**Pragmatic Encroachment and Closure**

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The idea that there is pragmatic encroachment on knowledge has been vigorously explored in recent literature, but what has been rather less explored is how pragmatic encroachment interacts with another important principle about the structure of knowledge, namely, epistemic closure. In this paper, we plan to go some way toward remedying that. For the purposes of this paper, we will focus on single premise closure, which we will understand as the idea that a proposition competently deduced from something one knows (and believed on that basis) is also known.[[1]](#endnote-1)

It is hard to explore the interaction between pragmatic encroachment and closure without some detailed model of how pragmatic encroachment works. To that end, section 1 presents a model for cashing out some standard subject-sensitive ideas. It is a model that we’ve discussed at length elsewhere,[[2]](#endnote-2) and is built on the idea that one knows *p* only if the gap between one’s strength of epistemic position for *p* and perfect epistemic position makes no practical difference. In section 2, we explain why that model is antithetical to closure. In section 3, we critically discuss some ways of trying to fix the model so as to restore harmony. In section 4, we discuss the interaction of closure with another idea that is used to motivate pragmatic encroachment, namely the idea that stakes make a difference to whether one knows.

**Section 1**

Pragmatic encroachment is typically motivated by combining a fallibilist view of knowledge—according to which a less than perfect epistemic position may suffice for knowledge in some settings—with the view that a less than perfect epistemic position will be insufficient for knowledge in a setting where the gap between actual and perfect epistemic position makes a decision-theoretic difference.

Following our earlier paper, here is a way to model the view. Let us suppose that strength of epistemic position is thought of as a kind of epistemic probability and is calibrated on a scale of 0-1. (We will assume that one’s epistemic probabilities respect the standard probability axioms.) Let rational action be defined in terms of expected utility where the relevant probabilities are the probabilities just alluded to.[[3]](#endnote-3) In this setting, there is a natural way to make precise the idea that the gap between one’s actual epistemic position and perfect epistemic position sometimes but not always makes a practical difference. Let’s define one’s rational preference conditional on *p* in the following way: one’s preferences conditional on *p* are a matter of what is preferable given one’s actual utilities and a probability space that is the result of conditionalizing one’s actual probability space on *p*.

In a situation where one has various options to choose between, the gap makes a practical difference with respect to *p* if and only if one’s actual preference is not the same as one’s preference conditional on p.[[4]](#endnote-4) This allows the following precisification of the initial idea: in a decision setting, one knows *p* only if one’s actual preference and one’s preference conditional on *p* match. We will call one’s position with respect to p ‘practically adequate’ in such cases.[[5]](#endnote-5) (We admit that there are idealizations built into the model. But as with standard kinds of decision theory there can be all sorts of epistemic illumination provided by a model despite its idealizations.)

**Section 2**

Here we present the sorts of cases that make trouble for reconciling a practical adequacy approach to pragmatic encroachment with closure. The trouble arises when premises for which one is practically adequate and which look otherwise in good epistemic standing entail conclusions for which one is not practically adequate. Given the good epistemic standing of the premise and its passing the practical adequacy test, there will be pressure on the proponent of the view to say that one knows the premise. Given closure, one will then know the conclusion (assuming the story is filled in by supposing that one competently deduces it from the premise). But given practical adequacy failure, one will not know the conclusion. That is to say, there are cases where P is practical adequate, P logically entails Q, but Q is not practically adequate. Let us illustrate with a few cases.

Case 1: One wishes to go to Foxboro. One has to choose between train A and train B. One is .95 that train A goes to Foxboro. One is .95 that train B goes to Foxboro. Train B is slightly more comfortable than Train A. As a result, one prefers to get on train B. Consider the conjunctive proposition that train A goes to Foxboro and train B goes to Foxboro. One is practically adequate for this proposition. As things stand one prefers getting on B. Conditional on the conjunctive proposition, one’s preferences do not budge. That train A and train B go to Foxboro entails that train A goes to Foxboro. But one is not practically adequate for the proposition that train A goes to Foxboro. Conditional on the proposition that A goes to Foxboro, we have a situation where B is slightly more comfortable, but is also a riskier option as far as getting to Foxboro is concerned (we assume sufficient probabilistic independence about where the trains go). So long as one is unwilling to risk not making it to Foxboro in order to ride on a slightly more comfortable train, getting on A will be preferable conditional on the proposition that A goes to Foxboro. One will thus fail to be practically adequate for the proposition that A goes to Foxboro.

