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Meta-conceivability and Thought Experiments

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A meta-conception is a double act of imagination. The procedure is to answer a question by imagining someone answering that question via an act of imagination. Meta-conceptions are hypothetical hypotheticals. They stand to thought experiments as thought experiments stand to executed experiments.

As the unexpected term in the simile, the meta-conception provides a new point of comparison. Instead of picturing thought experiment as an extreme, we can picture it as an intermediate case.

Some of what passes for conceiving is meta-conceiving. Those who seem to be one degree removed from executed experiment are sometimes two degrees away; they conceive someone conceiving a possibility and infer the possibility on this second-hand basis.

Our powers of imagination are spottier than they appear. This is partly due to a sampling illusion; we cannot survey the possibilities we cannot imagine. The illusion is also sustained by our success at compensating. We make up for our limited horizon by imagining hypothetical imaginers who transcend our limits.

1. IMAGINARY THOUGHT EXPERIMENTS

‘What would you build after everything could be done by pushing lots of buttons?’ The engineer retorts that he would build a machine that can push buttons.

Thought experiments are labor-saving devices. Instead of actually executing the procedure, you answer by reflecting on the procedure. This is an extension of what normally happens when planning an experiment. Since experimenters are not dogmatic, they revise their opinion as details about the procedure emerge. So before carrying out the experiment, the experimenter has undergone some a priori self-improvement. What grows as a by-product can be deliberately cultivated.

A predecessor of this paper was presented at the ‘Thought Experiments Rethought’ conference in Ghent, Belgium, on September 26, 2004. This paper has been improved by remarks from Daniel Cohnitz, Erdinc Sayan, and a referee for this volume.
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Opportunists accentuate the features of experimental procedures that promote a priori edification. The result is an experiment that is designed to support a hypothesis by reflection rather than by execution. Thought experimenters retrofit a posteriori tools to do a priori work.

A meta-conception is a further labor-saving device. Instead of actually executing a thought experiment, you imagine someone executing a thought experiment.

The added convenience comes at a price. Meta-conceptions tend to be less informative than thought experiments (except in the special case of meta-conceptions that are also thought experiments). And thought experiments tend to be less informative than executed experiments. A correct theory of thought experiments must reflect this ranking. Skeptics about thought experiments have trouble accounting for the fact that thought experiments are more informative than meta-conceptions. Those who believe that conceivability entails possibility share this problem. Their principle, I shall argue, implies that meta-conceptions are more informative than thought experiments.

Just as some thought experiments are aborted experiments, so some meta-conceptions are aborted thought experiments. Consider Professor Meta Conception who is trying to solve the postcard riddle: Is it possible to cut a hole in a postcard that is big enough for you to step through? The experimental approach is to equip oneself with scissors and postcards and try to produce such a hole. Professor Meta Conception, like most of her colleagues in the physics department, prefers to answer without violence. Some of her colleagues depict cuts on a blackboard. Other physicists visualize the cut lines in an imaginary rectangle. The hypothetical cuts of Professor Meta Conception activate the thought that length and area are not closely related. For instance, many meters of tape fit around a reel. Since Professor Meta Conception is given to mathematical abstraction, she conjectures that there is no limit to the lengths and areas that you can produce. Although she cannot conceive of a cut that would yield a hole big enough to walk through, she can conceive of someone conceiving such a cut. Professor Meta Conception’s meta-conception justifies (to some degree) her affirmative answer to the postcard riddle.

Just as some promoters of experiment deny that thought experiments are evidence, some devotees of thought experiments deny that meta-conceptions are evidence. The devotees of thought experiment scold Professor Meta Conception and urge her to do the hard work of specifying a hypothetical cut that will yield a hole big enough to step through. They compare her free riding to the honest toil embodied in Professor Thut X. Periment’s diagram (Fig. 13.1). Thut’s uncle, X. E. Cutedxperiment, cuts the postcard, and walks through. This vividly corroborates the diagram. But most members of the physics department were so convinced by Thut’s diagram that they denigrate his uncle’s cutout as an educational stunt.
2. DEFINITIONS OF ‘THOUGHT EXPERIMENT’

If all meta-conceptions are thought experiments, then some meta-conceptions are counterexamples to definitions of ‘thought experiment’. Including mine: ‘A thought experiment is an experiment that purports to achieve its aim without the benefit of execution’ (Sorensen 1992: 205). I say the aim of a thought experiment is to answer or raise a question by reflection on the experimental procedure. In a meta-conception there need only be reflection on someone reflecting on a design.

