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PATRICK SUPPES, A PHILOSOPHER PIONIER OF E-LEARNING

*Abstract*

As a philosopher and as an experimental scientist, analysing knowledge and its transmission “from within” and with reference to specific contexts, Patrick Suppes evaluated very early the great potential of computer technology in the field of education and gave innovative contributions. The instructional uses of computers at Stanford University, promoted and developed by him and his team, around forty years ago, belong to the history of e-learning, having influenced the practice and the theory of education. During my stay from 1979 at the *Institute for Mathematical Studies in the Social Sciences* (IMSSS), an outstanding intellectual environment, created and directed by Suppes, I had access to computer facilities exceptional for the time and could take the course on *Axiomatic Set Theory*, one of the two computer-assisted courses (the other one was *Introduction to Logic*) offered by Suppes since 1974 (and 1972). Constructing proofs of given theorems at one’s own pace, through an intense interaction with the computer (selecting axioms, inferential rules, prior relevant definitions and theorems) is a very valuable experience: its outcome is not only learning specific contents, but also understanding at a deeper level the use of a formal language, the structure of an axiomatic system and the very notion of “proof”.

*Computer-assisted instruction* (CAI) is not a question of pure technology, but it requires – in order to be suitably developed – an inquiry on the psychological and empirical aspects of learning, its difficulties and goals, supported by the capability of abandoning rigid schemata and of foreseeing future possibilities. Suppes was very soon aware that the large quantity of information made accessible at high speed by computers could be structured and directed toward educational uses, characterized by *individualization of curricula* and *high quality learning*. Nevertheless, the development of programs adapting to the individual student, i.e. taking into account initial competence and ability, and selecting each learning level on the basis of the evaluation of previous successes and failures, has been more difficult than expected. Many complex problems relevant for the integration of education and technology are still open.

In order to situate Suppes’ contributions in a more adequate perspective, the paper briefly recalls the evolution of modern technologies applied to educative systems. In the 60’s, when the first powerful computers, the so

called “mainframes”, became available to advanced academic institutions, Suppes started his research on computer-aided teaching and learning, on the basis of a scientific analysis of various aspects and problems of education. He then developed CAI programs better equipped to offer a more “natural” and “intelligent” interaction with the students, evaluating their individual progresses and selecting the difficulty of the subsequent problems on the basis of statistical data about previous answers. The transition from mainframes to personal computer and the diffusion of Internet have deeply changed the scenario: not only knowledge contents, in an enormous amount, are easily reached and updated, but the communication among learners is favoured. The present and close future of e-learning is characterized by tools allowing the *cooperative construction of knowledge objects*, of which Wikipedia, the on line encyclopaedia, is an example. Computer aided instruction, in its various forms, can consequently be recognized, following Suppes’ historical perspective, as one of the great educational innovations, after the introduction of written records and the founding of libraries in ancient times, the development of printing, the (still in progress) diffusion of mass schooling and the contemporary scientific study of testing.