Quinean Scepticism about Modality

Christopher J. Masterman
c.j.masterman@ifikk.uio.no

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1.1 Referential Opacity

To understand Quine's arguments we need to understand *referential opacity*.

Quine makes extended use of the following principle (Quine, 1953 [1980]).

Substitutivity of Identicals: *Given a true statement of identity, one of its two terms may be substituted for the other in any true statement and the result will be true.*

- This principle is closely related to the principle (I2) which we have used throughout in axiomatizing quantified modal logic with identity.
- It is compelling: if a and b are identical, then they are really one and the same thing. Thus, we should also take them to be *indiscernible*.

Quine notes that there are many cases in which this principle fails. For instance:

(1) Quotation The principle seems to fail for quoted expressions.[1]

(a) Cicero = Tully
(b) 'Cicero' contains six letters.
(c) 'Tully' contains six letters (False!)

[1] As Quine notes (p. 140), we can resolve (1) straightforwardly:

- "Cicero" names 'Cicero'
- 'Cicero' names Cicero

So (a) and (b) do not imply (c) by the substitutivity of identicals, since 'Cicero' = 'Tully' is patently false.

(2) Nominal Predication The principle fails with predicates related to names.

(a) Georgione = Barbarelli (True!)
(b) Giorgione was so-called because of his size (True!)
(c) Barbarelli was so-called because of his size (False!)

A name is purely referential if the principle of Substitutivity of Identicals holds:

> Failure of substitutivity reveals merely that the occurrence to be supplanted is not *purely referential*, that is, that the statement depends not only on the object but on the form of the name. (p. 140)

Referential Opacity: *A name may occur referentially in a statement S and yet not occur referentially in a longer statement which is formed by embedding S in a context. In which case that context is referentially opaque.*[2]

[2] What is a context? We'll focus on operators. For instance, if $L\phi$, we say that ϕ is in *the context* of the modal operator L.

Various epistemic states correspond to opaque contexts. For instance:

(3) Belief: Let S : George Orwell wrote *Animal Farm*. It is true that:

(a) Mary believes that George Orwell wrote *Animal Farm*.

The substitutivity of identicals fails for 'George Orwell' in this context because, though George Orwell is Eric Blair, it's false that:

(b) Mary believes that Eric Blair wrote *Animal Farm*.

Also: 'unaware that...', 'knows that...', 'thinks that...' etc.

1.2 Strict Modality

To understand Quine, we need to understand what he means by modality.

Quine is primarily interested in the notion of *strict modality*.

Strict Modality: Strict modality is defined in terms of analyticity as follows.

(a) A statement of the form $L\alpha$ is true iff α is analytic.

(b) A statement of the form $M\alpha$ is false iff $\sim\alpha$ is analytic. (p. 145)

Note that strict necessity is just analyticity. It is not equivalent to the post-Kripke understanding of metaphysical necessity we've gotten used to in this course.[3]

[3] e.g., theoretical identifications are necessary and not analytic. Likewise:
- Necessarily, Christopher is human
- Necessarily, 2 exists.

2. Quine's Critique of Quantified Modal Logic

Quine gave several arguments against the intelligibility of quantified modal logic throughout his life. Here, we'll focus on two in (Quine, 1953 [1980]).

Argument One: The Argument from Referential Opacity (ARO)

(i) Modal contexts are referentially opaque.

(ii) Quantification into referentially opaque contexts is unintelligible.

(iii) If QML is intelligible, quantification into modal contexts is intelligible.

(iv) Therefore: QML is unintelligible.

Let's unpack these premises. First, (iii) is obvious.

Quantifying into a Context: We quantify into a context if a quantifier binds a variable which would otherwise occur free in that context, e.g., $\forall xLFx$.

An essential part of quantified modal logic consists of expressions like $\forall xLFx$. If this quantification is unintelligible, then quantified modal logic is unintelligible.

For (i), Quine argues that just like (1)–(3), modal contexts are referentially opaque.

(4) Modality: Let S: 8 is greater than 7. It is true that:

(a) Necessarily, 8 is greater than 7

The substitutivity of identicals fails for '8' in this context:

(b) The number of planets is identical to 8. (True!)

(c) Necessarily the number of planets is greater than 7. (False!)

What about (ii)? Recall that with referentially opaque contexts, the truth of the statement in part depended on the form or the nature of the name.

The thought is that this dependence (in part) on the nature of the name makes quantification into opaque contexts unintelligible. Simple examples will help:

(G) Georgione is so-called because of his size. (Opaque Context)

(G′) $\exists x$(x is so-called because of his size). (Quantification *into* Opaque Context)

(G′) is not simply false, it is meaningless. The use of 'so-called' is anaphoric.

(Q) 'Cicero' has six letters. (Opaque Context)

(Q′) $\exists x$('x' has six letters). (Quantification *into* Opaque Context)

Again, (Q′) is not simply false, it is meaningless. Why? The 'Cicero' in "Cicero" is not semantically significant. (Q′) is simply ungrammatical. Compare:

(C) The cat is sat on the mat. (Simple Sentence)

(C′) $\exists x$($x$he ca$x$ is sa$x$ on $x$he ma$x$). (Quantifying over all instances of *t*)

Now, in each of the cases (G), (Q), and (C) we have an explanation for why the resulting quantification is meaningless—(G′) ignored the anaphora, (Q′) and (C′) were ungrammatical. What's the explanation for modal contexts? Take

(M) Necessarily, 8 is greater than 7

(M′) $\exists x$(Necessarily, x is greater than 7)

Quine thinks that (M′) is just as problematic:

> What is this number which, according to [(M′)], is necessarily greater than 7? According to [(M)] from which [(M′)] was inferred, it was [8], that is, the number of planets; but to suppose this would conflict with the fact that [*Necessarily, the number of planets is greater than 7*] is false. In a word, to be necessarily greater than 7 is not a trait of a number, but depends on the manner of referring to the number ... being necessarily or possibly thus and so is in general not a treat of the object concerned, but depends on the manner of referring to the object. (p. 148)

Here's a second argument against quantifying into modal contexts.[4]

Argument Two The Argument from Modal Open-Sentences

(i) QML is intelligible, if modal open-sentences are intelligible.

