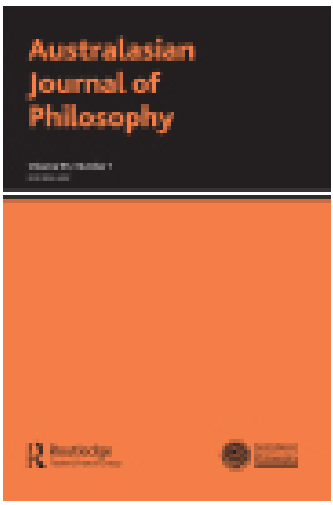


Australasian Journal of Philosophy

Publication details, including instructions for authors and subscription information:
http://www.tandfonline.com/loi/rajp20

Maps and Absent Symbols

Ben Bronner[a]

[a] Rutgers University

Published online: 19 Aug 2014.

Australasian Journal of Philosophy, 2015
Vol. 93, No. 1, 43–59, http://dx.doi.org/10.1080/00048402.2014.948463

MAPS AND ABSENT SYMBOLS

Ben Bronner

ABSENCE is the claim that, if a symbol appears on a map, then absence of the symbol from some map coordinate signifies absence of the corresponding property from the corresponding location. This claim is highly intuitive and widely endorsed. And if it is true, then cartographic representation is strikingly different from linguistic representation. I argue, however, that ABSENCE is false of various maps and that we have no reason to believe it is true of any maps. The intuition to the contrary results from mistaking what a map simply *conveys* for what it literally *represents*.

Keywords: maps, language, representation, predication, Grice, implicature

1. The Problem

Map 1 features mountain symbols above a river symbol. Suppose that the map really depicts some part of the world and that there are mountains where the map indicates. But suppose there are also mountains just south of the river—between the river and the southerly forest. There are no symbols on the map for those mountains. Is Map 1 inaccurate? Among my colleagues, there is a widespread and strongly held intuition that the answer is 'yes', and I expect that the reader will share this intuition.

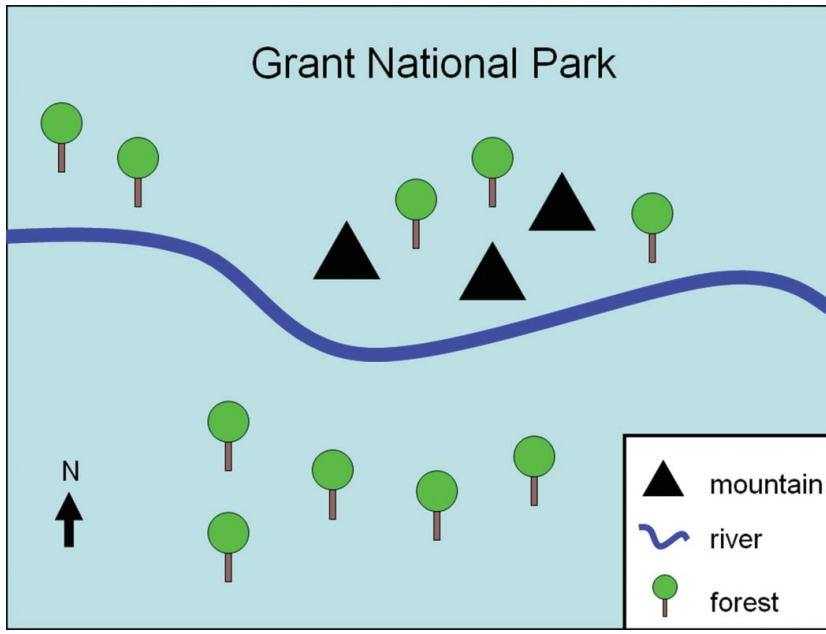
Rescorla [2009: 182] considers the more general intuition that 'if a marker appears on a map, then absence of the marker from some coordinate signifies absence of the corresponding property from the corresponding location'. He writes that 'this bedrock intuition is emphasized by Casati and Varzi [1999], Hayes [1985], Lemon and Pratt [1999], Pratt [1993], and Schlichtmann [1979]'. Let's turn this intuition into the following thesis:

> (ABSENCE) If a symbol appears on a map, then absence of the symbol from some map coordinate signifies absence of the corresponding property from the corresponding location.[1]

In addition to the authors listed above, ABSENCE is endorsed by Camp [2007: 163]—at least with regard to 'the familiar maps we ordinarily use to navigate'. So ABSENCE is a popular as well as an intuitive thesis.

It's also an *important* thesis. If ABSENCE is true, then cartographic representation is strikingly different from linguistic representation. After all, if I *say* that there are mountains north of the river, the accuracy of my assertion doesn't depend on whether there are mountains south of the river. So

[1]ABSENCE should really be formulated in terms of 'the corresponding property *or object*', but throughout, for brevity, I omit reference to objects. Note also that ABSENCE is a claim about our actual cartographic conventions. You *could* draw something that looks just like a normal map and stipulate that the absence of a symbol does not signify absence of the corresponding property. That wouldn't falsify ABSENCE. We're interested here in how maps *actually* work—whether ABSENCE correctly characterizes existing cartographic convention.



Map 1

ABSENCE suggests an interesting disanalogy between maps and language. And that disanalogy would support the existence of a further disanalogy, as ABSENCE has been used to argue that maps don't feature predication, a matter to which we'll return.

