Identity and change

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130 Metaphysics
Fall 2012
Identity and Leibniz’s Law

The triviality of identity: everything is identical with itself and with no other thing.

**Law (Indiscernibility of Identicals (‘Leibniz’s Law’))**

For any two objects \( x \) and \( y \) in a given domain of discourse, if \( x \) and \( y \) are identical, then they share all the same properties:

\[
\forall x \forall y [x = y \rightarrow \forall P(Px \leftrightarrow Py)].
\]

This is generally considered a law of logic. The same is not true of its converse:

**Thesis (Identity of Indiscernibles)**

For any two objects \( x \) and \( y \) in a given domain, if \( x \) and \( y \) share all the same properties, then they are identical:

\[
\forall x \forall y [\forall P(px \leftrightarrow Py) \rightarrow x = y].
\]
Identity as an equivalence relation

**Law**

*Identity is an equivalence relation, i.e. it is reflexive, symmetric and transitive.*

Examples: ‘is equal to’ on set of numbers, ‘has the same birthday as’ on the set of people
Suppose $R$ is a binary relation on a set $X$ (its ‘domain’).

**Definition (Reflexive)**

$R$ is **reflexive** just in case $\forall x \in X, Rxx$. (Ex: ‘is equal to’ on set of numbers, ‘is a subset of’ on the set of sets, ‘is related to’ on set of people)

**Definition (Symmetric)**

$R$ is **symmetric** just in case $\forall x, y \in X, Rxy \rightarrow Ryx$. (Ex: two of the three examples in previous definition; ‘is a sibling of’ on set of people)

**Definition (Transitive)**

$R$ is **transitive** just in case $\forall x, y, z \in X, (Rxy \& Ryz) \rightarrow Rxz$. (Ex: all the previous examples; ‘is an ancestor of’ on set of people)
### Table: Binary family relations defined on set of people

<table>
<thead>
<tr>
<th>Relation</th>
<th>Reflexive</th>
<th>Symmetric</th>
<th>Transitive</th>
<th>Equivalence</th>
</tr>
</thead>
<tbody>
<tr>
<td>‘is related to’</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>‘is a sibling of’</td>
<td>N</td>
<td>Y</td>
<td>Y</td>
<td>N</td>
</tr>
<tr>
<td>‘is a sister of’</td>
<td>N</td>
<td>N</td>
<td>Y</td>
<td>N</td>
</tr>
<tr>
<td>‘is an ancestor of’</td>
<td>N</td>
<td>N</td>
<td>Y</td>
<td>N</td>
</tr>
<tr>
<td>‘is a parent of’</td>
<td>N</td>
<td>N</td>
<td>N</td>
<td>N</td>
</tr>
<tr>
<td>‘has same grandparent’</td>
<td>Y</td>
<td>Y</td>
<td>N</td>
<td>N</td>
</tr>
</tbody>
</table>
Numerical and qualitative identity

**Question**

How can one and the same thing be coherently different at different times?

⇒ distinguish between **numerical** and **qualitative** identity

- An object remains numerically one and the same, while it becomes qualitatively different.

⇒ Do we have two distinct kinds of identity?

- No, there is only one identity really: numerical identity.

⇒ **Reduction**: A numerically identical object has numerically different properties at numerically different times.
Hierarchy of composition
The ship wherein Theseus and the youth of Athens returned [from Crete] had thirty oars, and was preserved by the Athenians down even to the time of Demetrius Phalereus, for they took away the old planks as they decayed, putting in new and stronger timber in their place, insomuch that this ship became a standing example among the philosophers, for the logical question of things that grow; one side holding that the ship remained the same, and the other contending that it was not the same. (Plutarch, Theseus, [http://classics.mit.edu/Plutarch/theseus.html](http://classics.mit.edu/Plutarch/theseus.html))
Limiting the amount of change an object can suffer

Thesis (Mereological essentialism)

“[A] composite object, cannot, strictly speaking, ever undergo a change of parts.” (26n)