Case 2: You are need of a clean needle. There are two needles available. You are .98 that needle A is clean and .98 that needle B is clean. (We assume that the probabilities of needles being clean are to some extent independent.) You have a choice between being given one of the needles at random or paying $1 for needle A. As things stand you prefer not to pay. Conditional on the conjunction that needle A is clean and needle B is clean you prefer not to pay. Thus, you are practically adequate for the conjunction. The context is urgent enough that conditional on the proposition that needle A is clean, you prefer to pay $1 to be given needle A. Thus, you fail to be practically adequate with respect to the proposition that needle A is clean.

Case 3: You have the choice between opening door A or staying where you are. If you stay where you are you are certain you will receive a BigMac. If you choose to open door A you are .8 that you’ll receive a Whopper, .1 that you will receive Steak Frites (and no Whopper), and .1 that you will receive nothing. Your utilities are as follows: BigMac (100), Whopper (99), Steak Frites (150), and nothing (0). As things stand, you prefer to stay. Conditional on the proposition that there is a Whopper behind door A, you prefer to stay. But conditional on the proposition that there is food behind door A, you’ll take door A, since conditionalizing on Food removes the risk of receiving nothing while slightly increasing the prospect of receiving Steak Frites.[[6]](#endnote-6)

In this scenario, you are practically adequate for the proposition that there is a Whopper behind door A, but you fail to be practically adequate for the proposition that there is food behind door A.[[7]](#endnote-7) (Note that if you think .8 is not sufficient for knowledge, it’s a trivial matter to change the numbers and maintain the general structure of the example so as to accommodate a higher threshold.) A practical adequacy test on knowledge thus does not fit well with an epistemic closure principle.[[8]](#endnote-8)

**Section 3**

Assuming that one wishes to preserve the principle that knowledge is closed under competent deduction (at least in the single premise case), there are two obvious fixes for the practical adequacy idea. One fix involves a weakening of the practical adequacy requirement, and one involves a strengthening.

The weakened test requires as a necessary condition for knowledge that *p* not that one is practically adequate for *p*, but that one is either (a) practically adequate for *p* or (b) *p* is competently deduced from something for which one is practically adequate. Consider someone who stays put in the burger case, explaining their reluctance to open door A by saying, “For all I knew there was no food behind door A.” The standard pragmatic encroacher will praise that speech on the grounds that in that practical environment, the strength of epistemic position was insufficient for knowledge. But the new test does not straightforwardly vindicate that attitude, since, while practically inadequate, the proposition that there is food behind door A is entailed by the proposition that there is a Whopper behind door A and one is practically adequate for that proposition. Of course, in some cases a proposition for which one is practically adequate will be entailed by but not competently deduced from various propositions for one is practically adequate. In those cases one will not be able to derive an untoward result from the weakened test. However, practically inadequate propositions are allowed to sneak in as knowledge so long as they happen to be competently deduced from ones for which one is practically adequate.[[9]](#endnote-9)

In general, the weakening may allow lots of beliefs that the pragmatic encroacher doesn’t want to count as knowledge to pass the test. Given that the key motivating idea is that practical adequacy is required for knowledge, it would be strange for the pragmatic encroacher to go for this fix. In this way, weakening the practical adequacy test does not look promising.

By contrast, a fix that involves a strengthening of the practical adequacy test looks more plausible. One way to strengthen the test is to require as a necessary condition for knowledge that *p* not merely that one is practically adequate for *p* but also that one is practically adequate for every proposition entailed by *p*.[[10]](#endnote-10) This is indeed a natural reaction to the burger case. The proposition that there is a Whopper entails that there is food.[[11]](#endnote-11) Since one is practically inadequate for the proposition that there is food, one’s belief that there is a Whopper fails the strengthened test. The problem with this approach is that it risks making the practical adequacy test so demanding as to yield unwanted skeptical results. Consider the following case.