According to John Norton, ‘Thought experiments are arguments which (i) posit hypothetical or counterfactual states of affairs, and (ii) invoke particulars irrelevant to the generality of the conclusion’ (1991: 129). For instance, Albert Einstein argued for the equivalence between uniform acceleration and gravitation with a scenario involving a physicist who awakens in an elevator. The physicist cannot tell whether the elevator is at rest on a planet or is uniformly accelerating in space. The particulars invoked in the scenario are irrelevant in the sense of being eliminable; the thought experiment could be replaced with an abstract argument that never mentions the elevator.

Compare the elevator scenario with the following exercise. Imagine Einstein constructing a hypothetical scenario in which a physicist is charged with the task of determining whether he is in a uniformly accelerating frame or in a corresponding unaccelerated frame in a homogeneous gravitational field. The physicist
Roy Sorensen has all the normal laboratory resources, and yet is stumped (through no fault of his own). We can conceive of Einstein constructing the requisite scenario. Therefore, the equivalence principle is true.

Norton would deny that the Einstein meta-conception is a thought experiment: the particulars invoked by the meta-conception are at the wrong level; they merely support the feasibility of a thought experiment. As the meta-conceiver of Einstein fills in more details, she gets closer to actually performing a thought experiment. But the labor-saving point of the meta-conception would be destroyed if she actually did the thought experiment.

Someone who thinks that thought experiments are arguments might regard this meta-conception as an appeal to hypothetical authority. Normally, one appeals to actual expert opinion. But if one could establish that the expert would believe \( p \), then that is enough to support \( p \). (If I could predict what my accountant would advise, then I would not pay him to actually furnish the advice.) If an expert’s conceiving \( p \) is well correlated with \( p \) being possible, then showing that the expert could conceive \( p \) would be a sign that \( p \) is possible.

This appeal to hypothetical authority works even if the imaginary expert does not believe that his conceiving is correlated with possibility. Meta-conceptions make it clear that we are free to exploit the intuitions of those who have a low opinion of their intuitions. Consider a technician, Ira Robin, who does not believe that experiments provide evidence. (Perhaps Ira Robin has converted to skepticism about science and now goes to the laboratory simply to earn a living.) As long as Ira Robin has applied the appropriate methodology, his experiments provide information that his colleagues could exploit. Our ability to incorporate the results of unbelievers alleviates some anxiety about the circularity of experiments—and thought experiments.

Meta-conceptions do require the conceiving of a conceiver. It is not sufficient to conceive hypothetical behavior. The snowy tree cricket, *oecanthus fultonii*, is a natural thermometer. You can measure the temperature in Fahrenheit by counting the chirps over a thirteen-second period and adding 40. But the cricket is no more a conceiver of the temperature in Fahrenheit than a mercury thermometer is. Behavior carries modal information. But meta-conceptions are restricted to the imagination channel.

Let me release an earlier remark from its parentheses: Some meta-conceptions are thought experiments. For instance, thought experiments about thought experiments are meta-conceptions. Thomas Kuhn (1977: 255) imagines thought experimenters in a world in which objects move at uniform speed. He says that Galileo’s thought experiments would then be too far out to refute Aristotle’s definition of motion. Alasdair MacIntyre (1981: 2) argues that thought experiments can be blindsided by historical reversals. He asks what would happen if science were wiped out and then ‘revived’ on the basis of a miscellany of fragments. Thought experimenters would not be able to detect that there was anything awry. Skeptics enjoy debunking thought experiments with
second-order thought experiments. Even if these skeptical meta-conceptions are self-defeating (Sidelle 2002: 311), they are genuine thought experiments.

3. THE LOGIC OF META-CONCEPTIONS

Those who wish to develop the epistemology of meta-conceptions will recycle the credentials offered for thought experiments. Certification efforts for thought experiments date back to the eighteenth century. David Hume appeals to the principle that conceivability implies possibility (and vice versa):

'Tis an establish’d maxim in metaphysics, That whatever the mind clearly conceives includes the idea of possible existence, or in other words, that nothing we imagine is absolutely impossible. We can form the idea of a golden mountain, and from thence conclude that such a mountain may actually exist, We can form no idea of a mountain without a valley, and therefore regard it as impossible. (1978 [1739–40]: 32)

Hume’s justification of thought experiments has the side effect of also justifying meta-conceptions. For the entailment thesis ‘Conceivability entails possibility’ implies the meta-entailment thesis ‘Conceivability of conceivability implies possibility’.

