1. Introduction: Bridge Principles

What is normativity of logic? Not only does logic seem to have normative significance to our beliefs, but also logic is sometimes taken to be a normative discipline.\(^1\) If you believe something, one might think, then you ought to believe its logical consequences. Whether correct or not, this is supposed to be a norm of our beliefs that logic tells us.

According to MacFarlane (2004), normativity of logic may be expressed by principles that bridge between facts of logical consequence and epistemic norms. Such principles are called Bridge Principles (BPs). BPs have the following common form:

\[
\text{BRI} \quad \text{IDGE PRINCIPLE}
\]

If \(P_1, P_2, \ldots, P_n \models Q\), then (normative claim about believing \(P_1, P_2, \ldots, P_n, \text{and } Q\)).

(Here ‘\(\models\)’ expresses the logical consequence relation.\(^2\))

As is obvious from MacFarlane’s characterization, we can conceive many BPs.\(^3\) But is there any correct PB and, if any, which is the correct one? In this talk, to find out the correct BP in a principled way, I explore the connection between BPs and epistemic closure principles in epistemology. Among BPs, I focus on the following principle:

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\(^1\) E.g., Frege 1893 and Priest 1979. See Steinberger (2016b).

\(^2\) It is controversial how to characterize the logical consequence relation. Logical consequence might be either semantically, proof-theoretically characterized, or taken as primitive. In this talk, I do not take any stand on this matter, though I suspect that it is not unrelated to the controversy on the normativity of logic.

\(^3\) For a systematic classification of BPs, see MacFarlane (2004).
**Br+-PRINCIPLE**

If \( P_1, P_2, \ldots, P_n \models Q \), then (if \( S \) has reasons to believe \( P_s \), \( S \) has a reason to believe \( Q \)).\(^4\)

(‘\( S \) has reasons to believe \( P_s \’) abbreviates ‘\( S \) has a reason to believe \( P_1 \), \( S \) has a reason to believe \( P_2 \), \ldots, and \( S \) has a reason to believe \( P_n \’’.)

The main claim of this talk is that, given some assumptions, we can derive a variant of Br+-Principle from the principle of epistemic closure called Knowledge Closure.

### 2. Knowledge Closure

Epistemic closures are widely endorsed by epistemologists.\(^5\) The basic idea behind epistemic closure is that we can extend our knowledge by inference. Suppose you know that the tree in my garden is a rose and all roses have thorns. Then, you are in a position to know that the tree in my garden has thorns, because this is logically entailed by the propositions you know.

One might formulate a principle of epistemic closure as follows:

**SIMPLE KNOWLEDGE CLOSURE (SKC)**

If \( P_1, P_2, \ldots, P_n \models Q \), then necessarily (if \( S \) knows \( P_s \), then \( S \) knows \( Q \)).

But KC is not plausible as it stands. As Hawthorne says, ‘[if] at \( t \), I know that \( p \) and know that \( p \) entails \( q \), I may still have to do something—namely perform a deductive inference—in order to come to know that \( q \). Until I perform that inference, I do not know that \( q \).’\(^6\) To accommodate these considerations, SKC is usually modified as follows:

\(^4\) This principle is called Br+ in MacFarlane (2004) because (1) it uses the normative notion ‘reason’, (2) the normative notion is in both the antecedent and the consequent of the conditional normative claims, and (3) the consequent is concerned with ‘reason to believe’ rather than ‘reason not to disbelieve’. In MacFarlane (2004), he uses ‘have reason to believe’ rather than ‘have a reason to believe’. I’m not sure whether this makes any difference. In any case, I’m interested in principles that use ‘have a reason’.

\(^5\) Dretske (2014) and Nozick (1981) are notable exceptions. For a criticism of their views on KC, see Hawthorne (2014).

\(^6\) Hawthorne 2004, p. 32.
**Knowledge Closure (KC)**

If $P_1, P_2, \ldots, P_n \models Q$, then necessarily if $S$ knows $P$s and competently deduce $Q$ from $P$s, thereby forming a belief $Q$ on this basis while retaining $S$’s knowledge $P$s, then $S$ knows $Q$.\(^7\)

Obviously, KC is structurally similar to BPs. Both are about relationship between *logical consequence* and *subjects’ epistemic status*. In addition, there are BPs (e.g., Br+-Principle) that like KC, given facts of logical consequence, entail a conditional statement about epistemic status, which has normative operators both in the antecedent and the consequent. Given these similarities, one may naturally ask: *does KC entail any BP?*

I argue that, given some assumptions, a variant of Br+-Principle can be derived from KC. To formulate the variant, I need to introduce two distinctions about reasons.

