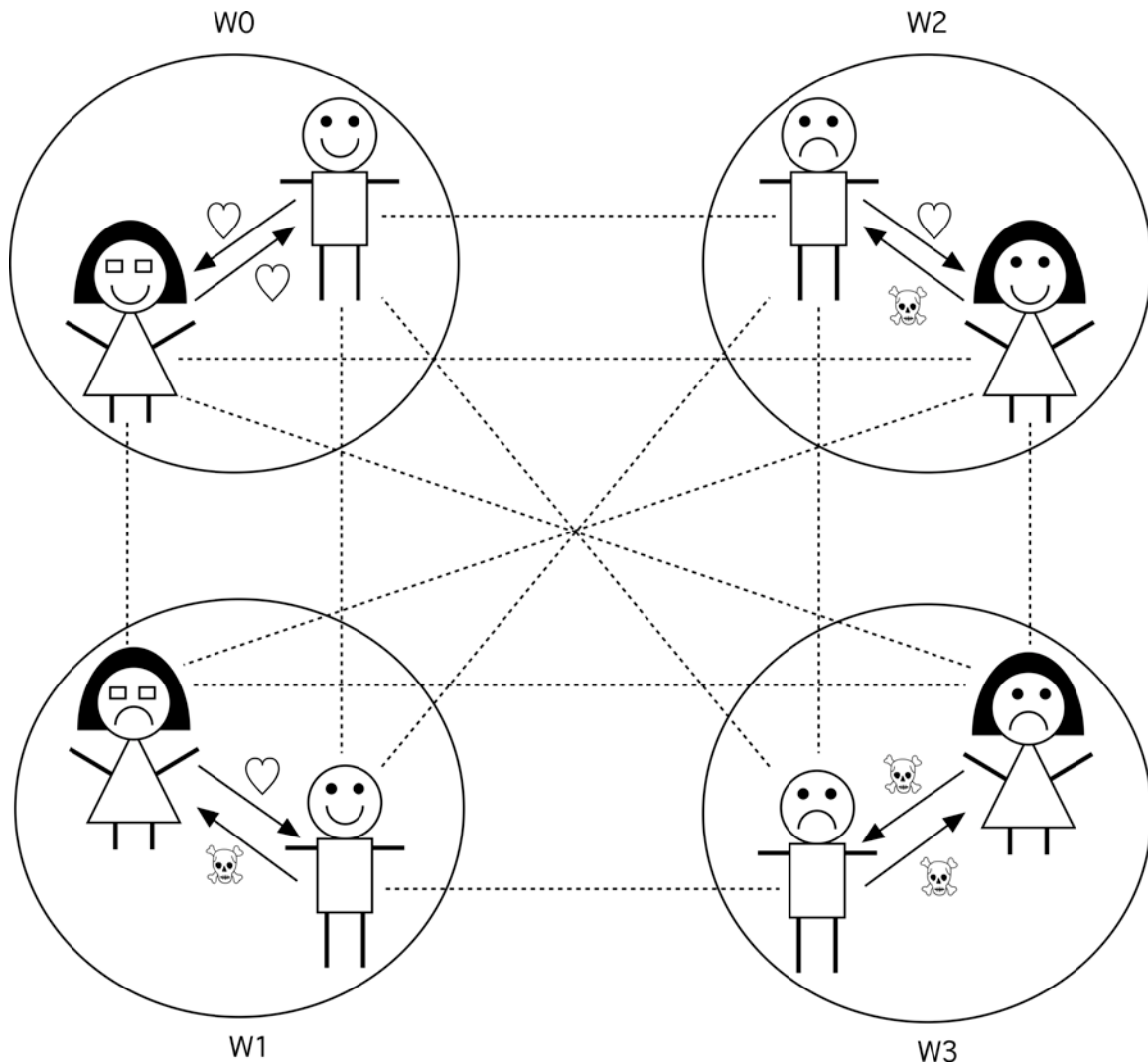


Semantics – Exercises (No Answers)

Exercises for Chapter 4 of Steinhart, E. (2017) *More Precisely: The Math You Need to Do Philosophy*. Broadview Press. Copyright (C) 2017 Eric Steinhart. Non-commercial educational use encouraged! All others uses prohibited. (Version 2)

Model 0

Each circle is a world containing some things in some relations. The relations are indicated by arrows. Triangular bodies are female; square bodies are male. Robots have square eyes; humans have round eyes. The heart is love the skull and bones is hate. A dotted line connecting two things indicates that they are counterparts.