Here is a short proof. Assume the entailment thesis (‘Conceivability entails possibility’). If it is conceivable that it is conceivable $p$, then two applications of the entailment thesis entitle us to infer that it is possibly possible that $p$. In other words, if $CCp$, then $♦♦p$. The reduction principle, ‘What is possibly possible is possible’, is derivable from the characteristic formula of the modal system S4: $□□p$ iff $□p$. So, given the entailment thesis, the conceivability of the conceivability of $p$ implies the possibility of $p$. In other words, if $CCp$, then $♦p$. Since the popular modal system S5 incorporates the theorems of S4, most philosophers will grant that the entailment implies the meta-entailment.

Hume also defends the converse of the entailment thesis: possibility implies conceivability. So he is further committed to the meta-converse: whatever is possible is conceivably conceivable.

Since the above reasoning is recursive, Hume is further committed to iterating the conceivability operator without limit:

1. If $C^n p$, then $♦p$.
2. If $♦p$, then $C^n p$.

Principle 1 seems mistaken, because meta-conceiving demands less specificity than conceiving. (A precise outline of a precise outline need not be a precise outline.) Principle 2 seems mistaken, because conceivers are limited beings. I can conceive of an equilateral pyramid. And I can conceive of conceiving it. But I can’t conceive of it a hundredfold. Indeed, I just conceived the opposite: namely, my inability to conceive an equilateral pyramid.
How did I do it? It would have been self-defeating to conceive the opposite by parsing a sentence containing 100 conception operators. Instead, I merely conceived of myself realistically, as a man without superhuman abilities. I can conceive a proposition by conceiving a proposition that implies it. Suppose a linguist gives you a disjunction that is too complicated for you to parse. The first disjunct of this complicated disjunction is ‘Newborns lack kneecaps’. You can conceive of babies without kneecaps (because actual newborns lack kneecaps). So you can conceive the truth of the disjunction.

Meta-conceptions do demand greater conceptual maturity than thought experiments. A child who lacked the concept of conception could still do thought experiments (just as a child who lacks the concept of digestion can still digest). However, this child could not execute a meta-conception, because he must conceive of someone conceiving something.

4. WHY META-CONCEIVING DOES NOT COLLAPSE INTO CONCEIVING

There is an analogy between chains of perception and chains of conception; both are broken by interposing agents. David Sanford illustrates the principle in ‘Some Puzzles about Prosthetic Perception’ (unpublished, 2004). Imagine that Chris has amazing powers of imitation. She imitates sounds with the same fidelity as a mechanical hearing aid. Do you hear a distant lecturer by virtue of Chris whispering the lecture into your ear? Chris is as reliable as a mechanical hearing aid. So you gain as much knowledge of the lecture as you would through conventional prosthetic perception. However, Sanford denies that you hear by means of the human hearing aid. Sanford’s explanation is that ‘The presence of a mediating perceiver disqualifies the larger system as one of prosthetic perception.’

Perhaps the disqualification is connected with the contrast between testimony and perception. The audience following a live narration of a hockey game does not hear the hockey game; they are being told about it. Is the contrast based on the element of freewill introduced by the agent?

No. Suppose Chris is witnessing the lecture from within a soundproof booth. Chris cannot hear the lecture but can see the lecturer. Now suppose that Chris reads lips. She focuses on the lecturer’s lips and begins to translate, mimicking the lecturer’s voice. Does Chris now hear the lecture? No, she would have to open the door to hear the voice. There is no perceiver in the booth besides Chris. The problem is that there is a mediating perceptual system (vision). Perceiving in one modality cannot be by means of another modality. I cannot hear by seeing. Most perceptual prostheses are compatible with self-reliance because they are not themselves perceptual systems. However, a few do violate the requirement: The blind cannot be made to see by means tactile stimulation of their backs. The spoiler here is the use of another perceptual system (touch).
self-reliance requirement also explains why reliable synesthetes cannot see sounds or hear colors. In the case of synesthetes, information from one perceptual system trespasses into another system.

The self-reliance principle also seems to apply intra-modally. If I feel myself feeling for my wallet (say my left hand is gripping my right wrist), then that higher-order feeling is not a feeling for my wallet.