Case 4: You are offered a bet on whether it will snow tomorrow in New York. You are .9 that it will snow (SNOW), but the odds of the bet are such that your strength of epistemic position is insufficient to make taking the bet a good idea. Let us suppose that if your strength of epistemic position for SNOW were a bit higher, you would prefer to take the bet. Conditional on SNOW you should take the bet, so you are practically inadequate for SNOW. Consider another proposition for which you are .9 and which is probabilistically independent of SNOW: that your mother will go to Tesco this week (TESCO). Let’s suppose you are practically adequate for this proposition. The proposition TESCO entails (TESCO or SNOW). Notice that conditional on that disjunction the probability that it will snow in New York will go up a little bit. This is because if the scenarios are probabilistically independent there will be some part of your epistemic space where (not-TESCO and not-SNOW). Conditional on the disjunction, the probability of SNOW will go up, and so conditional on the disjunction you’ll prefer to take the bet on SNOW. Since you fail to be practically adequate for the disjunction, given the strengthened test you will not only fail to know the disjunction, but also you will fail to know TESCO.

Elsewhere Fantl & McGrath entertain a global infection model according to which if one fails to know something through the damage incurred by pragmatic encroachment then one fails to know any proposition for which one’s strength of epistemic position is the same or less.[[12]](#endnote-12) If one learns to live with this, one might think that the result we’ve just mentioned isn’t so bad. However, the damage wrought by the strengthened test cannot in general simply be accommodated by appeal to the global infection model. Change the case so that you are .9 that SNOW and .94 that TESCO. Still, conditionalizing on the disjunction will have the effect of raising the probability of both disjuncts and so you will fail to be practically adequate for the disjunction and, by the strengthened practical adequacy test, will fail to know each disjunct. In this case, although global infection poses no threat for TESCO, the strengthened practical adequacy test delivers the result that you don’t know TESCO. Given the strengthened test, failing to know something of probability x doesn’t just pose problems for knowing things with probability less than or equal to x. It also poses problems for knowing things with probability greater than x.

**Section 4**

The practical adequacy model is an attempt to systematize the idea that the gap between one’s strength of epistemic position and perfect epistemic position destroys knowledge when the gap makes a practical difference. But there are other ideas and slogans associated with pragmatic encroachment that are not directly tied to practical adequacy. One particularly popular idea is that the stakes of a context make a difference: roughly speaking, the idea is that the higher the stakes, the harder it is to know. The literature has not been fully cognizant of the fact that this is not of a piece with the practical adequacy idea—we have argued at length elsewhere that on various natural conceptions of stakes, a stakes-theoretic approach to pragmatic encroachment is not at all the same as a practical adequacy approach.

How then does the stakes idea interact with closure? Once again, we need some moderately rigorous notion of stakes in order to pursue this question. Unfortunately, the literature offers little guidance on how the notion of *stakes* is to be spelled out. In what follows, we shall explore the closure-theoretic ramifications of one quite natural notion of stakes, one that is related to the popular idea that stakes have to do with the ‘cost of being wrong’. We shall call this notion the ‘*p*-stakes’ of an action. To calculate the *p*-stakes of an action we compare the expected utility of an action conditional on *p* and the expected utility of that action conditional on not-*p*. (One calculates the expected utility of an action conditional on *p* by conditionalizing one’s credences on *p* and using that updated credence distribution to calculate expected utility.) On this gloss, the larger the gap between these conditional expected utilities, the higher the *p*-stakes for that action.[[13]](#endnote-13)

The first structural point worth observing is that a low-stakes proposition can entail a high-stakes proposition. Given closure, if one knows the low-stakes proposition one will be in a position to know the high-stakes proposition as well.

CASE 5: One has the option to receive the contents of a box. One is .9 there is a dog in the box (DOG), .09 there is a cat in the box (CAT), and .01 there is an inanimate object with -8000 utility. Let us suppose one likes dogs and cats, but one likes cats an awful lot more than dogs. One’s utility for DOG is 100 and one’s utility for CAT is 1000.

The expected utility conditional on there being a dog in the box is the same as the expected utility on there not being a dog there. (Since conditional on DOG, one’s expected utility is 100, and conditional on not-DOG the expected utility is 100.) Thus, the *p*-stakes of the proposition that there’s a dog in the box are maximally low since the expected utility of DOG and not-DOG are the same.