Propositions and their Worlds (Fill in the table with true/false)

Proposition	W0	W1	W2	W3
Bob is human				
Bob is a robot				
Sue is human				
Sue is a robot				
Bob is joyful				
Bob is sad				
Sue is joyful				
Sue is sad				
Bob loves Sue				
Bob hates Sue				
Sue loves Bob				
Sue hates Bob				

Properties Distributed across Worlds (Fill in the cell with things that have the property at the world; for relations, use ordered pairs.)

	World W0	World W1	World W2	World W3
human				
robot				
joyful				
sad				
loves				
hates				

Questions (True or false, unless asking for a list of worlds).

“Bob loves Sue” at W2

“Sue is a joyful robot” at W1

“Sue hates a sad human” at W3

It is possible that Bob is a robot.

It is possible that Bob loves a joyful robot.

It is possible that everybody is sad.

It is necessary that Sue is a robot.

It is necessary that somebody is loved.

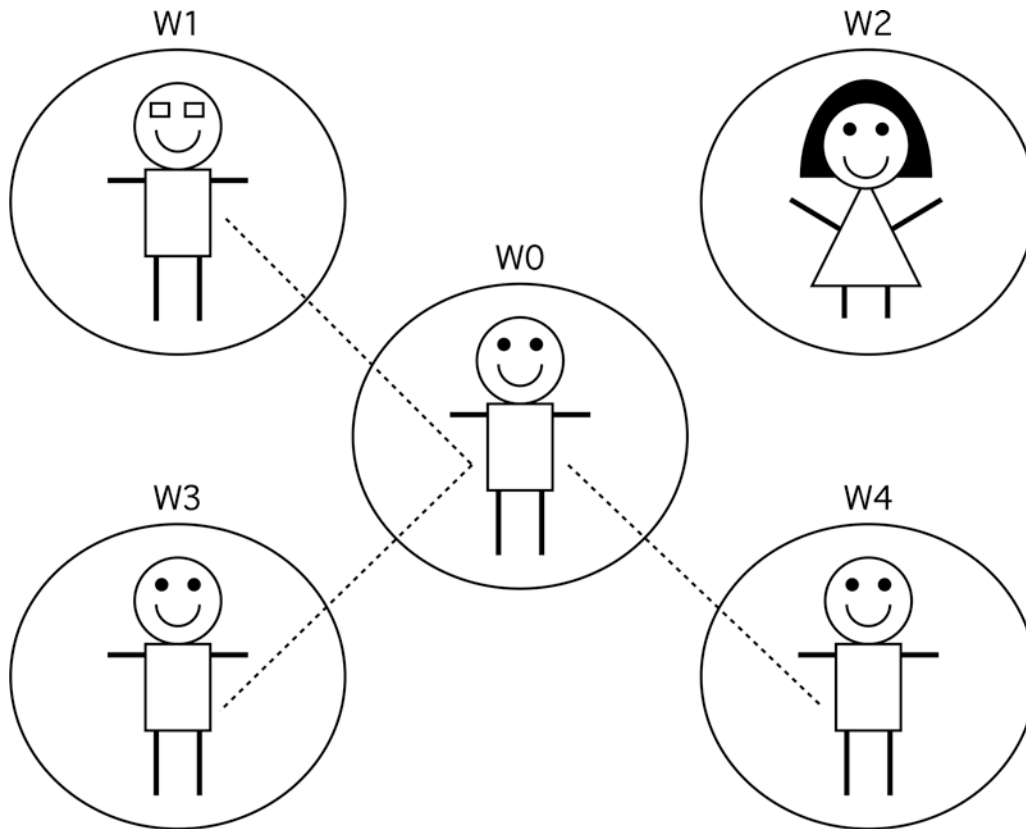
Necessarily, Sue loves a happy human.

