

The orienting response is a reaction to novel information (in the information theory sense) and not to the stimulus as such; it is not a conditioned response. Its significance to lie detection is that if a question is routine, orienting (i.e., the magnitude of physiological responses) should be minimal and rapidly disappear. If a question is novel, orienting should be strong and persistent. In other words, a truthful response should result in a minimal orienting reflex. A falsification requires decision, choice of words, a judgment designed for self protection and, in this case, the orienting reflex should be prominent and reinforced.

In summary, the U.S.S.R. must be regarded as highly qualified in the technology of lie detection, at least equal to that of the United States and Soviet scientists are fully competent to accomplish in this area anything that we can do.

10. KNOWLEDGE DETECTION FOR ARMS CONTROL AND POLITICAL PURPOSES

An unusual proposal to use lie detection as a means of inspecting an arms control agreement was first made in January 1956 by Lewis C. Bohn (1960, 1961) in a RAND memorandum; in later versions, he calls this idea "knowledge detection." Another suggestion, called "truth detection" has been made by Gerard (1961) that the polygraph technique be used to demonstrate truthful intent in international political affairs:

"The proposal is simply this: all key men, speaking officially for their country in private negotiations or public addresses, subject themselves to lie, or better, truth detection procedures administered by technicians from an opposing country or from the UN. More positively, when a statesman wished to convince the world that he was making a true statement he would subject himself to truth detection."

Both of these ideas assume that additional knowledge about the polygraph would increase our willingness to use it for purposes beyond those of conventional interrogation. Bohn recognizes that the accuracy of lie detection is not known and that claims for its validity may be suspect. Bohn and Gerard believe that a carefully designed, full-scale research program is desirable because it may improve the reliability of the lie detection procedure, reduce the need for subjective judgment in interpreting the results, and increase our understanding of the underlying physiological and cultural processes which influence its accuracy.

The remainder of this section is concerned solely with the application of lie detection to arms control inspection because of its possible military value. It is important to know the true reliability and validity of the lie detection method; while higher values are desirable, the actual values are not critical except that they would influence the number of people who would have to be interrogated to achieve any desired level of statistical confidence and, naturally, establish an upper bound to the value of this method.

American participation in an arms control agreement with the U.S.S.R. requires reliable assurance that no attempt is being made to violate the agreement. This assurance can be accomplished only by direct physical inspection of weapon delivery systems, fissionable materials, factories, test sites, and the like. The categories of information which are required to make an arms control agreement acceptable are described in Frisch (1961). The history of our negotiations with the Russians provides little reason to believe that they would accept on-site inspection on a scale required for reasonable assurance of compliance with an agreement. At one time they proposed a limited amount of such inspection, which we regarded as inadequate; since then their position has become even less cooperative.

Knowledge detection, assuming improved lie detection methods are feasible, provides a means around this impasse and, in certain respects, provides additional capability to the concept of inspection. Knowledge detection does not necessarily require inspectors to travel all over the U.S.S.R. Knowledge detection requires only that access be afforded to selected individuals who, by virtue of their positions as key scientists, military or political figures, would be in a position to know about current activities in such critical areas as troop movements, weapon developments, nuclear tests, and the like. Most of these people are identifiable and therefore an agreement would provide that some proportion of them could be interrogated regularly, probably on a random basis. Evidence from such interrogations that a violation may have occurred would point to the need for an on-site, physical inspection at a particular location or activity. Thus, there could be fewer physical inspections without reducing our confidence in the degree of compliance with an agreement.

Nonphysical inspection would also potentially make available a type of information beyond the capability of any physical means of inspection. This lies in the area of intent and future plans which, in general, produce limited physical