So ABSENCE is an intuitive, popular, and important thesis. A problem arises, however, when we try to square ABSENCE with a wider variety of maps. Consider Map 2, 'Some of the Cities I Have Visited'. If ABSENCE is correct, then Map 2 represents that there is no city I have visited in New Jersey. But there is such a city. So if ABSENCE is correct, then Map 2 is inaccurate. Yet Map 2 is not inaccurate, so ABSENCE is false. I consider responses to this argument below. First let's get another example on the table.

In Map 3, a black star represents a national capital. Students in Mr. Smith's class are to complete the map as a homework assignment. ABSENCE appears to imply that Map 3 is inaccurate. But like Map 2, Map 3 isn't inaccurate—it's just incomplete.

So we have a problem. ABSENCE is highly intuitive, both in itself and when applied to many maps. Yet it seems to imply unacceptable conclusions in other cases. Is there some way we can hold on to ABSENCE in the face of such cases? And if not, why is ABSENCE so intuitively appealing? The problem, in short, is finding a way to accommodate both the apparent counter-examples and the intuitive appeal of ABSENCE.

I'll argue that we must, in fact, give up ABSENCE. The apparent counter-examples are genuine. ABSENCE is false of various maps and we have no reason to believe that it is true of any maps. The appeal of ABSENCE results from mistaking what a map simply *conveys* for what it literally *represents*.

Map 2

Map 3

2. Can ABSENCE Be Saved?

Given the intuitive appeal of ABSENCE, it's well worth considering how it might be saved from apparent counter-examples, such as Maps 2 and 3. In this section, I consider various strategies either adopted or inspired by Rescorla [2009], who has provided the most detailed defense of ABSENCE to date. I conclude that none of these strategies succeed, and that we are left with genuine counter-examples to ABSENCE.

First, perhaps in Map 2 a black dot doesn't simply represent a city I've visited. Perhaps a black dot *actually* represents a city I've visited which meets some further criterion. In that case, Map 2 wouldn't represent that cities I've visited are located at locations L_1 through L_{18} and nowhere else in the mapped region. Rather, Map 2 would represent that cities I've visited *which meet some further criterion* are located at L_1 through L_{18} and nowhere else in the mapped region. Then ABSENCE wouldn't imply that there's no city I've visited in New Jersey, and so it wouldn't imply the unacceptable conclusion that Map 2 is inaccurate. A similar story might be told about Map 3: a black star represents a national capital which meets some further criterion. Call this the *Criterion Response*.

The Criterion Response is ambiguous in a crucial respect. Regarding Map 2, the Criterion Response might be disambiguated in either of the following ways.

> (CR-1) Map 2 represents that cities I've visited *which are major American cities* (for example) are located at L_1 through L_{18} and nowhere else in the mapped region.

> (CR-2) Map 2 represents that cities I've visited *which meet some criterion or other* are located at L_1 through L_{18} and nowhere else in the mapped region.

According to CR-2, the map is non-committal about *which* additional criterion is satisfied by the depicted cities.

Let's first consider a response to Map 2 along the lines of CR-1. Such a response would involve the claim that Map 2 represents some particular criterion and represents that the depicted cities are all and only the cities I've visited (in the mapped region) satisfying that criterion. But suppose I flipped a coin for each city I've visited to decide whether to include that city on Map 2. If the coin came up heads, then the city was included. If it came up tails, then the city was not included. Then what might be the additional criterion—*additional* to being a city I've visited—that is satisfied by all and only the depicted cities? The only plausible answer is the criterion of being selected by the coin-flipping procedure. A response along the lines of CR-1 would claim, then, that Map 2 represents that: cities I've visited which were selected by the coin-flipping procedure are located at L_1 through L_{18} and nowhere else in the mapped region. But even if I used the coin-flipping procedure, Map 2 wouldn't represent the depicted cities *as* having been selected by such a procedure. The map simply doesn't tell the viewer how the depicted cities were selected (apart from telling the viewer that the depicted

cities were selected in part because they are cities I've visited). So CR-1 leads to an unacceptable conclusion and hence should be rejected.

Similarly for Map 3. Suppose Map 3 doesn't contain a random sampling of national capitals. Suppose instead that Mr. Smith included these particular capitals with certain educational goals in mind. Perhaps he included the capitals that his students had already learned. Yet the map doesn't represent the depicted cities *as* the national capitals that the students already learned. So it seems that CR-1 won't save ABSENCE from the alleged counter-examples.

Return to Map 1. Suppose that the map-maker flipped a coin for each of the region's mountains in order to decide whether or not to include that mountain on the map. And suppose that the coin just happened to land heads-up for each mountain north of the river and tails-up for each mountain south of the river. Would you still think that Map 1 is inaccurate? Everyone I've asked has said 'yes'—such use of the coin-flipping procedure wouldn't, by itself, change their judgment about whether the map is accurate. We'll return to this point in a moment.

Now consider a response to Map 2 along the lines of CR-2. Such a response would involve the claim that Map 2 accurately represents the depicted cities as being all and only those cities I've visited (in the mapped region) which also meet some (unspecified) additional criterion. We're supposing that the only additional criterion that the depicted cities satisfy is that of being selected by my coin-flipping procedure. So if CR-2 is to handle the alleged counter-example involving Map 2, then even a random or arbitrary selection procedure supplies a *criterion*, in the relevant sense. But then CR-2 implies that Map 1 is accurate, if we make the supposition that the map's maker decided which mountains to include by flipping a coin for each of the region's mountains. After all, given that supposition, Map 1 successfully depicts all and only those mountains in the mapped region that meet some additional criterion—the very same criterion that was used in constructing Map 2. As I mentioned, however, seemingly everyone thinks that Map 1 is inaccurate even if the map's maker employed this coin-flipping procedure. So it seems that CR-2 can't handle Map 2 without producing this undesirable result regarding Map 1.