The popularity of perceptual models provides opportunities for a cognitive extension of the self-reliance requirement. Thomas Reid pictured memory as perception of the past. Inserting a human memory aid into the chain of recollection makes the process look like testimony rather than memory. His insistence on the immediacy of memory would also make him deny an otherwise attractive principle:

R: If you remember that you remembered that \( p \), then you remember that \( p \).

Note that the embedded past tense makes R less trivial than its present tense counterpart. ‘If I remember that I remember that \( p \), then I remember that \( p \)’ is a tautology by virtue of the truth property of memory.

James Robert Brown (1991) ch2, and Kurt Gödel before him, regards concep-
tion as perception of a Platonic realm. Intermediate perceivers would then be intermediate perceivers. So if Brown accepts the self-reliance requirement, he will deny that meta-conceiving \( p \) implies conceiving \( p \).

John Locke believed that introspection is perception of the mind. The ‘mind’s eye’ provides an avenue for the self-reliance requirement to prevent the collapse of meta-conceiving into conceiving.

I deny that conceiving is a species of perception. However, I think that con-
ceiving is analogous to perception, and this analogy helps me to recruit Sanford’s principle for an explanation of why meta-conceiving does not imply conceiving.

5. THE HISTORY OF META-CONCEPTIONS

On close inspection some of Hume’s appeals to conceivability are meta-
conceptions. In *Dialogues Concerning Natural Religion*, Cleanthes generalizes:

Nothing is demonstrable, unless the contrary implies a contradiction. Nothing, that is distinctly conceivable, implies a contradiction. Whatever we conceive as existent, we can also conceive as non-existent. There is no being, therefore, whose non-existence implies a contradiction. Consequently there is no being, whose existence is demonstrable. (Hume 1947: 189)

Hume’s conclusion is a universal generalization, not a particular statement such as ‘Edinburgh exists contingently’. His premise is a sweeping claim about conceivability: ‘Whatever we conceive as existent, we can also conceive as non-existent.’ What is his evidence for the premise? He has not gone through the exercise of conceiving each thing to be non-existent. There are too many things.
Some things are inaccessible to us, but are accessible to others. I cannot conceive of something that is inconceivable to me. That would be contradictory. But I can conceive of you conceiving of something that is inconceivable to me. (I just did it!)

Hume searches for his self and takes his failure to be direct evidence that he has no self. Given his empiricist scruples, Hume cannot construe his failure to find his self to be direct evidence that others lack a self. He simply invites others to introspect and check whether they have a different result.

I cannot directly refer to a person who is yet to be born. I cannot conceive the \textit{de re} proposition corresponding to the \textit{de dicto} proposition ‘The first person born in the twenty-second century is an hermaphrodite’. Direct reference requires causal contact. However, I can conceive of future people having that thought. For they will have the causal connection to ground the demonstrative. They can point to the first person born in the twenty-second century and utter the \textit{de re} statement ‘That baby is an hermaphrodite’. They can \textit{name} the baby. The best we residents of the twenty-first century can do is to predict the name of the baby. (I am assuming a causal theory of names.)

Other individuals are inaccessible to me because they are confined to other possible worlds. In addition to alien individuals, there are uninstantiated kinds. Acquaintance with some kinds is a necessary condition for conceiving them.

David Lewis (1986: 159) can no more conceive of these aliens than anyone else. But he can conceive of others conceiving of them. This meta-conceivability allows him to frame an objection to linguistic ersatzism (the view that possible worlds are sets of sentences).

Anonymity can also arise by strength of numbers. There are \(\beth_0\) sentences of a natural language, but there are \(\beth_1\) real numbers. This higher order of infinity prevents us from directly referring to each number. Each real number is conceivable by an individual, but they are not co-conceivable by that individual.

The project of conceiving what I cannot conceive is self-defeating. But it is feasible to meta-conceive what I cannot conceive.

Premises of Hume’s arguments are frequently generalizations about conceivability: \textit{Any cause can be imagined without its associated effect. Each thing can be pictured as popping into existence without any cause whatsoever. Any history can be envisaged as continuing with a future that does not resemble the past.} These generalizations about conceivability might be supported inductively through laboratory investigation. But Hume seems to be proceeding a priori via deductive arguments. The meta-entailment, ‘Conceivability of conceivability implies possibility’, allows us to reconstruct his arguments so that they can be done from the armchair. As previously demonstrated, the meta-entailment follows the entailment principle, ‘Conceivability entails possibility,’ and the entailment is universally ascribed to Hume.