- Seems too radical; surely, an object can undergo some qualitative change. But how much? 5%?
- Suppose ship \( a \) is changed by 4% to become ship \( b \), which is changed by 4% to become ship \( c \).
- This leads to a contradiction:
  - Ships \( a \) and \( c \) are not identical, as the difference between them (up to 8%) exceeds the threshold).
  - Ships \( a \) and \( c \) are identical, by the transitivity of identity.
- Unless we want to deny the transitivity of identity or accept mereological essentialism, “we must allow a complete change of parts.” (26)
If the ship of Theseus were continually repaired by the replacing of all the old planks with new, then—according to the Athenian philosophers—the later ship would be numerically identical with the original. But if some man had kept the old planks as they were taken out and were to assemble a ship of them, then this ship [containing all the original parts of the earlier ship] would, also, without doubt be numerically identical with that original. And so there would be two ships, existing at the same time, [in different places,] both of which would be numerically identical with the original. But this latter verdict is absurd. (De Corpore, Part II, Ch. 11, §7, after Norman Swartz, Beyond Experience: Metaphysical Theories and Philosophical Constraints, Second Edition, http://www.sfu.ca/~swartz/beyond_experience/, p. 347)
Discussion of augmented puzzle

⇒ transitivity of identity forces a kind of duplication, i.e. the ship now (post-reconstruction and -renovation) exists ‘doubly’, in distinct and separate locations

Curiously, even though reconstructed ship may thus not in fact be identical to the original ship, it would have been had the renovation not also occurred!

“But how can it make sense to say that a certain thing \( a \), which is not in fact identical with a certain other thing \( b \), would have been identical with \( b \) if a certain thing \( c \) (in this case, the renovated ship) had not existed?” (28)
Two radical solutions:
Reconsidering our commonsense conception of objecthood

**Principle (No non-locality)**

*The same object cannot be in two different places at the same time.*

**Principle (No co-location)**

*Different objects (of the same kind) cannot be in the same place at the same time.*

Giving up either of these principles permits a solution to the puzzle...
Solution A: denying ‘No non-locality’

“One solution would be to say that both the renovated ship and the reconstructed ship are identical with the original ship, accepting that this implies that, at the later, one and the same ship is in two different places at once, that is, both in the harbour and in the warehouse.”

(29)

Problem: we can’t know whether we have two ships or one before us without knowledge of the prior history of the object(s)
Solution B: denying ‘No co-location’

“Another solution would be to say, while accepting that the renovated ship and the reconstructed ship are two quite distinct ships, that both of these ships were originally in the harbour, so that, in fact, it was misleading to speak of the ship of Theseus: according to this solution, the two later ships exactly coincided with one another until the process of renovation and removal began, whereupon they gradually became separated.” (29)

Problem: we can’t know whether we have just one or more ships before us **without knowledge of the future history of the object(s)**
Lowe’s own solution

Principle

In ordinary cases of disassembly and reassembly, “none of the original parts of the original ship is ever appropriated by another, distinct ship. Once the original parts of a ship have been appropriated by another, distinct ship, I suggest, they cease to be parts of that original ship: and even if those parts are later reassembled to compose a ship, the ship they then compose is a new ship, numerically different from the original one.” (31)

⇒ “in two different possible situations [the ordinary and the puzzle case], the very same ship parts can undergo exactly the same individual histories and yet end up composing two quite different ships—the ship of Theseus in one situation and a newly composed ship in the other.” (33)
Intermittent existence, fission and fusion

- Q of whether it’s metaphysically possible for an object “to enjoy an intermittent existence” (34)

- Lowe: depends on what sort of thing object is, e.g., whether it’s the sort of thing which can be dissembles and reassembled

- Puzzle about ship of Theseus is one of large class of problems regarding the fusion and fission of persisting objects

- Lowe: “to say that one object ‘becomes’ two can, it seems, only mean either that one object ceases to exist and two new objects are created from its parts, or else that one object continues to exist but another new object is created from some of the old object’s former parts.” (35)

- Asymmetrical vs. symmetrical fission: in asymmetric case, fission products “are differently related to the original object” (ibid.)
The paradox of the thousand and one cats

Introducing **Tibbles**, a cat with 1,000 loose hairs in its coat, “neither definitely separated from Tibbles nor definitely not separated from Tibbles.” (37)

⇒ Are there strictly speaking 1,001 largely overlapping cats on the mat, or just one?