There is another problem with applying CR-2 to Maps 2 and 3. CR-2 implies that Map 3 would be inaccurate if Mr. Smith accidentally included a national capital that his students hadn't previously learned. For in that case there *wouldn't* be some criterion such that the depicted cities are all and only the national capitals (in the depicted region) which meet that criterion. Mr. Smith would simply be unsuccessfully *trying* to depict all and only those national capitals that meet some further criterion—in particular, having been previously learned by his students. Similarly, CR-2 implies that Map 2 would be inaccurate if I accidentally included a city I've visited for which my coin came up tails rather than heads. These implications are implausible. In sum, CR-2 doesn't fare any better than CR-1 as a response to the counter-examples I've considered.

There is another way in which we might respond to Maps 2 and 3. Rescorla [2009] says that incomplete maps have various 'sub-maps' that are

accurate, and he suggests that this fact might lead us to think that there is a sense in which an incomplete map is accurate. He claims, however, that in the case of an incomplete map it is *only* sub-maps that are accurate: the map as a whole is in no sense accurate [192]. We might conclude, then, that Maps 2 and 3 are actually inaccurate and that our intuitions are simply being led astray by the presence of accurate sub-maps.

However, virtually *every* map will have sub-maps that are accurate (just cut out the inaccurate bits). But that fact doesn't prevent us from judging that many such maps are inaccurate. In particular, people initially judge Map 1 to be inaccurate despite the presence of accurate sub-maps. So it would be mysterious why the presence of accurate sub-maps leads our intuitions astray for Maps 2 and 3. It might be suggested that in Map 3 there is a *salient* sub-map that is accurate: our attention is drawn to the group of nations for which a capital is depicted. There are several problems with this suggestion. First, I doubt that your judgment of Map 3's accuracy will change if you consciously take into account the nations for which no capital is depicted, thereby increasing the salience of that sub-map. Second, most people judge Map 1 to be inaccurate and Map 2 accurate, despite the fact that the accurate sub-maps are no more salient in one case than in the other. In both cases, I've simply told you that a particular region of the map omits a relevant symbol. Third, if ABSENCE is correct then Map 2 contains no region that is salient to you as an accurate sub-map. For example, if ABSENCE is correct, then for all you know the sub-map depicting California, Oregon, and Washington is inaccurate, since for all you know I've visited Portland, Oregon. Generally speaking, pick any sub-map of Map 2. For all you know, that sub-map depicts a region containing a city I've visited for which there is no city symbol. So if ABSENCE is correct then Map 2 contains no region that is salient to you as an accurate sub-map. So we can't explain the judgment that Map 2 is accurate by saying that our intuitions are misled by the salience of accurate sub-maps. In sum, the appeal to accurate sub-maps doesn't seem adequate to save ABSENCE from the counter-examples I've considered.

Each of Maps 2 and 3 is representative of a class of maps. Map 2 contains a random sampling of cities I have visited. Similarly, we might have a map that depicts the diversity of town names in Russia. It might contain a random or arbitrary sampling of Russian towns. Or a map depicting the flow of traded goods between cities worldwide might contain an arbitrary sampling of trade routes, just to give an impression of the overall pattern of trade. Map 3 contains a non-random sampling of national capitals, but the inclusion criterion is no part of the map's representational content. In this vein, a star map designed simply to spark children's interest might contain an incomplete selection of stars. The stars might be selected with educational purposes in mind, without the map representing that the depicted stars meet some further criterion. ABSENCE is false, at least when applied to these two types of maps.

In response, it might be claimed that ABSENCE is false when applied to *some* types of maps—and hence does not reflect a *universal* cartographic convention—but that it is true when applied to *other* types of maps. According to

this claim, an ABSENCE-style convention governs Map 1 but not the counter-examples. But this move seems *ad hoc*. By comparison, the account I offer in the next section is both well motivated and more unitary.

3. The Gricean Solution

Our problem is that of finding a way to accommodate both the apparent counter-examples and the intuitive appeal of ABSENCE. In the previous section I argued that we won't solve this problem by holding on to ABSENCE and by adopting some strategy to deal with the apparent counter-examples. In this section I present my preferred solution to the problem. The apparent counter-examples are genuine. ABSENCE is so appealing because we mistake what a map simply *conveys* for what it literally *represents*.

3.1 The Basic Account

Suppose I am travelling through the region depicted by Map 1. I ask my guide, Peter, if there are mountains near the river. Peter responds: 'There are mountains north of the river.' The accuracy of my guide's assertion doesn't depend on whether there are mountains *south* of the river. Yet Peter conveys that there are no mountains south of the river.

