On the Nature and Existence of Possible Worlds

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Plan

The nature of possible worlds

The existence of possible worlds

A Methodological Point: Two Metaphysical Questions

Q1 What is the nature of possibility?

Q2 What are possibile worlds?
(If we answer Q2, then we have an answer to Q1)

Q1 is a genuinely philosophical question

Q2 is a question for those interested in the foundations of possible worlds semantics (or for those who believe that possible worlds semantics can give an insight into the nature of possibility)

Plan

On the nature of possible worlds

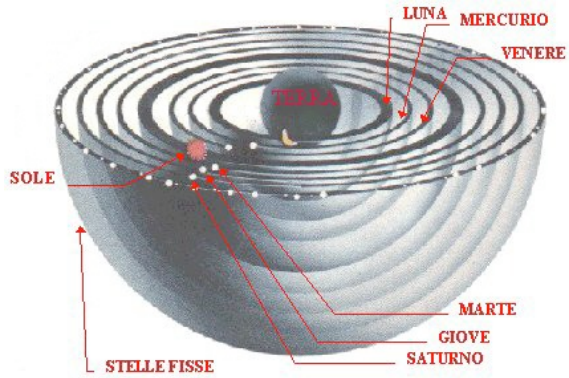
Three Paradigmatic Positions

1. Possible worlds are points connected by arrows on a blackboard (typically a mathematician).
2. Possible worlds are conceptual tools, or truth-value distributions (Kripke).
3. Possibile worlds are metaphysical entities which exist somewhere (typically a philosopher).

Instrumentalism vs. Realism in Philosophy of Science

Disputes about the ontological status of the theoretical entities talked about by scientific theories:

- Are Eudoxos' spheres real entities or they are only used to give predictions about the orbits of the planets?



- Is there any real force F in $F = k\frac{m_1 \times m_2}{d^2}$, as Newton's Law of Universal Gravitation seems to suggest? (*action at a distance*)

- ...

Many Names . . .

Possible worlds

Epistemic or doxastic alternatives

Information states

Perspectives

Contexts

Time instants

Situations

Transition states

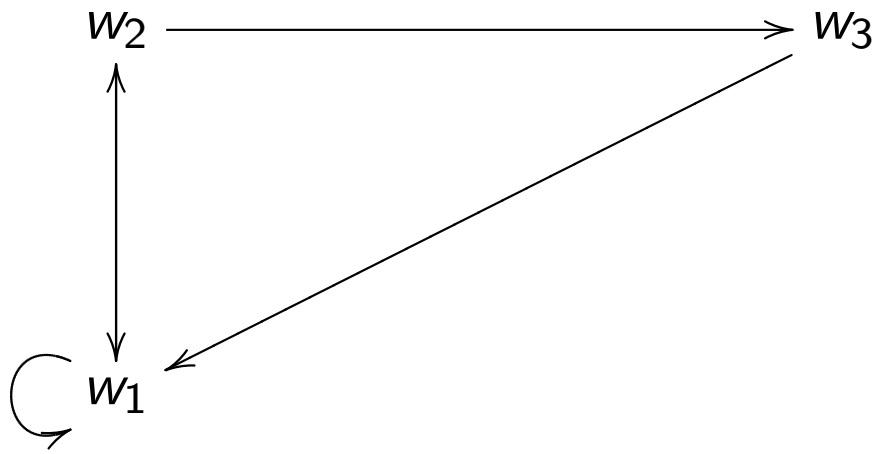
States of a computer program

Nodes in a tree

Points

. . .

What Do Worlds and Arrows Represent?



Anything?

Metaphysical Perspective

Reductionism:

Possible worlds are maximally consistent set of

- atomic sentences (=expressions that can be true or false)
- propositions (=the content expressed by a sentence)
- state of affairs (=nexus of objects)

Proposition: Maximal consistency implies completeness.
(in metaphysical possible worlds nothing is undetermined.)