### 3. Sufficient and Insufficient Reasons

First, we can distinguish between **sufficient** and **insufficient** reasons. The idea is that one’s sufficient reason to believe $P$ must be *on its own* strong enough to be *able to base her knowledge* that $P$. Suppose, for instance, $S$ is looking at a bird which looks like a swan. $S$ has a (apparent) visual experience of a swan. Then, even if the bird is a duck cleverly disguised like a swan, her visual experience *could* be a reason on the basis of which she *knows* that there is a swan. Her reason to believe it is on its own sufficient in the sense that it is *metaphysically possible* that someone with the same reason knows it on the basis of the reason.

**Sufficient Reason and Possibility of Knowledge**

$R$ is a sufficient reason to believe $P$ iff there *could* be a subject who knows $P$ on the basis of $R$.\(^8\)

Here ‘could’ expresses metaphysical possibility. For $S$ to know $P$ on the basis of $R$, at least, $S$ has to base her belief on $R$ and $R$ itself must be strong enough to justify $P$. Note that $S$’s having a sufficient reason to believe $P$ does not ensure $S$’s being in a position to know $P$, because $P$ may be false and other necessary conditions for $S$ to know $P$ may not be satisfied.\(^9\)

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\(^7\) See Pritchard (2015), Hawthorne (2004), and Williamson (2000).

\(^8\) Note that if contextualism about knowledge (see, e.g., Cohen 1998, Lewis 1996) is true, the distinction between sufficient and insufficient reasons may be context dependent.

\(^9\) ‘Other necessary conditions’ may include *external* conditions such as the ‘safety’ condition.
Not all reasons to believe propositions are sufficient. Suppose you draw lots which you know contains one million tickets. You know that the lottery contains only one winning ticket and the probability that your ticket is a loser is high. It seems that you have a reason to believe it. Your reason to believe it is that it is highly probable that your ticket is a loser. But this is not a sufficient reason to believe it. This is because before hearing announcement of the winner, it is not possible that someone knows that the ticket is a loser on the basis of the reason that it is highly probable. Thus, in the lottery case, the probabilistic reason is not sufficient.

4. Pro-tanto and All-things-considered Reasons

Second, whether reasons are practical or epistemic, it is usual to distinguish between pro-tanto and all-things-considered reasons. Here I focus on epistemic reasons.

A pro-tanto reason to believe P is a consideration which counts in favor of P. Pro-tanto reasons are defeasible in the sense that they may be either undermined or opposed by other considerations (Pryor 2012, 2013).

A pro-tanto reason R to believe P is undermined by another reason R* when R is made to
count less in favor of $P$ by $R^\ast$. For example, suppose you see a wall which looks red. Your visual experience $R$ may be your reason to believe that the wall is red ($P$). However, you find that the room lighting is red ($R^\ast$). Your reason ($R$) to believe $P$ is made to count less in favor of $P$ by the fact that the room lighting is red ($R^\ast$). Thus, $R$ is undermined by $R^\ast$.

A pro-tanto reason $R$ to believe $P$ is opposed by another reason $R^\ast$ when $R^\ast$ counts in favor of something incompatible with $P$. For example, suppose you see a bird that looks like a swan. Your visual experience $R$ may be your reason to believe that the bird is a swan ($S$). However, suppose your friend ornithologist says that it is a duck cleverly disguised like a swan. That the ornithologist says that it’s a duck ($R^\ast$) is a reason to believe that the bird is a duck ($D$). Since $S$ and $D$ are incompatible, $R$ is opposed by $R^\ast$.

When reasons are undermined or opposed, they are defeated. A pro-tanto reason $R$ is an all-things-considered reason if $R$ is not defeated (that is, neither undermined nor opposed) even when all other reasons you have are taken into consideration.

I have introduced the distinctions needed to state the principle I want to argue for. For brevity, let’s say ‘$S$ AS-reasonably believes $P$’ when $S$ believes $P$ and $S$ has an all-things-considered sufficient reason to believe $P$.