Following Grice, we can say that Peter *conversationally implicates* that there are no mountains south of the river. *Implicature* is a matter of meaning or conveying one thing by saying something else. By saying that there are mountains north of the river, Peter conveys (among other things) that there are no mountains south of the river. *Conversational* implicature is implicature that depends on 'certain general features of discourse' [Grice 1975: 45]. It's a general feature of discourse that participants are expected to be cooperative—i.e. to contribute what is needed, given the purpose of the conversation. There are various more specific expectations for participants in conversation: that they be informative, truthful, relevant, and perspicuous. Part of the explanation for why Peter implicates that there are no mountains south of the river is that he is expected to be adequately informative. Peter meets that expectation, in part, by conveying that there are no mountains south of the river.[2]

An interlocutor is expected to be as informative as is required, given the purpose of the conversation. I suggest that a map's maker is expected to be

[2]According to Grice's account of conversational implicature, in order for Peter to be a cooperative conversation partner it is *necessary* that Peter believe there are no mountains south of the river [1975: 49–50]. But such claims of necessity are false, at least typically [Davis 1998, ch. 3]. In our case, Peter would be a cooperative conversation partner if he were simply ignorant of whether there are mountains south of the river—for in that case, he wouldn't be withholding any relevant information. Further, Grice's account suggests that Peter's *believing* (that there are no mountains south of the river) is what brings Peter's conduct in line with the expectation of cooperativeness. But it is more natural (and quite common) to say that Peter meets the relevant expectations by *conveying* that there are no mountains south of the river. For it is by conveying information, and not simply by believing it, that Peter is an informative interlocutor. Beyond these remarks I don't want to take a stand on the controversial issue of exactly how conversational implicatures are generated.

as informative as is required, given the purpose of the map.[3] One of the purposes of Map 1 is to enable navigation. And properly navigating the region requires knowing about the *full distribution* of mountains in the region—not simply the distribution of mountains *north* of the river. So the map's maker is adequately informative, in part, by conveying that there are no mountains south of the river. That information is conveyed by the map maker's not representing anything about the presence or absence of mountains south of the river, just as that information is conveyed by Peter's not saying anything about the presence or absence of mountains south of the river.

So the *maker* of Map 1 implicates that there are no mountains south of the river. And derivatively, the *map* implicates that there are no mountains south of the river.[4] But, as with Peter's verbal report, that's no part of the accuracy conditions of the map. If there are mountains south of the river, then the map is misleading but it is not inaccurate. The initial intuition (that Map 1 is inaccurate) is caused by mistaking what the map simply conveys for what it literally represents.

That's the basic account of cartographic implicature. The remainder of section 3 extends and strengthens the account. Section 3.2 adds plausibility to the claim that what I call 'cartographic implicature' is indeed analogous to conversational implicature. Section 3.3 explains why people might mistake what a map implicates for what it represents. Section 3.4 explains why the counter-examples to ABSENCE don't elicit the intuition of inaccuracy. Finally, section 3.5 further explores the explanatory power of the Gricean account.

3.2 Cancellability, Reinforceability, Calculability, Non-Detachability

What I call 'cartographic implicature' can plausibly be interpreted as bearing the typical signs of conversational implicature: cancellability, reinforceability, calculability, and non-detachability. This lends credence to the claim that we are dealing with something analogous to conversational implicature.

Cancellability. A conversational implicature can be cancelled. Suppose I ask my guide whether there are mountains near the river. If he responds, 'There are mountains north of the river', then he implicates that there are no mountains south of the river. But if my guide instead responds, 'There are mountains north of the river, and in fact there are mountains south of the river as well', then the aforementioned implicature is cancelled—there is no suggestion that mountains are absent south of the river.

[3]Cf. Schier [1986: 168–73] and Abell [2005], who appeal to Gricean principles in their accounts of the interpretation of pictures.

[4]We could support this claim in either of two ways. First, we could say that a map is like an utterance rather than a sentence, as utterances are typically allowed to implicate things (e.g. Horn [2004: 4]). Then a map would implicate exactly what its maker implicates. Second, we could say that a map is like a sentence, and we could follow Davis [1998: 6] in holding that sentences can themselves implicate things: 'A *sentence* implicates, roughly, what speakers using the sentence with its regular meaning would commonly use it to implicate.' Then what a map implicates and what its maker implicates could come apart, as the former would be tied to what a maker of such a map would *commonly* implicate. With that said, nothing should go wrong with my account if the reader rejected both of these ideas. We can always rephrase talk of *maps* implicating things as talk of map-*makers* implicating things—either speaking of what a given map's *actual* maker implicates or what a maker of such a map would *commonly* implicate.

Similarly, if mountain symbols are placed below the river symbol in Map 1, then that cancels the implicature that there are no mountains south of the river. For a more interesting example of cancellability, recall Map 2, 'Some of the Cities I Have Visited'. Using the word 'some' usually results in the implicature 'not all'. So the map's title blocks the conclusion that the map conveys information about the full distribution of cities I have visited. Placing a symbol on a map can implicate that the corresponding property is absent from all the places without such a symbol. But the title of Map 2 cancels this implicature. Similarly, Rescorla [2009: 196] notes that the Gricean account (which Rescorla rejects) can interpret a label of '*terra incognita*' as cancelling the implicature that various properties are absent from the locations corresponding to blank spaces on a map.[5]

Reinforceability. A conversational implicature can be reinforced without redundancy. If my guide says 'There are mountains north of the river', then he implicates that there are no mountains south of the river. But if he instead says 'There are mountains north of the river (*A*), and there are no mountains south of the river (*B*)', then he has said what before was implicated (i.e. he has reinforced the implicature). Note that this latter utterance has no interpretation on which it is redundant, as it would if *B* were part of the semantic content of *A*.[6]

We could reinforce the implicature in Map 1—the implicature that there are no mountains south of the river. For example, the key could specify that the light green which covers most of the map represents non-mountainous terrain. Here's another example. Imagine a world map where each nation is blue, red, or white. The key specifies that blue represents nations which were NATO members and red represents nations which were Warsaw Pact members. If that's *all* the key specifies, then the implicature is that the white nations were members of neither alliance. But that implicature would be reinforced if the key also specified that white represents nations which were members of neither alliance. What before was implicated would then be represented.[7]