I agree that it is somewhat anachronistic to recast Hume as trafficking in metaconceptions. I just coined the term! But the anachronism is no more severe than
interpreting Hume as a conductor of thought experiments. The term 'thought experiment' achieved currency after Hume’s death, but thought experiments have been around since at least the pre-Socratics. So have meta-conceptions.

Contemporary proponents of 'Conceivability entails possibility' are more circumspect than Hume. The proof of the meta-entailment will give them pause. After accepting the meta-entailment, they will ask whether you have counterexamples to 'The conceivability of conceivability implies possibility'. You might snap back, 'I can conceive of someone conceiving of a counterexample. That should be sufficient refutation for someone who subscribes to "The conceivability of conceivability implies possibility".'

6. VERTICAL META-CONCEPTIONS

Meta-conceiving counterexamples is easier than conceiving them. For the conceiver must satisfy higher standards of precision than the meta-conceiver. I cannot form a clear idea of a chiliagon because it has 1,000 sides. But I can form a clear idea of a more gifted individual forming a clear idea of a chiliagon.

Derek Parfit is optimistic about what can be accomplished by thought experiment. However, he denies that utility monsters are conceivable (Parfit 1984: 389). He denies we can imagine someone being a million times happier than us. Yet Parfit says that we can imagine there being billions of people who are only marginally better off alive than dead. This asymmetry seems unprincipled. As an intermediate case, consider a man who lives for billions of years and, annually, is only marginally better off alive than dead. Possibly Parfit is correct about us not being able to conceive the utility monster. But our ability to conceive structurally analogous scenarios invites the conjecture that the inconceivability turns on some quirky fault of the human imagination. We can imagine more numerically gifted creatures who could imagine utility monsters. We can meta-conceive utility monsters.

Theologians frequently characterize our intellects as puny. William of Ockham granted that human beings cannot conceive of how freewill could be compatible with God’s foreknowledge. But he thought we could conceive of how a superior being could conceive it. St Augustine proposed a subjective theory of time to solve the problems of creation and foreknowledge. According to this theory, the present corresponds to what one perceives, the past to what one remembers, and the future to what one anticipates. Perceptual span varies with perceivers. Therefore, the duration of the present is relative to the perceiver. Since God has no perceptual limits, he can take in history in a single panoramic glimpse. So for God, there is no past or future. It is all one big Now. Hence God lacks foreknowledge even though he is all-knowing. There is no problem about what God was doing before he created the world because there is no before for God.

Human beings have trouble wrapping their minds around God’s big Now. But they can conceive of thinkers with somewhat wider perceptual spans. These
thinkers can in turn imagine thinkers with yet wider spans. We thus have a chain
of conceivers leading up to the Supreme Conceiver.

Theologians admit that there are difficulties in characterizing God as perceiv-
ing anything. He does not have perceptual organs. God is an immaterial being.
Proponents of negative theology, such as Maimonides and Thomas Aquinas,
think God is so different from his material creation that positive descriptions
of God are just disguised negative remarks. Truly positive truths about God are
inconceivable to us. However, they are conceivable to angels. And since angels are
intermediate between human beings and God, we can conceive of angels conceiv-
ing these truths.

Quantitative meta-conceptions allow us to transcend limits of attention,
memory, and symbol manipulation. Linguists require speakers to be finite, but
do not specify any further limit. This liberalizes linguistics. Syntacticians have
taught me to compose contingent sentences that are too complex for me to
understand. I cannot conceive of how my sentences could be true. But I can
conceive of them being understood by speakers who have more working memory
or swifter parsing.

Linguists generally assume that the speaker is finite. But even beings as lim-
ited as human beings can imagine infinite sentences being understood by super-
thinkers who can perform super-tasks. These beings can solve many problems
in number theory by inspection. For instance, if Goldbach’s Conjecture is true,
then an infinite being can verify its truth by checking an exhaustive list of the
infinitely many potential counterexamples. I cannot conceive of this infinitely
long proof, but I can conceive of the infinite being conceiving it. Upward meta-
conceptions let us transcend our ‘puny minds’.

Downward meta-conceptions allow us to shed some of the ill effects of our
superiority. Mothers protect and comfort their children by seeing through the
eyes of their children. Mom may be unable to conceive how a toddler could be
sucked down the bathtub drain, but she can conceive of a toddler conceiving this
catastrophe.