Lowe: “many slightly different collections of cat parts present on the mat” (38) compose but one single cat
Composition of material objects and persistence over time
The question of personal identity

Question (Personal identity)

What makes a person numerically the same over time?

Why we care about personal identity

- stability of substance that is bearer of properties, change
- bearer of emotions, desires, pleasures, qualia in general
- structuring the social world
- making sense of linguistic practices
- personhood in law, bearer of legal subjecthood
- criminal/ethical culpability
- theological relevance, esp. concerning an afterlife
- nostalgia
Remarks before we discuss answers

- reconstitution (out of new matter) of person physically similar to you is insufficient ⇒ mere qualitative similarity (to look like John Malkovich is different from being John Malkovich)

- More generally: sameness of matter not sufficient for personal identity

- Nor is it necessary (and least not strictly)

⇒ Personal Id isn’t especially tied to matter—but what is it tied to?
(1) The soul

Answer (Soul)

*Personal identity is tied to the soul.* “A person’s soul is her psychological essence, a nonphysical entity in which thoughts and feelings take place.” (Conee & Sider, 10)

Diego Velazquez: Christ and the Christian Soul, 1626/28, Oil on canvas, National Gallery, London
Responses to the soul answer

Sider: there’s no good reason to believe souls exist since

1. There’s no need to postulate souls to explain the psychology of humans.
2. Soul theorists can’t explain how souls think: since souls have no smaller parts, a mechanistic explanation is impossible.

Here’s a better response: either the soul is attached to the body or not.

- If not, all our criteria to judge personal id don’t apply and everything is up for grabs again.
- If it is, then why not go for spatiotemporal or psychological continuity?
(2) Spatiotemporal continuity

Answer (Spatiotemporal continuity)

**Personal identity is tied to spatiotemporal continuity, i.e. to a continuous series of locations of a body in space and time.**

- baseball example
- handy when dealing with identical twins
- good practical guide to personal id
- But does it capture its **essence**?
- essence vs. accident distinction: bachelor, gold examples
- This answer claims that spatiotemporal continuity is the essence of personal id
Suppose you are melting into a soup. Is the soup you?

**Answer (Refined spatiotemporal continuity)**

“[P]ersons are numerically identical if and only if they are spatiotemporally continuous via a series of persons.” (ibid., 13)
Locke’s counterexample: the prince and the cobbler
“A certain prince wonders what it would be like to live as a lowly cobbler. A cobbler reciprocally dreams of life as a prince. One day they get their chance: the entire psychologies of the prince and the cobbler are swapped. The body of the cobbler comes to have all the memories, knowledge, and character traits of the prince, whose psychology has in turn departed for the cobbler’s body. Locke himself spoke of souls: the souls of the prince and the cobbler are swapped. But let’s change his story: suppose the swap occurs because the brains of the prince and cobbler are altered, without any transfer of soul or matter, by an evil scientist...
“After the swap, the person in the cobbler’s body will remember having been the prince, and will remember the desire to try out life as a cobbler... He regards himself as being the prince, not the cobbler. And the person in the prince’s body regards himself as being the cobbler, not the prince. Are they right?

“The spatiotemporal continuity theory says that they are not right... Locke takes a different view; he agrees with the prince and the cobbler.” (ibid., 14)
“Here is a powerful argument on Locke’s side. Suppose the prince had previously committed a horrible crime... After the swap, the crime is discovered, and the guards come to take [...] the person in the prince’s body, ignoring his protestations of innocence. The person in the cobbler’s body (who considers himself the prince) remembers committing the crime and gloats over his narrow escape. This is a miscarriage of justice! The gloating person in the cobbler’s body is the prince, not the cobbler, for a person ought to be punished only for what he himself did.” (ibid., 14f)
(3) Psychological continuity

Answer (Psychological continuity)

“[A] past person is numerically identical to a future person, if any, who has that past person’s memories, character traits, and so on—whether or not the future and past persons are spatiotemporally continuous with each other.” (ibid., 15)

- This answer can deal well with the case of the prince and the cobbler.
- But there’s another counterexample...
Sir Bernard Williams (1929-2003): the case of Guy Fawkes

- A presently living person, ‘Charles’, is made to have the psychology of Guy Fawkes (a man hung in 1606 for trying to blow up the English Parliament).
- Locke: Charles is Guy Fawkes
- Now there’s the rub: another man, ‘Robert’, undergoes the exact same change to have the psychology of Guy Fawkes...
- Both Charles and Robert are psychologically continuous with Fawkes!
- Since identity is transitive, Robert must then be identical with Charles...
The duplication problem

- The **duplication problem**: what happens when psychological continuity is duplicated?