Calculability. While a conversational implicature is likely to be intuitively and immediately grasped, Grice believed it must also be calculable via explicit reasoning [1975: 50].[8] After I ask whether there are mountains near the river and my guide responds, I might reason as follows. *The only thing*

[5]Of course, the opponent of the Gricean account might also have explanations for the cited phenomena. First, the opponent would say that placing mountain symbols below the river symbol in Map 1 only changes the map's representational content and doesn't also cancel an implicature. The opponent could also say that the title of Map 2 changes the cartographic convention in play, moving us away from a convention where absence of a symbol signifies absence of the corresponding property. Finally, Rescorla says that cartographic convention simply includes an exception for parts of a map labelled as *terra incognita*. The point of section 3.2 is not that the Gricean account explains phenomena that the opponent cannot explain. The point is rather that what I call 'cartographic implicature' can plausibly be interpreted as bearing the marks of conversational implicature.

[6]The reader unfamiliar with the terminology should not be misled. An implicature is reinforced when a speaker *says* what otherwise would be implicated—not when an implicature is simply *strengthened* in some manner (as might be suggested by the term 'reinforced').

[7]Whether either of my examples of reinforcement might be thought to involve redundancy is hard for me to judge, however, as I can think of no good cases in which a map *is* redundant and by comparison to which a claim of redundancy might be judged. The cases which have been suggested to me are problematic in various ways.

[8]Though some think Grice was wrong, e.g. Davis [1998, ch. 3].

Peter said was that there are mountains north of the river. I assume he is being adequately informative. The best way to maintain that assumption, given what Peter has actually said, is to suppose that he is conveying that there are no mountains south of the river.[9]

A map user could reason in a parallel manner, except that she would be reasoning about a map or a map-maker rather than an interlocutor. Of course, a cartographic implicature (like a conversational implicature) is likely to simply be grasped without explicit calculation. The point for present purposes is just that the cartographic implicature *can* be calculated explicitly.

Non-detachability. Conversational implicatures depend in part on the proposition a speaker expresses, but they very often do not depend on the particular words that are used to express that proposition. In such cases, a conversational implicature cannot be detached simply by rephrasing what has been said. When I ask whether there are mountains near the river, and my guide answers 'There are mountains north of the river', he implicates that there are no mountains south of the river. If we are located south of the Generic River and he instead answers, 'Yes, beyond the Generic', the implicature is the same despite the difference in phrasing.[10]

As in the case of (many) conversational implicatures, the cartographic implicature I've highlighted depends on *what* is represented, not *how* it is represented. If black triangles represent mountains, then the absence of a black triangle at a given map coordinate conveys that there is no mountain at the corresponding location. The implicature remains if a *different symbol* is used to represent mountains—e.g. grey circles or tangible bumps. The implicature also remains if a *different type of map* is used. For example, Map 4 is a contour map which conveys that there is no mountain in the location corresponding to the large open region in the right-hand side of the map. (A contour map depicts elevation: the elevation of each point on the line marked '2000' is 2000 metres.)

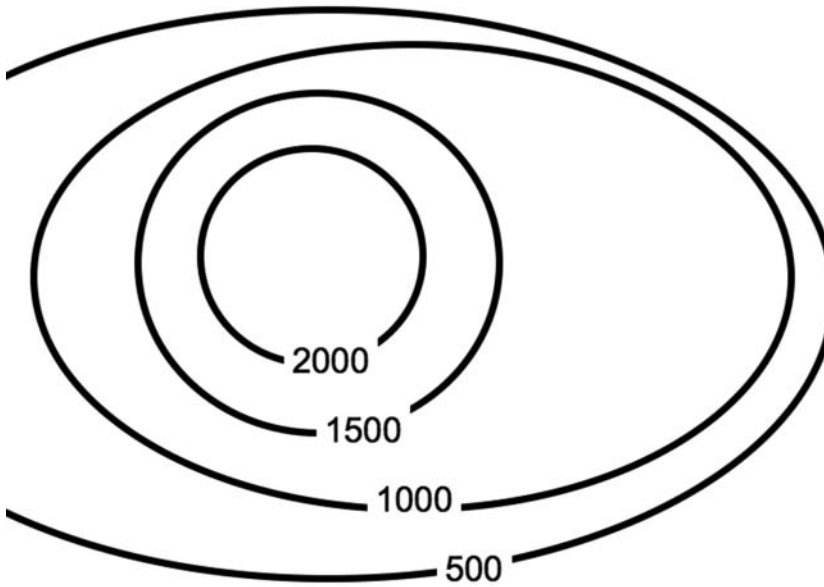
In sum, what I have called 'cartographic implicature' can plausibly be interpreted as bearing the typical signs of conversational implicature. This fact lends credence to the claim that we are dealing with something analogous to conversational implicature. Next, I explain why people might mistake what a map implicates for what it represents.

3.3 Generalized and Particularized Implicature

Grice drew a distinction between generalized and particularized conversational implicature. In the case of a *generalized* conversational implicature, 'one can say that the use of a certain form of words in an utterance would

[9]This does not quite fit Grice's 'general pattern' for calculating implicatures [1975: 50]. See footnote 2.

[10]Non-detachability is a mark of conversational implicature and helps to distinguish it from *conventional* implicature, but it does not distinguish conversational implicature from truth-conditional semantic content. See also footnote 5. (*Conversational* implicature results from conversational context and general features of discourse. *Conventional* implicature, according to Grice, results from the meaning of the words used—though not from the aspect of meaning that contributes to truth conditions. Some deny the existence of conventional implicature, e.g. Bach [1999].)