Necessarily, if Bob is loved, then he is loved by some robot.

List the worlds at which some robot loves somebody:

It is necessary for robots to love.

Model 1 (Same conventions as Model 0)



In this model, John exists at world W0.

Questions (list worlds or answer true/false)

List the worlds where John has counterparts.

List the worlds where John has no counterpart.

It is necessary that John exists.

It is necessary that John is male.

John is necessarily male.

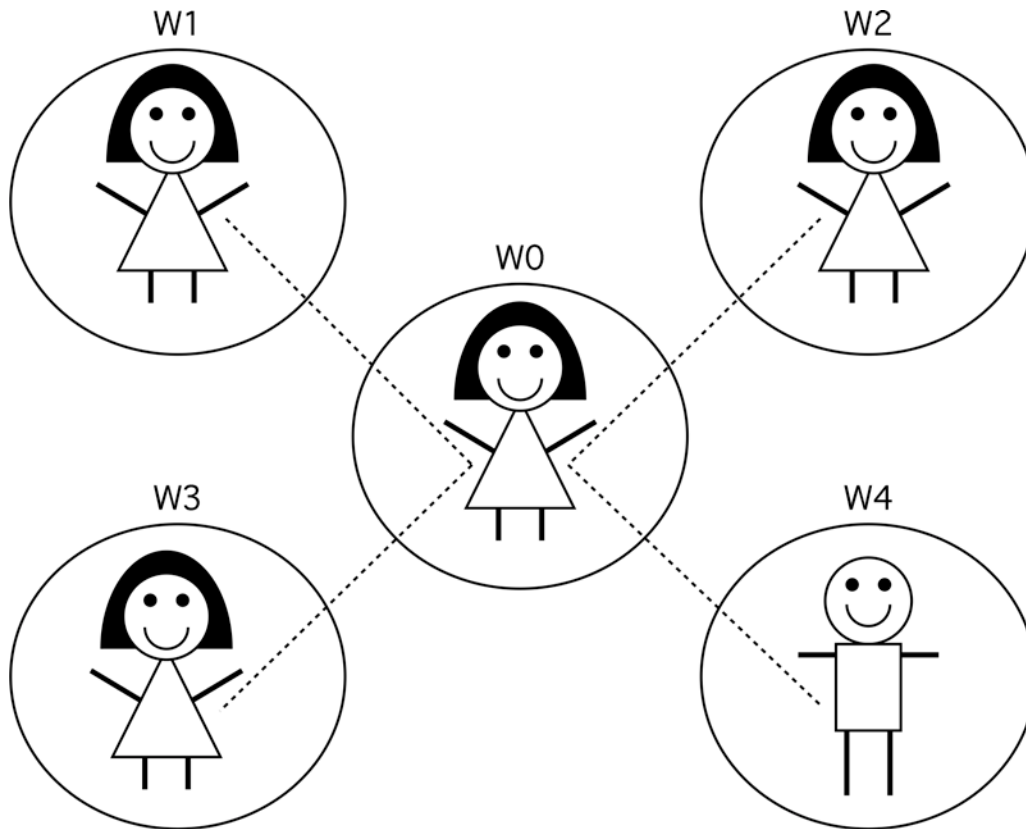
John is essentially male.

John is essentially human.

John is contingently human.

John is accidentally human.

Model 2 (Same conventions as Models 0 and 1)



In this model, Sue exists at W0.

Questions (true or false)

Sue has a counterpart at every other world.

It is necessary that Sue exists.

It is necessary that Sue is happy.

It is necessary that Sue is female.

Sue is necessarily female.

Sue is contingently female.

Sue might be male.