- Sider: there’s an analogous duplication problem for the spatiotemporal continuity theory

- **Question**: how much continuity is sufficient spatiotemporal continuity?

- Consider the case of the person whose right half is cancerous and removed by futuristic scientists (including the brain) and replaced by a prosthetic right body-half.

  ⇒ continuity of half the body had better count as sufficient

  ⇒ spacetime continuity theory faces its own duplication problem
Consider the case when a fully cancerous person is divided into two halves to improve chance of survival (which in each case is 10%)

⇒ 1% chance that two copies will survive

⇒ Sider: “A single original person can be continuous, whether psychologically or spatiotemporally, with two successor persons.” (ibid., 18)

Restate positions such as to require nonbranching continuity.

Psychological: neither Charles nor Robert is Fawkes; Spatiotemporal: you don’t survive the double-transplant operation

But this is strange: if both hemispheres survive, you don’t; if only one survives, you do too...
Two radical solutions

1. **Derek Parfit** challenges the assumption that personal id is important:
   - What really matters is psychological continuity, regardless of personal identity.
   - In duplication case, ceasing to exist is not bad since you have all that matters: psychological continuity.

2. Challenge the assumption that personal id is numerical identity:
   - All change really does result in numerically distinct person.
   - Branching cases: single person stands in relation of identity with two later persons, but that’s not a problem if identity is not numerical.
Qualitative change and the doctrine of temporal parts

- tension between Leibniz’s Law and notion of qualitative change:
- Consider a leaf which at first was green, and then turns red.
- How can it be that one and the same thing—the leaf—is both green and red (= not green)?
- Leibniz’s Law: if it is true of leaf that it is green, then it is not true that the same leaf is not green (i.e. red)
An obvious answer, and why it isn’t obviously an answer

- obvious answer: one and the same leaf can possess incompatible properties at different times
- But how does this make the properties any less incompatible?
- In particular, doesn’t this ‘solve’ the problem—to explain the possibility of qualitative change—by simply assuming it?
- Let’s look at four proposed solutions, i.e. four different analyses of statements of the type ‘a is F at t’...

Table: Proposed solutions to the problem of qualitative change

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<thead>
<tr>
<th>Solution</th>
<th>Temporally realist?</th>
<th>Type of persistence</th>
</tr>
</thead>
<tbody>
<tr>
<td>Presentism</td>
<td>No</td>
<td>endurance</td>
</tr>
<tr>
<td>‘a is F-at-t’</td>
<td>Yes</td>
<td>endurance</td>
</tr>
<tr>
<td>‘a-at-t is F’</td>
<td>Yes</td>
<td>perdurance</td>
</tr>
<tr>
<td>‘a is-at-t F’</td>
<td>Yes</td>
<td>endurance</td>
</tr>
</tbody>
</table>
(1) Presentism

Characterization (Presentism)

*Presentism is the position in the philosophy of time that maintains that nothing exists that is not present. In other words, only present events and objects exist, but no past or future objects do.*

- According to presentism, the sum total of existence is a three-dimensional manifold.
- In contrast, ‘eternalism’ considers the four-dimensional ‘block universe’ as the sum total of existence.
temporally antirealist, i.e. antirealist about non-present times

Presentism as strictly speaking true only statements of the form ‘a is F now’ (although ‘now’ is redundant).