(ii) Modal open-sentences are unintelligible.

(iii) Therefore, QML is unintelligible.

Here's how we justify (i):

(a) Generally, if we are to give a semantics for a language, we need to give a semantics of more complex expressions in terms of their simpler constituents.

(b) If quantifying into modal contexts is intelligible, i.e., $\forall x LFx$, then modal open-formulae must be intelligible, i.e., LFx.

Quine, however, doesn't think that modal open-sentences, i.e., $L(x > 7)$ are:

> *Necessary* greaterness than 7 makes no sense as applied to a *number* x; necessity attaches only to the connection betwen '$x > 7$' and the particular method...of specifying x. (149)

Here's the rough idea:

- To understand what is involved in an object satisfying $L(x > 7)$, we need to understand what is involved in an object necessarily satisfying $x > 7$.
- Of course, x is a variable, so we can assign it a value, i.e., an object. When thus interpreted, to understand $L(x > y)$, we need to understand how a particular object necessarily satisfies the open-sentence $x > 7$.
- Quine doesn't think that it is intelligible to say that a particular *object* necessarily satisfies $x > 7$. We cannot say that, for instance, 8 analytically satisfies $x > 7$. All we can do is say that $x > 7$ is analytically true when we have described x in some way, e.g., 'the number resulting from adding 1 to 7'.

3. Responses

Let's look at some ways one might respond to Quine.

3. 1 The Argument from Referential Opacity (ARO)

The **first response** is to resist Quine's argument that modal contexts are referentially opaque, i.e., reject (i) in ARO.

The core idea is to note that 'the number of planets' is a definite description and not a singular term. That is, we do not formalise (4b) as $n = 8$, but rather as:[5]

$$\ulcorner\text{The number of planets is 8}\urcorner = \ulcorner\exists x(Px \wedge \forall z(Pz \supset z = x) \wedge x = 8)\urcorner \qquad (4b')$$

Formalising (4b) as (4b′) has two important consequences for Quine's argument.

[4] For discussion of this argument, see Hale, Bob, 'The Problem of De Re Modality', in Mircea Dumitru (ed.), *Metaphysics, Meaning, and Modality: Themes from Kit Fine*.

[5] First noted in Arthur Francis Smullyan. 'Modality and Description'. *The Journal of Symbolic Logic*, 13(1):31–37, 1948

(1) Quine doesn't properly establish that modal contexts are referentially opaque because he *doesn't properly apply* the principle of substitutivity of identicals.

   – It is not $n = 8$, it is $\exists x(Px \wedge \forall z(Pz \supset z = x) \wedge x = 8)$

(2) Quine cannot straightforwardly claim that 'Necessarily, the number of planets is greater than 7' is false. That is, (4c) is ambiguous:

   (4c*) Necessarily, the number of planets (whatever it is) is greater than 7.
   Formalised as: $L\exists x(Px \wedge \forall z(Pz \supset z = x) \wedge x > 7)$. (False!)

   (4c**) Necessarily, the number of planets (that is, 8) is greater than 7.
   Formalised as: $\exists x(Px \wedge \forall z(Pz \supset z = x) \wedge Lx > 7)$. (True!)

   Importantly, Quine reads (4c) as (4c*). This is why he takes (4c) to be false. However, (4c*), with or without the substitutivity principle, does not follow from (4a)–(4b). (4c**) *does* follow without the substitutivity principle.

3.2 Argument from Modal Open-Sentences

Denying that modal contexts are referentially opaque does not allow for a response to the second argument. In fact, if Quine is right with the second argument, then we can't respond to the first argument like this—look at the last conjunct of (4c**)![6]

An important thing to bear in mind is that Quine is concerned with strict necessity and possibility which is defined in terms of analyticity.

- Quine is particularly arguing against his contemporaries Lewis and Carnap.[7]
- Modern quantified modal logic, post-Kripke and Barcan-Marcus is concerned with metaphysical necessity which is not taken to be equivalent to analyticity.

Quine does tentatively formulate the idea that we should understand such expressions in quantified modal logic as metaphysical truths of the objects, not analytic truths about meaning.

> The only hope lies in ... insisting ... that the object x in question is necessarily greater than 7. This means adopting an invidious attitude toward certain ways of uniquely specifying x ... and favouring other ways ... as somehow better revealing the "essence" of the object. (p. 155)

For Quine, this is too much. It is a 'reversion to Aristotelian essentialism'—the idea that objects have essences independently of how they are described.

- Of course, for Quine's opponents, e.g., Carnap and Lewis, who aimed to put modal logic on a firm footing with analyticity, this is also devastating.
- How far modern logicians should worry about this consequence is open.
- It's an interesting question whether this idea of real essences of things is incompatible with a naturalistic metaphysics. Quine seemed to think so.[8]

[6] Also, the above response to AOR does not dispense with worries about free-variables in modal contexts!

[7] See C.H. Langford and C.I. Lewis, *Symbolic Logic* (1959) and Rudolph Carnap *Meaning and Necessity* (1947)

[8] For contrast, see Williamson, Tim (2016). Modal science. *Canadian Journal of Philosophy* 46 (4-5):453-492.