**ALL-THINGS-CONSIDERED SUFFICIENT REASON CLOSURE (ASRC)**

11 The two distinctions among reasons are independent. The distinction between pro-tanto and all-things-considered reasons depends on whether there exist other defeating reasons. Thus, being an all-things-considered reason is an extrinsic property of a reason. In contrast, being a sufficient reason to believe $P$ is an intrinsic property of a reason. (More precisely, it is a relation intrinsic to the pair of a reason and a proposition.) That is, the distinction between sufficient and insufficient reasons to believe $P$ depends on whether they are on their own strong enough to base knowledge that $P$.

Not all all-things-considered reasons are sufficient reasons. For example, in the lottery case, the fact that the probability of your being a loser is high is an all-things-considered reason to believe that your ticket is a loser because it is undefeated, though it is an insufficient reason to believe it because someone cannot know it on the basis of the probabilistic reason.

Conversely, not all sufficient reasons are all-things-considered reasons. For example, suppose you see a wall which looks red. Your visual experience $R$ may be your reason to believe that the wall is red ($P$). However, you find that the room lighting is red ($R^\ast$). Here $R$ is defeated by $R^\ast$. However, since it is possible that someone knows $P$ on the basis of the visual experience $R$ (when the lighting condition is normal and the wall is in fact red), $R$ is a sufficient reason to believe $P$. Thus, $R$ is a sufficient, but not an all-things-considered reason.
If $P_1, P_2, \ldots, P_n \models Q$, then if $S$ \textit{AS-reasonably believes} $Ps$ and $S$ competently deduces $Q$ from $Ps$, thereby forming a belief that $Q$ on this basis while retaining S’s \textit{AS-reasonable beliefs} that $Ps$, then $S$ \textit{AS-reasonably believes} $Q$.

Before I present the main argument, let’s state two assumptions that together with KC entail ASRC.

5. Internalism about Epistemic Reasons

The first is an assumption about relationship between mental states and having reasons. Let’s say ‘$S$ and $S^*$ are internal twins’ when they have the same non-factive mental states. Because, e.g., $S$’s inferring $Q$ from $Ps$ entails neither $Ps$ nor $Q$, I take it that non-factive mental states include not only beliefs and (apparent) experiences, but also \textit{inference}. The first assumption we need is as follows:

\textbf{INTERNALISM ABOUT EPISTEMIC REASONS (INTERNALISM)}

If $S$ and $S^*$ are internal twins, $S$ and $S^*$ have the same reasons.

Behind (INTERNALISM) is the so-called \textbf{New Evil Demon Intuition} (Conce et al. 1988, Littlejohn 2019). Suppose $S$ and $S^*$ are internal twins, though $S^*$ is deceived by the Cartesian evil demon while $S$ is not. They have the same non-factive mental states such as beliefs,

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12 Because ‘$S$ competently deduces $Q$ from $Ps$, thereby forming a belief that $Q$ on this basis while retaining S’s AS-reasonable beliefs that $Ps$’ implies ‘$S$ believes $Q$’, the final consequent of ASRC reduces to ‘$S$ has an AS reason to believe $Q$’.

13 \textbf{Factive} mental states are mental states whose contents must be true for the states to exist. For example, knowing and seeing that $P$ are factive mental states, because they entail $P$.

14 Silins (2005, p. 376) formulates a similar principle which he calls Evidential Internalism: ‘Necessarily, if $A$ and $B$ are internal twins, then $A$ and $B$ have the same evidence’.

15 (INTERNALISM) is largely independent of the matter of ontology of epistemic reasons. (For ontology of epistemic reasons, see Turri 2009.) (INTERNALISM) is compatible not only with mentalism about reasons, according to which reasons are mental states, but also propositionality, according to which reasons are propositions. Furthermore, (INTERNALISM) compatible with the claim that reasons are states-of-affairs. What (INTERNALISM) excludes are positions that require reasons to be factive (mental states), true (propositions), or obtaining (states-of-affairs).
(apparent) experiences, and inferences. It is natural to suppose they are *equally justified* in believing propositions, e.g., that there are two hands. While many of S’s beliefs may be knowledge, S*’s beliefs are for the most part false. But S*’s beliefs seem to be justified as S’s.

Because sufficient reasons are, of course, reasons, it follows from (INTERNALISM) that internal twins S and S* have the same sufficient reasons. Furthermore, since internal twins have the same considerations, they have the same all-things-considered reasons. Thus, given (INTERNALISM), internal twins have the same AS reasons.