That there’s a dog in the box entails that there’s a mammal in the box. But the *p*-stakes for the proposition that there’s a mammal in the box are extremely high. Conditional on not-mammal the expected utility is extremely low whereas conditional on mammal the expected utility is modestly high. So here we have a low-stakes proposition *there’s a dog in the box* entailing a high-stakes proposition *there’s a mammal in the box*. If one’s preferred picture of pragmatic encroachment is one which endorses the ‘higher the stakes, harder to know’ slogan, then the result will be that it is harder to know *there’a mammal in the box,* despite the fact that it is entailed by the *there’s a dog in the box.*

Consider another case.

CASE 6: One is considering entering a bank. We can imagine this is a paradigm ‘low-stakes’ bank case. Nothing terrible will happen if the tills are closed. Consider the proposition that the tills are open (OPEN). Conditional on OPEN being false, if one walks in one will simply return the next day with little consequence. The differential in expected utility for entering the bank will be roughly the differential induced by the modest cost in energy to make a second trip to the bank.

Now consider the disjunction: either OPEN or it is not the case that if you enter the bank you will be tortured by aliens. This proposition is entailed by OPEN. But the *p*-stakes for the disjunction are extraordinarily high. Conditional on the falsity of the disjunction the expected disutility of your action of entering the bank is incredibly high since you will be tortured by aliens. Here again we have the phenomenon of a low-stakes proposition entailing a high-stakes proposition.

How much will this structural fact be damaging for the advocate of pragmatic encroachment who builds his or her position on the ideology of stakes? Let us briefly describe two ways to try to contain the damage. One way is to shift to a maximal gap conception of stakes where the *p*-stakes of an action are some kind of function of the gaps between (i) the best-case scenario conditional on *p* and the best-case scenario conditional on not-p and (ii) the worst-case scenario conditional on p and the worst-case scenario conditional on not-p. Regardless of how it interacts with closure, this kind of approach is extremely unpromising since it risks flattening out the stakes difference between paradigmatic high and low stakes cases. After all, for the fallibilist, there is a small possibility of terrible things occurring even in the “low stakes bank case” (eg being tortured by aliens, the bank falling on your head etc) and a small possibility of fantastic things as well (being given millions of dollars by a stranger etc).

Of course, we can’t preclude the possibility that there is some fairly natural notion of stakes that is in keeping with the ideas in the literature, but which precludes low-stakes propositions entailing high-stakes propositions. We leave it as a challenge to say what that conception is.

There is a second, initially more promising, option. Notice that in cases 5 and 6 the high-stakes proposition is one for which one has much higher epistemic probability. One might hope that pragmatic encroachment could be developed in such a way that allows one to know a low-stakes proposition in a scenario where it entails high-stakes propositions on account of the fact that the strength of epistemic position for the high-stakes proposition is much stronger. A natural way to develop such a view would be to imagine a sliding scale. When the stakes are maximally low the requirement on knowledge is a relatively low point on a threshold, such as .9. As the stakes increase, the threshold required for knowledge increases with it. In a case where one is .9 in a low-stakes proposition there may be no obstacle to knowing a high-stakes proposition entailed by it so long as the epistemic probability of the high-stakes proposition is suitably higher.

Might one hope to reconcile the stakes idea with closure by some theory spelled out along these lines? A second structural fact is extremely damaging for any such vision. It is this: there are cases where a maximally low-stakes proposition with epistemic probability x entails a significantly high-stakes proposition whose epistemic probability is only slightly higher. We illustrate with this case:

Case 7: One may open a door. One is .9 that there is a dog behind the door (DOG), .09 that there is a cat behind the door (CAT), and .01 that there is something awful behind it (BAD THING). One’s utilities are as follows: 100 DOG, 1000 CAT, and -8000 BAD THING. The *p*-stakes of DOG is maximally low since the expected utility conditional on DOG is 100 and conditional on not-DOG is 100. Consider now the disjunction of (DOG or BAD THING). The epistemic probability of that proposition is only a tiny bit higher than the epistemic probability of DOG—that is, .91. Let us look next at the *p*-stakes of that proposition. Conditional on it being false, there is a cat behind the door, so the expected utility of opening the door is 1000. Conditional on the disjunction being true, the expected utility is 11. Thus, while the epistemic probability of the (DOG or BAD THING) is only slightly higher, the *p*-stakes is vastly higher.