Anti-reductionism:

Possible worlds are primitive entities
(e.g., I and my surroundings, Lewis).

Epistemic and Informational Perspectives

Possible worlds are consistent set of

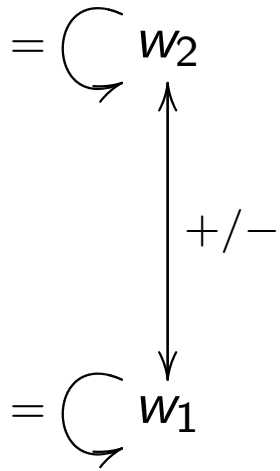
- sentences (=expressions that can be true or false)
- propositions (=the content expressed by a sentence)

Maximal consistency or completeness is not required anymore.

Possible worlds are **states of knowledge**.
(perhaps require $w_1 R w_2$ implies $w_1 \subseteq w_2$)

Possible worlds are **states of information**.

Transition Systems (e.g., an Elevator)



Two accessibility relations (understood as operations):
$R_{=} = \{(w_1, w_1), (w_2, w_2)\}$
$R_{+/-} = \{(w_1, w_2), (w_2, w_1)\}$

w_1 means "the elevator is on floor 1" and
w_2 means "the elevator is on floor 2"

$R_{=}$ means "stay at the same floor" and
$R_{+/-}$ means "move one floor up or down".

What Does the Accessibility Relation Represent?

$w_1 R_i w_2$ means:

- the possibility of w_2 is visible from w_1.
- w_2 increases the information in w_1.
- w_2 results from w_1 after executing the operation R_i.
- ...

Upshot

Possible worlds semantics is very flexible. Worlds and accessibility relations can represent **almost** everything.

Concerns:

As a theory of modality, isn't that possible worlds semantics is under-specified?

Does possible worlds semantics have any explanatory power?

Plan

On the existence of possible worlds.

- We take the metaphysical perspective on possible worlds and ask whether they exist and how.
- *Remark*: Within other perspectives on possible worlds, the problem of their existence is less compelling.

On the Existence of Possible Worlds

Actualism (Plantinga):
At most one world exists (i.e., obtains, is actual), namely the actual world.
PW = maximally consistent set of states of affairs

Possibilism or **Modal Realism** (Lewis):
Possible worlds exist in the same way as the actual world exists.
PW = I and my surroundings (or way things could have been)

Question: Is the definition of PW relevant for claims on the existence of possible worlds?

More Careful Definition of Possibilism

T1: There are more worlds than actually exist. Being is wider than actuality.

T2: Being actual is an indexical notion (=relative to the world we are in).

T1+T2: Each world is actual (=no world is actual).

Actualism: at Most One World Exists (Argument by Plantinga)

Argument:
Suppose, for contradiction, that both w_1 and w_2 obtain (=are actual), and w_1 is different from w_2.
So, there is a state of affairs S such that $S \in w_1$ and $S \notin w_2$.
By completeness, we have $\neg S \in w_2$.
But both w_1 and w_2 are actual, and so both S and $\neg S$ obtain.
Contradiction!

Conclusion: Either reality is contradictory, or actualism is true.

Possibilism: Reply by Lewis

The notion of **obtaining is relative** to a possible world.
The notion of **actuality is indexical**.

The conclusion of the argument by Plantinga is only that
[. . .] both S obtains-in-w_1 and $\neg S$ obtains-in-w_2.
No contradiction follows.

Against the Indexicality of Actuality (Plantinga)

Indexicality of Actuality

- "This world is the actual world" is always true when uttered (similarity with "I am here")
- the expression "this world" means the same as the expression "the actual world"

But these sentences express different propositions

- "This world is this world" (necessary)
- "This world is the actual world" (contingent)

Aside

- Stalnaker distinguishes a semantic and a metaphysical version of the indexicality of actuality.

Possibilism: Possibilities Exist (Argument by Lewis)

We make sense of talks like 'I might have been in Nigeria', whose logical form is '*there is the possibility* that I am in Nigeria'.