Map 4

normally (in the *absence* of special circumstances) carry such-and-such an implicature or type of implicature' [1975: 56]. By contrast, a *particularized* conversational implicature 'is carried by saying that *p* on a particular occasion in virtue of special features of the context' [56]. Levinson [2000: 16–17] illustrates the difference with the following example.

Context 1
Abe: 'What time is it?'
Bea: 'Some of the guests are already leaving.'
Particularized conversational implicature: 'It must be late.'
Generalized conversational implicature: 'Not all of the guests are already leaving.'

Context 2
Abe: 'Where's John?'
Bea: 'Some of the guests are already leaving.'
Particularized conversational implicature: 'Perhaps John has already left.'
Generalized conversational implicature: 'Not all of the guests are already leaving.'

In both cases, Bea's utterance results in the same generalized conversational implicature. In addition, in each case Bea's utterance results in a particularized conversational implicature, and features of the context determine *which* such implicature results.

The cartographic implicature I have highlighted is a generalized implicature.[11] A map maker is presumed to be as informative as is required, given the purpose of the map. And it is a *general* feature of maps that their purpose is served by knowing both where properties are present *and* where they are absent. Hence, barring special circumstances, declining to place a symbol at some coordinate implicates that the corresponding property is absent from the corresponding location. This is to say that the implicature is *generalized*, in Grice's sense.

Generalized *conversational* implicatures are easily mistaken for semantic content. Consider a specific generalized conversational implicature: saying '*p* or *q*' normally implicates 'not both *p* and *q*'. For example, saying 'I'll join the basketball team or I'll join the debate team' will normally implicate that you won't join *both* teams. Because saying 'or' normally implicates 'not both', there is a temptation to think that 'not both' is part of the semantic content of 'or'. After all, if 'not both' *were* part of the semantic content of 'or', then that would explain why a speaker who uses 'or' usually communicates 'not both'. But 'not both' is *not* part of the semantic content of 'or'. For if it *were*, then 'I'll join the basketball team or I'll join the debate team, indeed I'll join both' would have an interpretation on which it is a contradiction; but it has no such interpretation. And 'I'll join the basketball team or I'll join the debate team, but not both' would have an interpretation on which it is redundant; but it has no such interpretation.[12]

We don't feel the same temptation to treat *particularized* conversational implicatures as semantic content. Recall that saying (*A*), 'Some of the guests are already leaving,' can implicate (*B*), that perhaps John has already left. But saying *A* only implicates *B* in special circumstances, as when one is asked, 'Where's John?' If *B* were part of the semantic content of *A*, then we would expect *A* to communicate *B* in a wider range of contexts. So there's little chance of mistaking *B* for part of the semantic content of *A*. *Generalized* conversational implicatures are what can easily be mistaken for semantic content.[13]

Because the cartographic implicature I've highlighted is generalized, it can easily be mistaken for part of the semantic content of a map. The absence of a symbol at some map coordinate normally communicates the absence of the corresponding property at the corresponding location. That's exactly what we would expect if there were a convention to the effect that the absence of a symbol *represents* the absence of the corresponding property.

[11]Though there may be *other* cartographic implicatures which are not generalized.

[12]If you don't agree that 'not both' is not part of the semantic content of 'or', then you can consider the case of 'some', which usually implicates 'not all'. There is a temptation to think that 'not all' is part of the semantic content of 'some', though it is not. If it *were*, then 'Some of the students passed the test, indeed all did' would have an interpretation on which it is a contradiction. And 'Some of the students passed the test, but not all' would have an interpretation on which it is redundant.

[13]As Grice emphasized [1981: 185, quoted in Levinson 2000: 18]:

> I also distinguished ... particular conversational implicatures that depended on particular contextual features ... and ones that I thought of as relatively general which I called GENERALIZED IMPLICATURES. These are the ones that seem to me to be more controversial and at the same time more valuable for philosophical purposes ... there seemed to me to be quite good grounds for suspecting that some people have made the mistake of taking as part of the conventional meaning of some form of expression what was really not part of its conventional meaning, but was rather a nonconventional implication which would normally be carried, except in special circumstances.

But, just as a generalized *conversational* implicature results from most but not all conversational contexts, the cartographic implicature I've examined results from most but not all cartographic contexts. In the next subsection I explain why the implicature does not occur in the counter-example cases I've considered.

3.4 Explaining the Counter-Examples

The Gricean account explains why, unlike with Map 1, the apparent counter-examples to ABSENCE elicit no intuition of inaccuracy. Map 1 involves an implicature which we mistake for semantic content, while the other maps involve no such implicature. Since the cartographic implicature in question is a *generalized* implicature, there should be *special features* of the counter-example maps which account for their lack of implicature. And indeed there are.

We assume that a map is as informative as required, given its purpose. A typical map's purpose is served by knowing both where properties are present *and* where they are absent. But the purpose of the map of national capitals is simply to test or develop the students' knowledge. That purpose doesn't require the map to convey information about the *full distribution* of national capitals in the region. In fact, the map's educational purpose is likely to be served by learning or testing just a manageable handful of capitals at a time. Since the map can be adequately informative without conveying information about the full distribution of national capitals in the region, we don't assume that the map conveys such information. Similar remarks apply for most of the other maps I've mentioned. For example, the purpose of the map of Russian towns is simply to illustrate the diversity of Russian town names. Given its purpose, this map can be adequately informative without conveying information about the full distribution of Russian towns.