Some Christian theology involves downward meta-conceptions. How can God
conceive pain? To understand pain, one must experience it firsthand. Further-
more, pain is always suffered contrary to your will. Since God is all-powerful, he
cannot suffer pain, and so cannot understand a key feature of the human condi-
tion. One Christian response is to say that God solved this problem by imagining
being a suffering man. Although God could not conceive pain, he could meta-
conceive it. Indeed, Christians say that God actually feels pain by becoming
carnated as Jesus Christ.

7. CONCEPT EMPIRICISM

Qualitative meta-conceptions let the conceptually handicapped indirectly access
possibilities that only healthy people can conceive. Those who cannot taste
phenylthiocarbamide cannot conceive its bitter taste but can conceive others conceiving its bitter taste.

According to concept empiricism, the concept of $F$ can be acquired only through the experience of $F$. This doctrine imposes severe limits on what can be conceived. For I can conceive of $x$ being $F$ only if I have the concept $F$. One objection to concept empiricism is that blind people have a fluent color vocabulary. They learn how to use color words grammatically and can even pass on color information. (A blind man will inform the luggage attendant that his bag is green with a red handle.) The concept empiricist can reply by characterizing the blind man as meta-conceiving color rather than conceiving colors.

The most famous objection to concept empiricism is Hume's missing shade of blue. Suppose that someone has experienced many shades of blue except for an intermediate shade. He can interpolate the shade. Hume breezily dismisses this counterexample as a singular case. Mystified Hume scholars object that one counterexample is enough to refute a generalization. Furthermore, the case is far from singular. We interpolate gaps in tone sequences, tactile experiences, tastes, and smells.

The concept empiricist might reply by characterizing interpolation as meta-conceiving. You cannot conceive the missing shade of blue. You are actually conceiving a more experienced person conceiving that shade. Your experiences with the neighboring shades give you sufficient basis to conceive of someone else conceiving the shade. This gives you an advantage over a color-blind man who is insensitive to blue. He cannot even conceive of someone conceiving that specific shade.

Normal people are trichromats who are sensitive to three basic hues. A small percentage of women are tetrachromats. They can see shades that no man can discern. The concept empiricist will say that no man conceives these shades. But men conceive women who can conceive.

No man or woman can conceive of a fourth spatial dimension in which a left shoe can be turned into a right shoe. However, Edwin A. Abbott has led millions of readers to conceive of creatures who can conceive of the fourth dimension. The first step of his method is to have us to conceive of conceptually impoverished beings. (As Heraclitus said ‘The way up is the way down.’) In *Flatland* Abbott describes two-dimensional beings. They cannot conceive of the third dimension. Through mathematical adventures, these creatures come to conceive of beings that can conceive of the third dimension. After this downward meta-conceptioning, Abbott’s three-dimensional readers are now poised to participate in mathematical adventures of their own, ones that allow them to envisage four-dimensional beings who can conceive of turning a left shoe into a right shoe by flipping it through the fourth dimension.

One may have doubts about the completeness of these exercises. Robert Heinlan’s ‘He Built a Crooked House’ provides a stimulating inkling of the
properties of a four-dimensional hypercube. But part of the allure of story lies in residual mystery.

Salvador Dali’s ‘Christus Hypercubus’ depicts Christ being crucified on a tesseract (an unraveled hypercube). The religious interest of the painting peaks for those with partial understanding of tesseracts. If you were completely at home with tesseracts, the mystical aspect of the composition would be compromised.

Perceivers form chains that allow indirect perception of imperceptibles. I cannot see that a ship is approaching, but I can see that the lookout sees that a ship is approaching. In this sense, I can ‘see’ what is invisible to me. Through similar indirection, I can ‘conceive’ what is inconceivable to me.

8. THE APPEAL TO FUTURE THINKERS

The electric organs of weakly electric fish were an anomaly for Charles Darwin’s theory of evolution. The organs of strongly electric fish could be explained as an adaptation for hunting or defense. Feeble currents produced by other fishes seemed useless.