Natural language allows speakers to **existentially quantify over possibilities**, and so possibilities exist.
(cf. Quine's criterion of ontological commitment in *On What There Is*)

Actualism: a Reply

- The fact that ordinary language allows speakers to existentially quantify over possible worlds does not entail that possible worlds exist—the way language works need not mirror the way reality is.

Possibilism: Counter-reply by Lewis

- We need not take existential quantifiers in natural language at their *face value*, but why shouldn't we?
- An argument for not taking them at their face value is needed.
- Such an argument needs to show that
  (1) taking them at their face value leads to trouble, and
  (2) not taking them at their face value doesn't lead to trouble.
- Option (2) fails.

Possibilities Cannot Be but Quantifiers over PWs

Alternatives:

- Possibility is analyzed in terms of consistency
  - Consistent is a sentence which could be true (circular theory)
  - Consistent is a sentence whose denial is not a theorem (incorrect theory)
- Possibility are quantifiers over maximally consisten set of . . .
  - How do we explain consistency?

Conclusion:

Option (2) leads to trouble, and so possibilities are quantifiers over irreducible entities called possible worlds.

Challenges to Actualism from SQML

SQML = Simplest Quantified Modal Logic

Semantics:

- Two fixed non-empty domains:
  W (possible worlds) and D (individuals).
- Interpretation function I for constants, variables and predicates (relative to worlds).

Proof System:

Axioms for First Order Logic (e.g., axioms for quantifiers)

N $\vdash \varphi$ implies $\vdash \Box\varphi$.

K $\Box(\varphi \rightarrow \psi) \rightarrow \Box\varphi \rightarrow \Box\varphi$

T $\Box\varphi \rightarrow \varphi$

5 $\Diamond\varphi \rightarrow \Box \Diamond \varphi$

First Challenge to Actualism from SQML

$w \Vdash \Diamond\varphi$ iff **there is a** w' such that $w' \Vdash \varphi$.

The truth-condition of $\Diamond$-formulas entails the existence of non-actualized possible worlds.

Two lines of response:

- SQML talks about abstract entities (but what are they?).
- SQML has no effective existential commitment.
  It is a only a formal tool.

Second Challenge Challenge to Actualism from SQML

SQML proves $\Diamond\exists x\varphi \rightarrow \exists x \Diamond \varphi$

From: It is possible that there is an x such that x is an Alien.

To: There is an x such that it is possible that it is an Alien.

Problem:

- Not only *possibly* there are Alines, but there are individuals in this world such they can be Aliens.

Replies:

- It is a problem only for essentialists.
- We may drop the requirement of the same domain of individuals for each possible worlds.

Third Challenge to Actualism from SQML

SQML proves $\forall x \Box \exists y (y = x)$.

- $\exists y (y = b)$ means b exists.
- $\forall x \Box \exists y (y = x)$ means everything necessarily exists.

Problem:

- "Everything necessarily exists" is a possibilist claim.

Reply:

- That every being has necessary existence is utterly wrong.
- We may drop the requirement of the same domain of individuals for each possible worlds.

A Moderate Possibilism (Stalnaker)

Four actualist claims:

- T1 Possible worlds exist.
- T2 Possible worlds are defined along the lines "I and my surroundings".
- T3 Actuality is indexical.
- T4 Possible worlds are irreducible entities.

Moderate Possibilism

T1 + T3 (only semantical indexicality of actuality) + T4.

An Example of a Related Metaphysical Dispute

Consider the notion of **change**.
E.g., from S being the case to $\neg S$ being the case.

Suppose $S \in w_1$ and $\neg S \in w_2$.

Actualism: from w_1 being actual to w_2 being actual.

Possibilism: both w_1 and w_2 obtain, so change is an illusion.

Cf. Aristotele vs. Megarians (a Socratic School) about the reality of change and the act/potence distinction
(in Aristotle, *Metaphysics*, Book IX).