

## Necessity and Knowledge: A Response to Saul Kripke

In his book, *Naming and Necessity*, the American philosopher Saul Kripke argues, among other things, that the traditional belief that a priori knowledge must be knowledge of necessary truths and a posteriori knowledge must be knowledge of contingent truths is false. He contends that there can be both necessary truths known a posteriori and contingent truths known a priori. This paper, however, will show that though Kripke has proved that some necessary truths can be known a posteriori as well as a priori, his arguments for the contingent a priori and the necessary a posteriori (in the sense of necessary truths that can only be known a posteriori) are flawed. Therefore, we have good reason to accept a picture similar to the traditional one in which contingent truths can only be known a posteriori and necessary truths must be knowable a priori though we must revise the traditional account to allow that some necessary truths can be known a posteriori as well.

Kripke notes correctly that "a priori" and "a posteriori" are epistemological concepts while "necessity" and "contingency" are metaphysical concepts. The question of whether a truth is a priori or a posteriori is a question of epistemology and amounts to the question of whether something can be known to be true through reason alone or whether it can be known only through experience. On the other hand, the question of whether a truth is necessary or contingent amounts to the question of whether it could be false--that is, whether there could be a state of affairs in which it was not true (Kripke 1981, 34-6). He is also correct that since a prioricity and a posterioricity are not synonymous with necessity and contingency respectively, it is not trivially true that these concepts are coextensive and therefore that an argument is needed if it is to be shown that they are in fact coextensive (Kripke 1981, 38).

Kripke himself provides such an argument though he ultimately rejects it. He says that a

reason it has been believed that necessity and a priority are coextensive is that for something to be known a priori it must be necessary because if it were contingent, that is true in only some possible worlds, then it could not be known a priori whether it were true of the actual world or whether the actual world were one of the possible worlds in which it were not true (Kripke 1981, 38-9). Thus, for example, we know a priori that a triangle has three sides, and we know that this is a necessary truth because if it were possible for there to be a triangle with more or less than three sides we could not know a priori whether our possible world was one of those in which triangles could have some other number, let us say four, of sides. If it were contingent whether triangles had three or four sides, the only way we could know whether triangles had three or four sides in our world would be through a posteriori knowledge, that is by going out and counting the sides of the triangles. Therefore, a priori knowledge is only knowledge of necessary truths, and, conversely, contingent truths can only be known a posteriori.

This line of argument also shows that it cannot be shown a posteriori that a truth is necessary rather than contingent because it is impossible merely through experience of the actual world to draw conclusions about what is or is not possible in other possible worlds. For instance, we know a posteriori that there are eight planets in our solar system. Perhaps this is necessary; perhaps there is some reason that the number of planets in our solar system is eight in every possible world, but we could not know this a posteriori because we have no experience--no a posteriori knowledge--of other possible worlds. The only way we can know whether something is necessarily true is through a priori reasoning because that is the only way we can know anything about other possible worlds. If this is a good argument, there can be no such things as contingent truths known a priori or necessary truths known a posteriori.

These arguments may be flawed as Kripke believes. It may be the case that there are in

fact contingent a priori truths and necessary a posteriori truths, but this would have to be demonstrated. Either it would have to be shown that the argument I have given for the connection between a priori knowledge and necessary truths and a posteriori knowledge and contingent truths is wrong in some way, or counter examples would have to be adduced. Kripke devoted a considerable portion of his book to the latter task, but I believe it can be shown that his counter examples do not in fact establish the existence of the necessary a posteriori or the contingent a priori with the exception of those necessary truths that we can come to know both a priori and a posteriori. If this is the case, then it would seem we have good reason to believe the traditional view.

One way that Kripke attempts to show that the a priori and the necessary do not always go together is to argue that some necessary truths can be known either a priori or a posteriori. He gives the example of a computer calculating whether a given number is prime, and contends that we can know that the number is prime or not prime a posteriori by learning it from the computer without any a priori reasoning (Kripke 1981, 35). This seems true--I can have justified true belief that a number is prime without doing the math to establish this because I can have a justified belief that the computer (or other human for that matter) knows whether the number is prime and will tell me the right answer. Of course, the problem with this is that the computer had to engage in a priori reasoning to calculate whether the number was or was not prime in the first place--it had to do the math. Thus, this example is not one of a necessary truth being known independent of a priori reasoning. Examples of necessary truths being known independent of a priori reasoning do exist however; for instance, it would be possible to determine that a given triangle had three sides a priori because all triangles have three sides by definition or a posteriori by actually examining the triangle and counting the sides. As Kripke notes, however, this is entirely

consistent with the coextensivity of the necessary and the a priori since it does not contradict the claim that all necessary truths can be known a priori (Kripke 1981, 159). Thus, this shows that the contingent and the a posteriori are not coextensive because certain necessary truths can be known a posteriori, but it leaves the traditional view mostly intact in that it does not show that the necessary and the a priori are not coextensive or show that all contingent truths are not known a posteriori.