The situation is a bit different with Map 2, 'Some of the Cities I Have Visited'. It's not clear what exactly the purpose of this map is. But, as I explained in section 3.2, the map's title cancels the implicature that the absence of a black dot corresponds to the absence of a city I've visited.

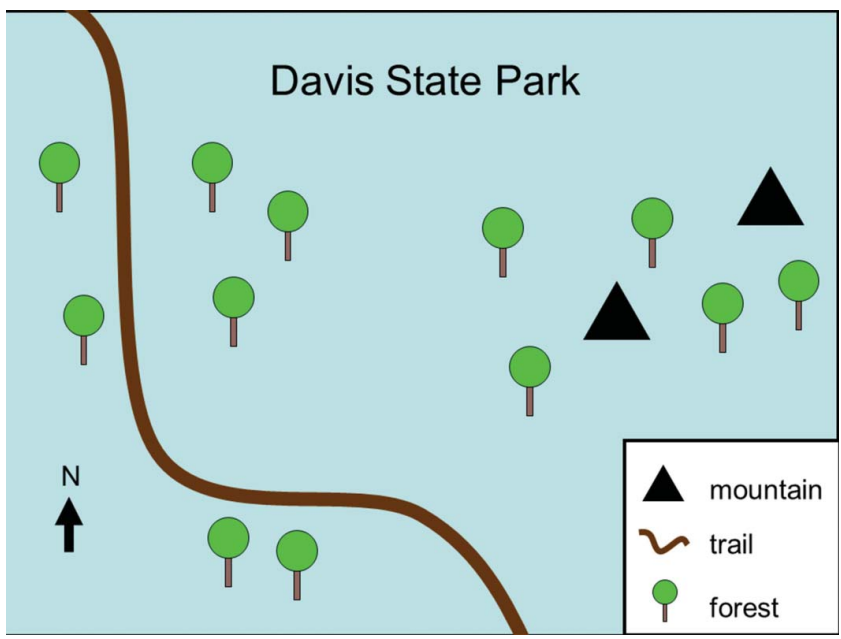
I argued in section 2 that we can't account for the apparent counter-examples if we hold on to ABSENCE. In the present section I've argued that the Gricean account *can* explain those examples. Next, I further explore the explanatory power of the Gricean account.

3.5 A Final Explanatory Advantage of the Gricean Account

Imagine a road map containing no mountain symbols at all. Intuitively, such a map *doesn't* convey that there are no mountains in the mapped region. But as soon as we add a mountain symbol to the map, we feel that the absence of a mountain symbol from a given coordinate conveys the absence of a mountain from the corresponding location. Adding a single symbol changes our interpretation of the *rest* of the map.

But now consider Map 5. Intuitively, the map conveys that there are no rivers running through the middle of the park. The map conveys that information even though it doesn't contain river symbols elsewhere. It conveys that information *whether or not* it contains river symbols elsewhere. So adding a single river symbol wouldn't change our interpretation of the rest of the map.

Why does adding a single mountain symbol change our interpretation of the first map, while adding a single river symbol doesn't change our interpretation of the second map? Here is the Gricean explanation. First consider the former map. We assume that a map is as informative as required, given its purpose. The purpose of a road map isn't obviously served by indicating the locations of mountains: the map is used for navigating by road, and once on a road a driver need not worry about encountering terrain that is impassable due to the presence of a mountain. So we don't assume that the road map conveys anything at all about the location of mountains. Hence we don't assume that the absence of a mountain symbol conveys the absence of a mountain. But placing even a single mountain symbol on a map conveys that mountain information is relevant/required, given the purpose of the map. That's because if mountain information weren't relevant/required, then the map would violate the Gricean presumptions that it is relevant and not more informative than is required [Grice 1975: 45–6]. And once we believe that mountain information *is* relevant/required, we'll assume that the map conveys that type of information (as explained in section 3.1). So we'll interpret the map as conveying information about the presence or absence of mountains, even for locations for which mountain symbols are absent. In



Map 5

this way, the Gricean account explains why placing a single mountain symbol on the first map changes our interpretation of the *rest* of the map.

The Gricean account also explains why placing a single river symbol on the second map *doesn't* change our interpretation of the rest of the map. We assume a map is as informative as required, given its purpose. Part of the purpose of Map 5 is to enable navigation. And navigating the park is greatly aided by knowing about the *full distribution* of rivers in the park. So we assume the map conveys such information. But that's all true, whether or not the map contains any river symbols. So the Gricean account explains why adding a single river symbol to Map 5 doesn't change our interpretation of the rest of the map.

None of this falsifies ABSENCE. The proponent of ABSENCE just has to claim that, once the road (/park) map contains a mountain (/river) symbol, then the map represents that coordinates where there is no such symbol correspond to locations where there is no mountain (/river). ABSENCE is officially silent about why adding a single symbol changes our intuition in the one case but not in the other.

But the proponent of ABSENCE faces an uncomfortable choice. First, she could leave unexplained the difference between the road map and the park map, in which case the Gricean account would have an explanatory advantage over its competitor. Second, the proponent of ABSENCE could acknowledge that pragmatic features account for the difference between the road map and the park map but she could point out that this is consistent with ABSENCE being true. But that response is problematic. Once we admit that pragmatic features account for our intuitions in this pair of cases, there seems to be little reason to deny that *in just the same manner* pragmatic features account for our intuitions in cases such as that of Map 1—i.e., account for the intuitions which motivated ABSENCE in the first place. The third option for the proponent of ABSENCE is to account for the difference between the road map case and the park map case by appeal to conventions governing the semantics of maps. But I can't think of such a story myself. So the case appears to be one more advantage of the Gricean account.

