics and responsibility certainly are. Suppose just before the experiment, Adam committed a crime. Who should be tried for the crime? If relation- $R$ , is all that matters, there really is no non-arbitrary reason to try Adam instead of Baker or otherwise. A possible explanation is that as both are psychologically connected to the person before, and as ownership of actions consists in psychological continuity with the original agent, and because ownership is the necessary condition for responsibility, both Adam and Baker are morally responsible for the person's crimes and should be tried identically. This again is a rather boring solution, but it is the only fair one if we consider relation- $R$  as our grounds for concern.

### 3 Conclusion

It seems pre-mature to conclude that one of the views stated above is strictly 'better' than every other view, and can define identity properly. Each of the aforementioned views has its own issues, and so falls short of being consistent and satisfying the equivalence relation of identity at the same time. We feel that there is still some depth left to be uncovered in our understanding of the views and identity in general.

That being said, we believe in Occam's razor, which states that the simplest solutions tend to be the correct one. The anthropological view makes too many assumptions (about self and society), narrative view is circular and uncertain in nature, biological view is non-intuitive in the simplest of cases, and Identity Doesn't Matter view simply evades the question. We are then left with the psychological view, which makes the most sense to us. As mentioned before, it fails to satisfy the transitive property of the identity relation across time. A possible workaround is, as stated earlier in the introduction, to discount the usual transitive property across time from the identity relation, and replace it with the *weak transitive property*. This property states that for all people  $a, b$ , and  $c$ , at times  $t_1, t_2$ , and  $t_3$ , such that  $t_1 \leq t_2 \leq t_3$ , if  $aRb$  and  $bRc$ , then  $aRc$ . In that case, Baker and Clark are identical to Adam, but not to each other.

This also runs into some obvious issues, some of which are easier to address. For instance, consider the division of assets among the two people identical to the initial person. We claim that objects such as wealth are distributed equally, and aspects such as affection from loved ones are distributed with mutual decisions, random chance, etc. Of all the views, the psychological view seems the most apt. We live in an imperfect world, and an imperfect definition will have to do.

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