Kripke goes further, however; he attempts to show that there are necessary truths that can only be known a posteriori. His argument here relies on his view of names and his analysis of identity statements. According to Kripke, because names are rigid designators--that is terms that pick out the same thing across all possible worlds, when two names have the same referent it is necessary that their referents are identical. This is because in no possible world could the thing picked out by one name be something other than the thing picked out by the other. However, though this is necessary, it cannot be known a priori because we cannot know without empirical investigation whether two names in fact have the same referent. The main example he uses is the planet Venus. When seen in the evening the planet Venus has been given the name "Hesperus," and when seen in the morning it has been given the name "Phosphorus." It is a necessary truth that Hesperus is Phosphorus because if we take Hesperus and Phosphorus to be rigid designators, then in all possible worlds where the planet Venus exists both Hesperus and Phosphorus denote the planet Venus. It is not, however, knowable a priori that Hesperus is Phosphorus because we can only know through experience that the heavenly body we call "Phosphorus" is the same heavenly body that we call "Hesperus." Thus we have an example of a necessary truth that is only knowable a posteriori (Kripke 1981, 100-5).

Of course, accepting this example of the necessary a priori depends on accepting Kripke's

theory of naming. A description theorist could define the problem away by saying that "Hesperus" means, "the planet we see in the evening" and "Phosphorus" means, "the planet we see in the morning." It then would not be necessary that Hesperus is Phosphorus because these descriptions could in another possible world apply to different planets. It is only if "Hesperus" and "Phosphorus" are rigid designators that it becomes necessary that they designate the same thing across all possible worlds and, therefore, that they are identical. But if we follow Kripke in rejecting the description theory, this example loses much of its intuitive force. If "Hesperus" means "the planet Venus" not "the planet we see in the evening" and "Phosphorus" means "the planet Venus" not "the planet we see in the morning," then "Hesperus is Phosphorus" tells us only that the planet Venus is self identical--a necessary a priori truth, which is exceedingly uninteresting--and tells us nothing about whether the planet we see in the evening is the same planet we see in the morning--a much more interesting truth, which is contingent and only knowable a posteriori.

When we are told that "Hesperus is Phosphorus" we believe that we have been told something nontrivial, and so we have--we have been told that the name "Hesperus" designates the same thing as the name "Phosphorus," that is we have been told the meanings of the words "Hesperus" and "Phosphorus." This is, of course, a posteriori because we cannot know the meaning of words a priori--we must learn them from others, but it is also contingent because the words "Hesperus" and "Phosphorus" might have had other meanings. We also think that "Hesperus is Phosphorus" expresses a necessary truth, which it does. Both these terms designate the same thing and it is of course necessary that this thing is identical to itself, but this can be known a priori. Thus, in so far as "Hesperus is Phosphorus" is knowable a posteriori, it is not necessary, and in so far as it is necessary it is knowable a priori. In holding that it is both

necessary and only knowable a priori that Hesperus is Phosphorus, Kripke equivocates between this sentence's two meanings:

1) that "Hesperus" and "Phosphorus" are rigid designators denoting the same thing, which is a contingent a posteriori truth, and

2) that the thing denoted by both "Hesperus" and "Phosphorus" is self identical, which is a necessary a priori truth.

An example will make this clear. Let us imagine a man; we will call him "Smith," who is told that the German word for "cheese" is "Käse." Smith has just learned something a posteriori-- he has learned the meaning of the word "Käse," and he has learned that it designates what he calls "cheese." Is this a necessary truth? Clearly not, the word "Käse" could just as easily have meant something else, so what he has learned is a contingent truth. Now that Smith knows the meaning of the word Käse, is he expressing a necessary a posteriori truth when he says, "cheese is Käse"? No, because once he knows the meaning of the two words, he knows that "cheese is Käse," is true a priori since the words have the same meaning--that is the words "cheese" and "Käse" designate the same substance, and that substance is necessarily self identical, so "cheese is Käse" means "P = P."

It might be objected that I am missing the point. The purpose of the Hesperus is Phosphorus example, a defender of Kripke might say, is to show that one can understand the meaning of two terms and yet not know that they are identical. One can know that Hesperus is a certain heavenly body seen in the evening and Phosphorus is a certain heavenly body seen in the morning and yet not know that Hesperus is Phosphorus. I think the cheese is Käse example shows the fallacy in this objection. Let us say that before he is told that cheese is Käse Smith believed that "cheese" was a rigid designator for a certain edible milk product made in America

and "Käse" was a rigid designator for a different edible milk product made in Germany. Does this mean that the proposition "cheese is Käse" is not knowable a priori? No, because if Smith believes this, then he is mistaken about what "cheese" and "Käse" designate--these terms both designate the same edible milk product no matter where it is made. Similarly, a person who believes that "Hesperus" and "Phosphorus" designate different heavenly bodies is mistaken about what "Hesperus" and "Phosphorus" designate.