The electric organs of fishes offer [a] case of special difficulty; for it is impossible to conceive by what steps these wondrous organs have been produced. But this is not surprising, for we do not even know of what use they are put. (Darwin 1897: 234)

Darwin can conceive of future biologists conceiving a function for weakly electric organs. Thus Darwin thinks it is possible that there is a function for the organs. He thinks that the scientific imagination will be expanded by greater knowledge of the habits and structure of weakly electric fish and their progenitors. Thus he optimistically concludes, ‘serviceable transitions are possible by which these organs might have been gradually developed’ (1897: 235).

Darwin was vindicated by the conjecture that the fish perceive their surroundings by means of disturbances to the electric field that they generate (Keeley 1999). Adaptationists tout many other success stories. New phenomena have expanded our conceptual scheme. We can predict further expansions that will enable future thinkers to conceive of functions for traits that currently seem pointless.

Darwin also faced conflicts with physics. The evolutionary interpretation of the fossil record implied that the Earth was at least several hundred millions of years old, perhaps billions of years old. William Thomson, later elevated to Lord Kelvin, used thermodynamic premises to calculate the Earth as between 20 million and 400 million years old (with just under 100 million being the most probable). Darwin was far more alarmed by Lord Kelvin than by the weakly electric fish. He could not conceive of any physical mechanism by which the sun could shine for the period demanded by his theory.
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As with the weakly electric fish, Darwin could conceive of future physicists conceiving of such a mechanism. This appeal to meta-conceivability was not as persuasive, because physics, in the nineteenth century, appeared on the verge of becoming a completed science. Kelvin’s estimate had also been corroborated by several separate lines of investigation. Despite this consilience, Darwin refused to infer the impossibility of the sun shining for billions of years from its inconceivability.

Darwin was once again vindicated, this time by the discovery of radioactivity. This undreamt-of phenomenon made it conceivable for the sun to shine for billions of years.

Appeals to meta-conceivability vary enormously in their plausibility. Parapsychologists react to conflicts with the laws of physics by appealing to the widening mental horizon of future physicists. We are less impressed by this appeal to meta-conceivability, because a record of fraud and wishful thinking dogs parapsychology.

Appeals to meta-conceivability are salient along the speculative frontier of knowledge. For instance, Rudolf Carnap (1950) noted that the sorites paradox depends on vague predicates. He believed that science was gradually replacing vague predicates with precise predicates. Carnap extrapolated: at the end of the process, language will be precise, so the sorites paradox cannot be formulated. Thus Carnap believed that waiting for the language to change would passively resolve the sorites paradox.

One objection to Carnap’s strategy is that ‘precise’ is a vague term (since it is the complement of ‘vague’, which is itself vague). Hence Carnap has not conceived of a language (rich enough to express all important truths) that really is free of the sorites. Carnap could concede that he cannot imagine this future precise language. He could simply insist that he can imagine others imagining it. These future thinkers will have the language needed to frame the possibility.

Most meta-conceiving is of possibilities. But we also meta-conceive impossibilities. Eratosthenes suspected that it was impossible to double the cube. But, like the other mathematicians of ancient Greece, he could not conceive an impossibility proof. He could conceive of future mathematicians grasping the impossibility. Practices of proof construction improved piecemeal until the result was finally achieved in the nineteenth century.

Thomas Nagel (1998) defers to future philosophers who have a richer conceptual scheme. Nagel can conceive of the impossibility of the number 379 having parents. But he cannot conceive of the impossibility of zombies (physical duplicates of healthy, active human beings who have no mental states). When Nagel imagines his doorman from a third-person perspective, he feels free not to attribute qualitative conscious states. This is evidence that consciousness is a contingent feature of active human beings. But Nagel dismisses this evidence as misleading. Neuroscience suggests that consciousness supervenes on the brain.
Given this supervenience principle, it is impossible for the brain state to exist without consciousness. So Nagel thinks that there is a necessary truth about consciousness (akin to 'Salt is sodium chloride') that we have trouble grasping. Although Nagel cannot conceive the necessity, he can conceive of future philosophers conceiving it.

Illusions of contingency are caused by incomplete conceptual development. Failure of one’s conceptual scheme to preclude a hypothesis is apt to be confused as proof that the hypothesis represents an objective possibility. A conceptual scheme is like a logical system. As one increases the stock of predicates, more propositions become theorems. These propositions narrow the range of possibilities. Thus we should predict that with each supplement to our conceptual scheme, more will be revealed to be necessary. The only way for a conceptual advance to introduce new possibilities is by exposing fallacious impossibility proofs or by giving us the vocabulary to express hypotheses that were previously ineffable.