⇒ solves the problem because it is never really the case “that one and the same object possesses mutually incompatible qualities at different times” (43)

How can a presentist makes sense of ordinary talk involving past and future times? (so-called ‘grounding problem’)

presentist will have to license talk about non-present times in a way that does not require existence of those times (e.g. as statements of what would be the case, counterfactually, if a certain non-present time were present)
(2) ‘a is F-at-t’

**Characterization (‘a is F-at-t’)**

“The first [realist] solution builds the time referred to, t, into what is predicated of the object a, which is regarded as the genuine subject of the statement.” (44)

- On this view, “it is an error to suppose that objects undergoing such change possess such intrinsic qualities [as colours]: rather, they stand in certain relations to times” (ibid.).
- ‘greenness-yesterday’ and ‘redness-today’ are compatible, and hence the problem is solved.
Effectively, it is denied that there is qualitative change, because there are no intrinsic qualities of the sort usually assumed to be necessary for there to be qualitative change in the first place, viz. change in intrinsic qualities.

Lowe also finds it problematic insofar as objects would not in general have any intrinsic properties on this view, even though some intrinsic properties are necessary in constituting objects’ identity.

CW: This is not in general necessary for identity.
‘a-at-t is F’

Characterization (‘a-at-t is F’)

“This solution] builds the time referred to, t, into the subject of this statement, which is now regarded as being not the object a itself, but rather the temporal part of a that exists at time t, that is to say, a-at-t.” (45)

- qualities are not ascribed to one and the same object, “but to numerically distinct objects, albeit ones which are both temporal parts of the same object.” (ibid.)

- ‘leaf-yesterday’ and ‘leaf-today’ are numerically distinct objects, and the problem is resolved
need to clarify what temporal parts are, and how they combine to a persisting object

temporal parts cannot themselves undergo change

At least: properties are intrinsic to objects which exemplify them—even though objects are non-standard

Still: nothing which possesses intrinsic qualities undergoes qualitative change, but only objects which possess them derivatively (by virtue of having temporal parts which do)...

persisting objects themselves do not change at all: they just have temporal parts with with numerically distinct properties, but they do so eternally, tenselessly

*If this is a ‘solution’ to the problem of qualitative change, then it seems to be like the presentist’s ‘solution’ in denying the existence of the very phenomenon whose possibility we are seeking to understand.*” (46)
(4) ‘a is-at-t F’ (adverbialism)

Characterization (‘a is-at-t F’)

“[T]he temporal reference... can go into the predicative or ascriptive link itself, which is expressed in the original statement by the verb ‘is’... [W]hat this means is that the expression ‘at t’ has the status of a predicate modifier, or adverb... The idea is that... a quality can only be ascribed to an object in some temporal mode, whether past, present, or future... The qualities of objects that exist in time are genuinely intrinsic properties of them... but the possessing of a quality by such an object is itself a temporally relative affair and so involves, if you like, a relation to a time. Qualitative change then consists in the fact that, relative to different times, one and the same object possesses different qualities.” (47)

- difference to (2): ascribing a non-relational property in temporally relativized way vs. ascribing temporally relational property in absolute way
This is Lowe’s own proposal, and he is sort of mute on problematic aspects of this proposal.

First, is it really an explication of the problem of qualitative change to say that the having of properties itself must be indexed to times (so we maintain our ordinary objects and ordinary intrinsic properties), or just a restatement of the problem?

Second, he claims that philosophers have overlooked this option because they are steeped in quantificational or predicate logic, which eliminates adverbs; this complaint can be turned against Lowe, as his solution then seems to require new logic.
Persistency: perdurance vs. endurance

**Definition (Endurance)**

An object is said to **endure** just in case it exists at more than one time.

- objects can be wholly present at different times
- time privileged among dimensions of spacetime

**Definition (Perdurance)**

An object is said to **perdure** by having different temporal parts at different times with no part being present at more than one time.

- temporally extended objects consist of temporal parts just as spatially extended objects are composed of spatial parts
- time on par with spatial dimensions
Exercise for the reader

Make sure you understand why the four solutions to the problem of qualitative change are classified in terms of type of persistence they require as they are in the above table entitled ‘Proposed solutions to the problem of qualitative change’.
Lowe considers characterizations of temporal parts and finds them wanting:

- analogy to processes or events
- analogy to spatial parts (in various senses)
- temporal parts as theoretical entities

I believe that there are various points in Lowe’s arguments challenging the notion of temporal parts and crafting an argument against perdurance on the basis of this challenge (particularly on pp. 52-54), which can quite straightforwardly resisted, so perhaps we need not go over them in detail.