

evidence. It also affords some means of knowing about technological developments for future weapons with physical characteristics beyond the detection capability of an inspection system set up before knowledge of their existence was available; or of tests conducted at remote times and places below the sensitivity level of an existing detection system.

There are some limitations to physical inspection. It is very costly, requires some selection among all the possible events of interest, and can only respond above the threshold of those sensors which have actually been installed. On the other hand, knowledge is pervasive and is not bound by time or place.

Bohn and others¹⁷ who have explored this idea recognize that it has advantages and disadvantages. The characteristics of a nonphysical inspection scheme would have to be evaluated carefully to determine whether it has a useful role, among many means of inspection, in providing the information necessary to assure us that possible military and political agreements are not being violated.

Knowledge detection is proposed by its supporters as an adjunct to and not a substitute for physical inspection. There are formidable questions as to whether lie detection would work when used by people of different cultures; or whether the records of key leaders would show indications of deception when they deliberately mislead foreigners in accord with their country's interest, as they see it. Finally, key leaders need not lie if provisions are made to keep them ignorant of significant developments. There is no evidence that the U.S.S.R. would find nonphysical inspection any more acceptable than physical inspection or that an agreement with them could be reached in which it was one of the means of inspection.

To some extent, the use of lie detection in search of knowledge among a group of people is a simpler problem than whether a particular individual has committed a crime. In the latter case, extremely high reliability is required. In the former, we are searching only for leads which become significant when observed in several people and which alert us that a particular type of event may have occurred and that, therefore, a particular physical inspection may become necessary. Detection of knowledge among many people lends itself, conceptually at least, to the use of standardized, pretested questions, simultaneous testing of groups of people, multiple recorder, and automated data processing.

For purpose of the present paper, however, it is sufficient to recognize that additional research in lie detection is desirable primarily for the use to which it is now put in our own military establishment. Research and development for such purposes will also provide the information required to apply lie detection to other uses that may arise in the future, of which arms control inspection is a prime example. The question as to whether or not we should consider it for such use obviously requires that we know more about the capabilities of lie detection, the problems faced in its employment with individuals in a society competitive with our own, the sampling procedures which would be required and the value of the information derived by its use in comparison with the cost of operating such a data-gathering system. These questions can only be answered by supporting additional research and development on these topics.

11. THE INTERVIEW TECHNIQUE IN LIE DETECTION

One could write a treatise on lie detection by considering the interview technique to the neglect of the polygraph instrument. Lie detection requires the use of a delicately controlled interview in order to understand the instrumented responses which are obtained. The intimate combination of interview technique and polygraph technique is recognized by polygraph examiners and the key writers on lie detection. In describing the interview, attention is directed to the use of "relevant-irrelevant" type questions, "peak of tension" procedures, control questions and the need for repeating a test; there is clear concern with the importance of a well-controlled interview. Learning how to interview properly comprises a substantial portion of the training of a polygraph examiner. This probably accounts for the preference for polygraph examiners who have previously qualified as military investigators.

Prior to an examination, the examiner is supposed to prepare his questions in a form which permits only "Yes" or "No" answers. Before the polygraph is attached, it is general practice to review with the person the precise questions to be asked to make sure that they are completely understood. A polygraph examination is severely contaminated if a person does not understand the

¹⁷ Melman (1958), pp. 33-44; Milburn et al. (1960); Bernard T. Feld in Brennan (1961), pp. 317-332; Jerome B. Weisner in Henkin (1961), pp. 112-140; Jay Orear (1961).