The fact that one can be mistaken about the meaning of a term does not mean that one cannot use that term in a priori reasoning. For instance, someone could be mistaken about the meaning of the term "bachelor." They could think that "bachelor" meant "married woman," or anything other than what it actually means. To know a priori that a bachelor is a married man, one must know the correct meaning of the word "bachelor." Similarly, to know that Hesperus is Phosphorus or that cheese is Käse one must know the correct meaning of the terms involved. Once one knows the meaning of "bachelor," one knows that bachelors are unmarried men, and once one knows the meaning of "Hesperus," "Phosphorus," "cheese," and "Käse," one knows that Hesperus is Phosphorus and cheese is Käse.

In addition to the example given above of identity between names, Kripke argues that theoretical identity statements are examples of the necessary a posteriori. His argument is that statements such as "cats are animals," "gold is the element of atomic number 79," "light is a stream of photons," "lightning is an electrical discharge," "water is H<sub>2</sub>O," and "heat is the motion of molecules" are necessarily true but can be known only a posteriori. Part of this is obviously true; we clearly know the truth of such statements a posteriori. These statements are also necessary, according to Kripke, because he views "cats," "gold," "light," etc. as rigid designators akin to proper names. For him, "heat" is whatever we call "heat" not whatever has the same

attributes as what we call "heat." Thus, though it is true that in another possible world there could be a substance with all the properties of gold except that it was not the element of atomic number 79 and was instead another element or a compound, this substance would not be gold but a substance very similar to gold, and if in another possible world something other than the motion of molecules had the effects of what we call "heat," caused the sensation we associate with heat and caused the same changes in molecules that heat produces in the actual world, that would not be "heat" but something with the same effects that we associate with heat. Of course, Kripke recognizes that we could be mistaken about the truth of one of the above statements--perhaps the current theory of light being a stream of photons is as erroneous as the earlier theory that light was waves in the ether, or perhaps cats are in fact not animals but automatons, or perhaps the theory of atomic numbers is mistaken--but he argues that given that one of these statements is true, it is necessarily true and, by extension, if one of these theoretical identifications is false, then whatever the true theoretical extension is is necessarily true (Kripke 1981, 116-44).

As with the above example of identity between names, Kripke's argument here could be denied by denying that words such as "heat," "cats," "gold," etc. are rigid designators. It would certainly be possible to contend that "heat" is whatever has the effects of heat, and "water" is whatever has the properties of water. Even without doing this, however, Kripke's argument can be shown to be fallacious though it is certainly stronger than the earlier argument regarding identity between names. It is true that it is an empirical discovery that water is H<sub>2</sub>O--that is that water is a compound of hydrogen and oxygen rather than an element or some other compound, and it is true that if "water" is a rigid designator, then in all possible worlds, water is H<sub>2</sub>O. One way to deny that this is a necessary a priori truth is to point out that it is necessary that water is H<sub>2</sub>O only given that water is in fact H<sub>2</sub>O. That is, it is only necessary that water is H<sub>2</sub>O because it



is necessary a priori that whatever the chemical composition of water is is the chemical composition of water. An example will make this clear. Imagine a stone that has been shown a posteriori to be 90% silicon and 10% other elements. Given that we know the contingent a posteriori truth that this stone has this composition, it is necessary a priori that this stone has the composition that it has, but that hardly makes "this stone is composed of 90% silicon" a necessary a posteriori truth because it could have been composed of 89% silicon or 91% silicon or no silicon at all, though the more different in composition the stone becomes the more likely we are to say that it is not the same stone. Similarly, it is contingent a posteriori that water happens to have the composition  $H_2O$ , but given that it has that composition, it is necessary a priori that water everywhere has that composition because given our definitions, if a substance wasn't  $H_2O$ , it wouldn't be water. Thus we have not one necessary a posteriori truth that water is  $H_2O$  but two truths--one contingent and a posteriori that a certain substance happens to have a certain composition and the other necessary and a priori that given the fact that this substance has this composition, anything that does not have this composition is not this substance.

Other theoretical identity statements can also be analyzed in this way. Thus, the alleged necessary a posteriori truth "cats are animals" becomes a contingent a posteriori truth "cats happen to be animals" and a necessary a priori truth "entities that are not animals are not cats," and the alleged necessary a posteriori truth "light is a stream of photons" becomes the contingent a posteriori truth "light happens to be a stream of photons" and the necessary a priori truth "forms of energy that are not streams of photons are not light."

