INTRODUCTION TO THE CONFERENCE

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We at the Naval Training Equipment Center are very grateful that the Chief of Naval Education and Training authorized this Sixth NAVTRAEQUIPCEN/Industry Conference since it brings the Training Equipment Industry and the Naval Training Equipment Center together to further mutual understanding and interests. As in past conferences, our aim is to promote the cooperation between the NAVTRAEQUIPCEN and Industry, to exchange ideas on new training simulation technology, with the goal of further improving military training programs, to present to Industry the very significant changes that have occurred since our last conference, and, last but not least, to hear Industry's problems in their relation to the NAVTRAEQUIPCEN.

As you remember, the Naval Training Equipment Center transferred from the Command of the Chief of Naval Material to that of the Chief of Naval Training, now the Chief of Naval Education and Training, the very day our last conference started. Since then we have gone through major reorganizations and reorientations. To a large extent this has been due to the fact that in July 1972 the Naval Training Support Command was established and became the direct Command of the Naval Training Equipment Center and that the Naval Training Support Command and other of its field activities meanwhile assumed several functions that had been previously the responsibility of the Naval Training Equipment Center.

The dust--I think--has by now sufficiently settled and we can give you an insight into our new modus operandi which has naturally an impact on Industry's interfacing with the NAVTRAEQUIPCEN. It is therefore one of the goals of the Conference to bring Industry up to speed on the new NAVTRAEQUIPCEN/Industry interface.

Another fact we like to get across to Industry is the steady trend to increase the NAVTRAEQUIPCEN's responsibilities more and more beyond the plain acquisition of training devices. For the NAVTRAEQUIPCEN is now involved in the whole training process, especially the optimization of the training cost for a large sector of a career training program using the most advanced instructional technology.

For this purpose, we have to look at a larger training time span and develop and select that training methodology that provides us with the trained man under optimization of training cost and time, considering, of course, simultaneously all other restraining parameters.

Advances in training device technology play a major role in obtaining a better trained man, and this can be and has to be achieved even at an overall training cost reduction.

Latest training device technology in the form of adaptive systems has individualized the training syllabus and made it possible at the same time to increase the instructor's effectiveness multifold. Thus, we shortened simultaneously the training time required and achieved a more proficient Naval officer and enlisted man.

On the other hand there are many untouched or only barely touched areas that require our attention and effort. For example, we have to replace more training that is presently conducted in the operational environment with training in training devices and equipment, an effort that is often limited by the present state-of-the-art in training device technology.

Foremost among the unresolved technological problem is the wide-angle visual environment display problem that has so far not yet found a satisfactory economic solution. Though some progress has been made, especially in the computer-generated image area, much more effort is required in the wide-angle visual environment display area. For here major progress will widen the application of synthetic training and improve the training economy significantly.

What we are looking for are wide-angle visual displays for all kinds of weather conditions, for day and for night operation for the purposes of training takeoff and landing on carrier and on shore facilities, for training traffic pattern and approach flying, for formation and acrobatic flying, for weapons delivery both air-to-ground and air-to-air; in short, for all aviation exercises that demand the visual observation of the environment. We are, of course, aware of the fact that such a diversity of requirements cannot be met in a single system in the near future unless a major breakthrough in the state-of-the-art occurs.

Another area of technology that deserves an all-out effort is the software problem for our training device computer systems. For several years we have hoped that it would be possible to develop a special training device computer language that would reduce the cost of programming and reprogramming of training device computers--a language that would enable a larger group of people without extensive training to undertake programming effectively. It seems though that the progress in the art of computer technology is always running ahead of the software methodology. For example, during the last few years we have had a rapid increase in the application of minicomputers and an increased appreciation of the values of hybrid computer systems, both areas which still require highly skilled specialized personnel for optimal programming.

Another problem area that has been attacked during the last few years is training for fire fighters. The old method of burning diesel oil for fire-fighting training with its inherent black smoke generation and pollution consequences, has been widely replaced by a water spray system that burns diesel fuel without releasing polluting smoke.

Another approach for a non-polluting fire-fighting training system has been developed in the NAVTRAEQUIPCEN laboratories. It uses gas which is electronically controlled to simulate the effects of hose handling and fire characteristics, such as flashback.

However, since we need smoke for certain training exercises, we are looking for means to generate non-polluting smoke which can be controlled by the instructor. A solution to this problem would not only benefit the military fire-fighting training program but also its civilian counterpart in their strive for a better pollution control.

With higher demands on the capabilities of training equipment, its complexity is further increasing and therefore, in spite of improved reliability of components and subsystems, the maintenance problem is still with us. The impact of equipment failure, and even partial equipment failure, is the more felt, the more the training equipment plays a truly integral role in the training curriculum, as it is our endeavor for the new and future training systems. It is here, therefore, even more important to reduce the repair time, and since failure diagnosis and isolation takes about seven times as long as the actual repair, it becomes even more important than in the past to use automatic test equipment and failure indicators. Much progress has been made in this area of technology during the last few years, and it is of utmost importance to make use of these achievements in new training devices. As most of you who are familiar with this area know, automatic test equipment cannot be just an add-on, but the training equipment has to be designed for testability to make the automatic testing an integral part of the training equipment. I call your attention especially to the June 1973 publications of Project SETE, which was handled by the School of Engineering and Science of New York University in June 1956.

Whenever the desired characteristics of a new training device or system are established, based on which we establish the technical specifications for an acquisition we think that this equipment we are buying will meet the previously established training requirements.

Certainty that this equipment will really serve its purpose (namely, provide the best time- and cost-economic training to produce the best trained man) can be obtained only if a formal thorough evaluation has shown the achieved transfer of training, shown the achievement of the required proficiency through the use of the equipment in the planned training curriculum. We have therefore started to evaluate the latest most advanced training equipment in a curriculum setting both by in-house teams as well as under contract to determine the best method to achieve optimum transfer of training. We thus focus our attention to achieving for the fleet the best trained man, the fully proficient man.

ABOUT THE AUTHOR

DR. HANNS H. WOLFF was born in Berlin, Germany and came to the United States in 1947. Prior to coming to America Dr. Wolff was with the Telephon Fabrik, J. Berliner A. G., and for 16 years, a Chief Engineer of the Loewe-Opta Radio A. G. After the war he joined the staff of the Technical University of Berlin and was in charge of the Chair for Theory of Electricity. Dr. Wolff was on the staff of the W. L. Maxson Corporation and has held high technical positions in American industry. He served as Chief Engineer of the Electronics Laboratory of the Paul Moore R&D Center of the Republic Aviation Corporation prior to his assignment to the Naval Training Equipment Center in 1963.

Dr. Wolff has a Bachelor, Master, and Doctorate Degree in Electrical Engineering as well as a Dozent Doctorate Degree, all from the Technical University of Berlin. He has been awarded many patents from the United States and various other countries. He is also the author of many technical papers; mostly in the electrical/electronics field. From 1959 to 1966 he was an adjunct professor at the Polytechnic Institute of Brooklyn. He is a Fellow of the IEEE, the American Physical Society, and the Research Society of America (Sigma Xi).

As Technical Director of the Naval Training Equipment Center, Dr. Wolff serves as the principal scientific and engineering advisor to the Command and is responsible for the planning, direction, implementation, review and evaluation of the research, scientific, engineering, and technical work and activities of the Center.