**6. Inferential Knowledge and Reasons**

The second assumption states that one cannot have inferential knowledge which is based on no AS reason:

**IMPOSSIBILITY OF INFERENTIAL KNOWLEDGE WITHOUT AS REASONS (IMPOSSIBILITY)**

There couldn’t be a subject who *inferentially* knows P but has no AS reason to believe P.

(IMPOSSIBILITY) is motivated as follows: I take it that inferential knowledge is, by its very nature, knowledge based on reasons. If you know P inferentially, it seems that you have a sufficient reason to believe it, that is, a reason on the basis of which you know P.16 Furthermore, if your belief that P is inferential knowledge, your reason must not be defeated. (In general, if knowledge is based on a reason, the reason must not be defeated. Otherwise, you wouldn’t know P.) Thus, inferential knowledge without AS reasons is impossible.

**7. Argument from KC to ASRC**

Given (INTERNALISM) and (IMPOSSIBILITY), we can derive ASRC from KC as follows:

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16 What is the reason based on which you inferentially know P? There are two options. First, the reason may be the premises from which you draw the conclusion P. Second, it may be the reasons based on which you believe the premises. (The second requires that if you know something inferentially, there must be reasons based on which you believe the premises from which you draw the conclusion.) Though this question is important, I do not go into it in this talk because it is independent of (IMPOSSIBILITY).
Assume for *reductio* that ASRC is false. Then, for some Ps and Q such that \( P_1, \ldots, P_n \models Q \), (1) S AS-reasonably believes Ps, (2) S competently deduces Q from Ps, thereby forming a belief that Q on this basis while retaining S’s AS-reasonable beliefs that Ps, but (3) S doesn’t AS-reasonably believe Q. Since (2) entails that S believes Q, it follows from (3) that S doesn’t have any AS-reason to believe Q.

Let Rs be S’s AS reasons to believe Ps. (That is, S has an AS reason \( R_1 \) to believe \( P_1 \), \ldots, S has an AS reason \( R_n \) to believe \( P_n \).) S’s internal states such as beliefs, experiences, and inferences are *compatible* with knowing Ps based on Rs. This is because, first, since Rs are sufficient reasons to believe Ps, Rs are able to base knowledge that Ps and, second, since Rs are all-things-considered reasons, they are not defeated by other considerations which S has to take into account. (If Rs are just pro-tanto, some of Rs may be defeated by other considerations. In that case, Rs may be incompatible with knowing that Ps.) Therefore, there could be an S’s *internal twin* S* who knows Ps on the basis of Rs.

Since S* knows Ps, S* retains her knowledge that Ps iff S* retains her reasonable beliefs that Ps. Therefore, the following equivalence holds: S* competently deduces Q from Ps, thereby forming a belief that Q on this basis while retaining S*’s *reasonable beliefs* that Ps iff S* competently deduces Q from Ps, thereby forming a belief that Q on this basis while retaining S*’s *knowledge* that Ps. Since S and S* are internal twins, S and S* do the same inference from Ps to Q. Therefore, it follows from (2) that S* also competently deduces Q from Ps, thereby forming a belief that Q on this basis while retaining S*’s *knowledge* that Ps.

S* knows P and S* competently deduces Q from Ps, thereby forming a belief that Q on this basis while retaining S*’s knowledge that Ps. Therefore, by KC, S* knows Q. Furthermore, since S* forms her belief that Q inferentially, S* *inferentially* knows Q.

But, by (INTERNALISM), since S* is an internal twin of S, S and S* have the same AS reasons. Since, by (3), S doesn’t have any AS reason to believe Q, neither does S*.

Thus, S* has no AS reason to believe Q but inferentially knows Q. However, this contradicts (IMPOSSIBILITY). Therefore, we must reject the initial assumption that ASRC is false. Thus, ASRC is true.

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17 For example, suppose you see a bird which looks like a swan. Your visual experience R may be your reason to believe that the bird is a swan (\( P_1 \)). However, suppose your friend ornithologist says that it’s a duck *cleverly disguised like a swan*. The fact that the ornithologist says that it’s a duck (\( R^* \)) is a reason to believe that the bird is a duck (\( P_2 \)). Thus, R is opposed by \( R^* \). Since having R and \( R^* \) is incompatible with knowing \( P_1 \), your internal states are incompatible with knowing Ps.
References