It might be replied to this analysis that what I identify as contingent facts are not in fact contingent because it is not possible, for instance, for water in another possible world to not be  $H_2O$  since substances that are not  $H_2O$  are not water. Therefore, since contingent facts are those

that could be otherwise in another possible world, these facts are not contingent. There is truth in this objection, but it fails to take account of the fact that water is the name we give to the substance H<sub>2</sub>O not the other way around. It is contingent that there is a substance composed of H<sub>2</sub>O, but it is necessary given that substance's existence that any rigid designator for it refers only to it. Similarly, it is contingent that there exist certain electrical discharges that we call "lightning," but given that they exist and we call them lightning, it is necessary a priori that we restrict the use of our rigid designator "lightning" to these electrical discharges.

Even less plausible than his arguments for the necessary a posteriori is Kripke's argument for the contingent a priori. His primary example of a contingent a priori truth is that the standard meter in Paris, that is the stick in Paris that was used to fix the Metric System, is one meter long. He says that we can know that this stick was one meter long at the time it was used to fix the length of the meter a priori, but it could have been more or less than one meter long in another possible world if it had been stretched or compressed, so the fact that it is one meter long in our world is a contingent a priori truth (Kripke 1981, 54-6).

One problem with this example is that it is not clear that one can know the length of this stick in Paris a priori. The only way one can do this is to build the fact that this stick was used to set the meter into the definition of the stick. One cannot simply say that one knows the length of "the stick in Paris" a priori; one must say that one knows a priori the length of "the stick in Paris that was used to define the meter." Unless the fact that the stick in Paris was used to define the meter is made part of the definition of the stick, one only knows that the stick was used to define the meter a posteriori. If one defines the stick in this way, however, it becomes less clear that its length is contingent because if the stick is not one meter long in another possible world, it could not be used to define the meter in that possible world and if it does not define the meter in that

possible world, then "the stick in Paris used to define the meter" does not exist in that possible world.

Leaving aside these considerations, it is also not clear from the fact that the stick in Paris was used to define the meter that the stick in Paris was actually one meter long when it was measured. It is at least possible that a measuring error occurred, and the stick was actually slightly longer or shorter than a meter. Thus, one cannot know a priori whether the stick in Paris was actually a meter long. The only way one can know the length of the stick is a posteriori by measuring it.

It is true, that one can stipulate the length of the stick in Paris. One can say that a meter is actually the length of the stick in Paris, which would imply that the stick in Paris is actually one meter long since if  $x = y$ , then  $y = x$ . If one stipulates this, however, one is no longer knowing that the stick in Paris is one meter long a priori. To say that this was a contingent a priori statement would be like saying that "given that Jones is a bachelor, Jones is an unmarried man" is a contingent a priori truth, which is clearly absurd. It is contingent that Jones exists, that he is a man, and that he never married, but if he is an unmarried man, then it is a necessary a priori truth that he is a bachelor, and if he is a bachelor, then it is a necessary a priori truth that he is an unmarried man--these are tautologies. Similarly, saying that "the stick in Paris that is a meter long is a meter long" is a tautology not a contingent a priori truth.

Similar objections apply to Kripke's other examples. He stipulates that 100 degrees centigrade is fixed as the temperature at which water boils at sea level from which we are apparently to conclude that one can know a priori that water at sea level boils at 100 degrees C (Kripke 1981, 54-6). It is difficult to see how this is a contingent a priori truth. One cannot simply mean that the temperature of boiling water was measured and the centigrade system was

defined by that measurement because one could not know a priori whether the measurement was accurate. One must build the fact that water actually boils at 100 degrees C into the statement, which becomes, "given that water boils at 100 degrees C, water boils at 100 degrees C." This is, of course, a mere tautology and also a necessary a priori truth because in any possible world where water boils at 100 degrees C, water boils at 100 degrees C, and whatever other possible worlds with alternate laws of physics there may be, this fact remains true.

This paper has recapitulated the traditional argument for the coextensivity of the necessary and the a priori and of the contingent and the a posteriori that Kripke attempted to refute. I have shown that Kripke's counterexamples to the traditional argument fail to prove what he wishes them to except for his argument showing that some necessary truths can be known a posteriori as well as a priori. It may be that the traditional argument is in correct and will one day be proven to be so, but at the least this paper has shown that it has not yet been proven wrong. Therefore, it lives on to fight another day as it were unless and until a better counter argument can be devised.

## Bibliography

Kripke, Saul A. *Naming and Necessity*. Maiden MA: Blackwell, 1981.