4. Conclusion

ABSENCE is a highly intuitive and widely held thesis. Yet it faces a variety of apparent counter-examples. The problem we face is one of finding a way to accommodate both those examples and the intuitive appeal of ABSENCE. I've argued that an account of cartographic implicature can do both of those things, while the competing account cannot. I conclude by noting one implication of rejecting ABSENCE.

According to ABSENCE, if a symbol appears on a map, then absence of the symbol from some map coordinate signifies absence of the corresponding property from the corresponding location. Language isn't like that. So if ABSENCE were correct, then there would be an interesting disanalogy between linguistic and cartographic representation.

And that disanalogy would support the existence of a further disanalogy. Casati and Varzi [1999] claim that maps feature a predicational structure analogous to that of language. They suggest that placing a symbol at a map coordinate predicates the corresponding property of the corresponding location. Rescorla [2009] dissents. First, he understands predication on the model of Frege and Tarski: roughly, predication is taken to be 'a compositional mechanism whereby [denoting] terms fill the argument-places of a predicate that carries [the terms'] denotations into a truth-value' [177]. Rescorla then notes that nothing like ABSENCE is true for non-cartographic predication. For example, if I *say* that there are mountains north of the river, the accuracy of my assertion does not depend on whether there are mountains south of the river. Rescorla claims that 'this contrast between cartographic and linguistic representation poses a challenge to anyone who holds that attaching a marker to map coordinates is the same mode of semantic composition as attaching a predicate to a singular term' [182]. Rescorla goes on to consider and to reject a number of attempts to meet this challenge. He concludes that maps do not feature predication, contrary to the claims of Casati and Varzi, as well as of Head [1984] and Pratt [1993].

I've argued, however, that ABSENCE is false of various maps and that we have no reason to believe it is true of any maps.[14] If that's right, then Rescorla's anti-predication argument is undermined, and maps might well use the same mode of semantic composition as language. That would be a significant commonality between maps and language. But even if maps don't feature predication, this paper suggests that there is another commonality between maps and language, namely, implicature.[15]

Rutgers University

REFERENCES

Abell, C. 2005. Pictorial Implicature, *Journal of Aesthetics and Art Criticism* 63/1: 55–66.
Bach, K. 1999. The Myth of Conventional Implicature, *Linguistics and Philosophy* 22/4: 327–66.
Camp, E. 2007. Thinking with Maps, *Philosophical Perspectives* 21/1: 145–82.
Casati, R. and A.C. Varzi 1999. *Parts and Places: The Structures of Spatial Representation*, Cambridge, MA: The MIT Press.
Davis, W.A. 1998. *Implicature: Intention, Convention, and Principle in the Failure of Gricean Theory*, Cambridge: Cambridge University Press.
Grice, H.P. 1975. Logic and Conversation, in *Syntax and Semantics, Vol. 3: Speech Acts*, ed. P. Cole and J.L. Morgan, New York: Academic Press: 41–58.
Grice, H.P. 1981. Presupposition and Conversational Implicature, in *Radical Pragmatics*, ed. P. Cole, New York, NY: Academic Press: 183–98.
Hayes, P.J. 1985. Some Problems and Non-Problems in Representation Theory, in *Readings in Knowledge Representation*, ed. R.J. Brachman and H.J. Levesque, Los Altos, CA: Morgan Kaufmann: 3–22.
Head, C.G. 1984. The Map as Natural Language: A Paradigm for Understanding, *Cartographica* 21/1: 1–32.
Horn, L.R. 2004. Implicature, in *The Handbook of Pragmatics*, ed. L.R. Horn and G. Ward, Oxford: Blackwell: 3–28.

[14]ABSENCE is false of the two classes of maps considered in section 2. And we have no reason to believe that ABSENCE is true of any maps, because the Gricean account can do all of the work that the ABSENCE-based account can do and because it is a superior account otherwise.

[15]I am grateful to the editors and three anonymous reviewers for their time and attention. For helpful comments and criticisms, I also thank Eddy Chen, Todd Ganson, Nico Kirk-Giannini, Olivia Odoffin, Jonathan Schaffer, and Stephen Woodside. Special thanks are due to Andy Egan for several rounds of detailed comments and discussion. Finally, thanks to Andy Egan and Todd Ganson for direction to relevant literature.

Lemon, O. and I. Pratt 1999. Putting Channels on the Map: A Channel-Theoretic Semantics of Maps?, in *Logic, Language and Computation: Vol. 2*, ed. L.S. Moss, J. Ginzburg, and M. de Rijke, Stanford: CSLI Publications: 143–64.

Levinson, S.C. 2000. *Presumptive Meanings: The Theory of Generalized Conversational Implicature*, Cambridge, MA: The MIT Press.

Pratt, I. 1993. Map Semantics, in *Spatial Information Theory: A Theoretical Basis for GIS*, ed. A.U. Frank and I. Campari, Berlin: Springer-Verlag: 77–91.

Rescorla, M. 2009. Predication and Cartographic Representation, *Synthese* 169/1: 175–200.

Schier, F. 1986. *Deeper Into Pictures: An Essay on Pictorial Representation*, Cambridge: Cambridge University Press.

Schlichtmann, H. 1979. Codes in Map Communication, *The Canadian Cartographer* 16/1: 81–97.