

prompts one to consider how many sheets appear on television per episode. While the presentation of sheets in a given time interval is typically finite, we are now equipped to prove that the actual number available is necessarily infinite.

Infinite Sheet Hypothesis. *Let B be a bed. The following are equivalent:*

- (a) *Some neighborhood of B contains infinitely many sheets.*
- (b) *Some neighborhood of B is on television.*

Sketch of Proof. Suppose that a neighborhood U of B is on television. Then, let A be the set of all people in B , and let S be the set of all sheets in U . Whenever $\alpha \in A$ leaves B , α is covered by some sheet $s_\alpha \in S$. By Lemma 1, the cardinality of the set of sheets contained in a bed on television is constant over all episodes. Thus, $(S : 1) = (S : 1) - 1$, so $(S : 1)$ must be infinite.

We leave the proof that condition (a) implies (b) as an exercise for the reader.

For related results regarding sheets and film, see [Insel 1], page 75-89.

§2. Other Results on Furniture

We now move to a field that has been the subject of much recent interest, broadcast table theory. While results about four-sided tables are well known, little is understood about the behavior of arbitrary tables.

Theorem 2.1. *Let T be a 4-sided table with side a_1 , a_2 , a_3 , and a_4 . If T is on television, then at most 3 sides of T can be in use at any one time. Moreover, if there is a unique unused side, it cannot be shorter than any side in use.*

A version of this proposition dates to third century China, but the proof of the theorem as stated can be found in [Moore, Van Dyke]. The most obvious generalization would be to state that if a n -sided table appears on television, then at most $n - 1$ sides can be in use, but we can show a stronger result.

Theorem 2.2. *For all k , there is some N such that if $n > N$, then an n -sided televised table has at least k sides unused.*

Proof. Suppose not. Then for all k , for all N , there exists an n -sided table T_N with more than $n - k$ sides in use. In the limit case, there exists some T_ω with infinitely many sides in use. Since people have positive size, at least one back must be visible from any vantage point, contradicting the principle that backs are seen only for gratuitous display of buttock.

If we consider typical arrangements of tables with other furniture, several useful corollaries can be derived. Particular examples regarding coffee tables and sofas are stated as Exercises 8-13.