The next step up from a future meta-conception is an extra-terrestrial meta-conception. The 'transcendental naturalist' Colin McGinn (1993) argues that human beings cannot conceive of how the brain could give rise to consciousness. But instead of inferring impossibility, he conceives of hypothetical Martians who can conceive of the mind–body relation as easily as we conceive the object–shadow relation.

9. CONCEIVING IDEAL CONCEIVABILITY

Since the meta-entailment (CC_p → ♦p) is less plausible than the entailment (C_p → ♦p), we must either raise our opinion of the meta-entailment or lower our opinion of the entailment thesis. The downward revision seems more natural. In addition, there appear to be fresh opportunities to find counterexamples.

A temperate defender of the entailment thesis will concede that there is a sense of ‘conceive’ in which meta-conceiving is easier than conceiving. For instance, David Chalmers (2002) distinguishes between prima facie conceivability (where one relies on first appearances) and ideal conceivability (which is based on ideal rational reflection). Ordinary human imagination is fallible and limited. So it provides only a prima facie case for a proposition being possible or impossible. The strengths of that prima facie case vary with the imaginative task at hand. Psychologists might specify the conditions under which strengths or weaknesses should be expected. Since the appearance of an appearance is weaker evidence than an appearance, we should expect that meta-conceiving is easier than conceiving. Chalmers would agree that this would be a reason for concluding that the entailment thesis is false (when read in terms of prima facie conceivability).
Chalmers defends the entailment thesis only when construed in terms of ideal conceivability. Perhaps Hume also had this restriction in mind. Some Hume scholars interpret his ethics as an ideal observer theory. As Hume’s friend Adam Smith emphasized in *The Theory of the Moral Sentiments*, the morally perplexed try to take the perspective of a judge who is well informed, rational, impartial, etc. Just as children learn to do what is right by predicting what their parents would advise, so an adult can guide his own behavior by predicting the advice of an impartial spectator.

If the ideal observer is *stipulated* to be correct, then the theory offers no guidance; one must already know what is correct to know the opinion of the ideal observer. Possibility is trivially implied by any propositional attitude that is idealized in this heavy-handed fashion.

Those with a lighter hand will draw an analogy with color. An object is red in virtue of the fact that standard observers judge it to be red. This analysis is not circular, because one can ascertain whether something is judged red independently of judging whether it is red. Similarly, one can judge whether an ideal observer can conceive of \( p \) without judging whether \( p \) is possible.

If Hume is right, ‘possible’ and ‘conceivable’ are co-intensional, even though they are not synonyms. They are like ‘equilateral’ and ‘equiangular’. A triangle can be judged to be equilateral without judging that it is equiangular. Once you learn that ‘equilateral’ and ‘equiangular’ are co-intensional, you infer equilaterality from equiangularity, and vice versa. Similarly, news that ‘possible’ and ‘conceivable’ are co-intensional would allow us to jump from one to the other. The leap is impressively long between ‘conceivable’ and ‘possible’, because ‘conceivable’ is in the domain of psychology, while ‘possible’ is in the domain of metaphysics.

Ideal observer theories do not imply that ideal observers are actual. However, they do imply that ideal observers are possible. So those who base their atheism on the *impossibility* of omniscience may still have ontological reservations about the ideal observer theory. Maximal agents raise worries about impossibility results. A second concern is alienation. As the powers of the ideal observer grow, so he becomes increasingly unlike us. This undermines the analogy that makes the ideal observer knowable to us.

One compromise is to replace the ideal observer with an infinite progression of imperfect observers. Each is closer to perfection than his predecessor. None is perfect. If this sequence of hypothetical observers is denumerable, we can be democratic: \( p \) is ideally conceivable iff the majority of those in the sequence conceive \( p \).

I am not sure whether the progression is an improvement over the traditional appeal to ideal observers. Either way, we should note that ‘ideal conceivability’ is a misnomer. If any human being ideally conceives \( p \), then he is actually meta-conceiving \( p \). He is conceiving of (specially credentialed) agents conceiving \( p \).
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He is drawing a conclusion from what he can conceive them conceiving, not from what he can conceive. The inference may be good or bad. But it is more likely to be good if he has clear understanding of how he is reasoning—via meta-conception rather than conception.

REFERENCES

Queries in Chapter 13

Q1. We have changed ‘(ii)’ to ‘(i)’. Please confirm.