> is shrinking to zero, yet having time for human intervention is absolutely imperative if we are to avoid catastrophic error – this problem doesn't have a technological fix.

Daniel Frei's paper provided a critical examination of the existing literature on accidental nuclear war. Rather than construct an empirically derived theory of the risk of accidental nuclear war, he identified some unexamined issues. One of the main issues with which he dealt was the probability of accidental nuclear war, probability being defined as the combined result of a number of risk factors. Some of these risk factors, would be independent; that is, the probability of their occurring simultaneously is very much lower than their occurring individually. Examples of a pair of independent risks, which could in tandem lead to accidental nuclear war, would be a faulty computer chip setting off a false alarm and a mentally ill submarine commander misinterpreting the data. On the other hand, some of the risk factors leading to accidental nuclear war would be interdependent since the failure of one factor may cause the failure of another. An example of interdependent risks would be an unintentional missile launch by the United States leading the Soviets to conclude that they were under a massive attack. The more interdependent risks there are in the system, the higher the probability of an accidental nuclear war. The provision of safeguards is intended to create redundancies within the nuclear-weapons system, and thus make interdependent risks independent. Among such measures, Frei lists double-key systems, permissive action links and detonation locks.

Dr. Frei pointed out, however, that in real world systems risks are neither fully interdependent or independent. Thus far the literature has failed to identify the level of interdependence between the risk factors leading to accidental nuclear war. Frei argued that in order to achieve credibility with decision-makers the literature must identify:

> . . . precisely which risk factors on the level of weapons technology and command and control systems are affected by each other and the nature of an acute international crisis as compared to situations of 'normalcy', and in what ways are these causal interrelations structured.

In addition to emphasizing the need for the clear identification of interdependence among risks, Frei also warned that risks cannot be assessed in a political vacuum, since the current nuclear dilemma is very much the product of East-West confrontation:

> The differences in values separating East and West should not be neglected nor must it lead to premature and superficial identifications of common interests. Today's situation is much more complex. Also the fact that both East and West wish to avoid a nuclear war does not necessarily imply that they share identical ideas about how to control and reduce this risk.