When one reminds oneself of cases like this all hope collapses of maintaining our conception of *p*-stakes and combining it with closure and a sliding scale threshold tied to stakes. Of course, there is an option of formulating a conception of stakes that is more closure-friendly, but we leave it as a challenge to find a notion of stakes that is continuous with the ideas of stakes in the literature and which nicely harmonizes with closure.

We do not take ourselves to have shown that no version of pragmatic encroachment can be harmonized with closure. But we hope we have done enough to show that securing harmony is, at the very least, a difficult task. The discussion here will at least help to illuminate the variety of relevant challenges.

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**References**

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Fantl & McGrath. (2009) Knowledge in an Uncertain World. Oxford: Oxford University Press.

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1. Some qualification is needed to cover cases where one’s knowledge of the premise is lost during the reasoning. If a change in practical environment can make knowledge go away (as the pragmatic encroacher thinks), such cases may be more frequent than we have traditionally supposed. [↑](#endnote-ref-1)
2. See Anderson & Hawthorne (2018). [↑](#endnote-ref-2)
3. Notice that we are not making assumptions about what actually goes on psychologically when preferences are formed. We do not assume that there are credences corresponding to the epistemic probabilities. And we allow that decisions are often achieved by deploying full beliefs and desires in a way that rarely involves reflecting on the epistemic probabilities. [↑](#endnote-ref-3)
4. For the purposes of this paper, the crucial issue is whether one’s top ranked preference changes. A more demanding option is to look at the entire ranking and see whether any ordering within the ranking changes. For discussion of this choice point, see Anderson & Hawthorne (2018). [↑](#endnote-ref-4)
5. Let us say that *p* is irrelevant to a decision just in case no Jeffrey update on *p* makes a practical difference. (It should be clear enough how to extend the definition of what is preferable conditional on p to what is preferable conditional on various Jeffrey updates concerning p.) Whenever *p* is irrelevant to the decision at hand, *p* is ipso facto practically adequate. Call a decision *p*-dependent if one’s preference condition on *p* differs from one’s preference condition on not-*p*. In most (but not all cases) where a decision is not *p*-dependent, *p* is irrelevant. (For an exception, consider cases where one has the opportunity to pay a small amount to get the answer to the question whether *p*. As things stand, it is worth paying. But conditional on *p* and conditional on not *p*, one prefers not to pay.) [↑](#endnote-ref-5)
6. See also case 4 in the section below for another case of the practically adequate entailing the practically inadequate. [↑](#endnote-ref-6)
7. Note that in this particular example the decision is not *p*-dependent on the proposition that *there’s a Whopper behind door A* (see fn 3 for a definition of p-dependence). However, this fact does not make the challenge to closure go away. In any case, it’s easy to tweak the example so that the decision is *p*-dependent. Assume the choice is between 4 options: stay and bet on Whopper, stay and bet on not Whopper, open door A and bet on Whopper, open door A and not bet on Whopper, and that the odds of the bet are set in such a way that it is not good to take the bet given the current epistemic probabilities, but that taking the bet is a good idea conditional on the proposition that there is a Whopper. [↑](#endnote-ref-7)
8. It was brought to our attention at a late stage in the revisions process that Zweber (2016) makes a similar point to the one we advance in this section. [↑](#endnote-ref-8)
9. Of course, as we noted earlier one might go in for a version of pragmatic encroachment that does not give a starring role to practical adequacy. This is not the place to review the other options. [↑](#endnote-ref-9)
10. A milder strengthening would be to require that a belief not only be practically adequate but everything competently deduced from that belief be practically adequate as well. Similar points to those made below can be made for this version. [↑](#endnote-ref-10)
11. We may be taking liberties calling this ‘entailment’ but the case can easily be fixed so that the entailment is straightforwardly logical. [↑](#endnote-ref-11)
12. Fantl & McGrath (2009) chapter 7. [↑](#endnote-ref-12)
13. In our (2018) we discuss some further potential refinements, as well as some ways to define the notion of the *p*-stakes of a decision. We will not go over those details here. [↑](#endnote-ref-13)