THE STRONG FUTURE TENSE

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1 *Introduction*   If the universe is deterministic, to say at time **t** that it will be the case that p is to say that p is true in the only physically possible future relative to **t**. But if the universe is indeterministic, the meaning of "it will be the case that p" becomes more problematic. Relative to **t** there are many alternative possible futures instead of one. In which of these should we require that p be true? The answer given by classical tense logic is that Fp is true iff p is true at some point in at least one such future (see for example [6], p. 38.). But this answer makes it quite possible for Fp to be true while p never is; this happens if p is true in some possible future which turns out not to be actual, i.e., not to be the one that the history of the world follows. This is a defect of F *qua* representative of the future tense of natural languages. If p turned out not to be true we would be justified in accusing the person who previously uttered "Fp" of speaking falsely. In what follows we shall examine a different sort of future tense operator which avoids this defect.

The most straightforward way of avoiding the difficulty of having Fp true and p false in an indeterministic future-branching universe is to replace F by a stronger operator. "Fp" says in effect that p is true somewhere on some future branch. Let "Sp" assert that p is true somewhere on every future branch. Then a situation in which Sp is true and p never is cannot arise. However, the converse situation can arise: it is possible for Sp to fail to be true even though p turns out later to be true. (This can occur when p is true on some future branches but not on all.) Although this might seem to render Sp as deficient as Fp, on balance Sp appears to fit the use of the future tense in natural languages better. The man who arrives at the powerhouse during a torrential downpour and asks breathlessly, "Will the dam burst?", is not asking if the dam's bursting is a feature of *some* possible futures, but of *all*.

Against what has just been said it might be objected that what determines the truth of any statement of the form "it will be the case that p" is not whether p is true in some possible futures, or in all, but whether p is ture in *the actual* future. That is, in the branch that becomes history. But