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A PROGRAM ON ART AND SCIENCE AT THE BEZALEL ACADEMY OF ARTS AND DESIGN, JERUSALEM, ISRAEL*

Vladimir Bonačić†

1. Introduction

A new program called 'Art and Science' was initiated for the academic year 1972–73 under the patronage of the Bezalel Academy of Art and Design in conjunction with the Hebrew University and the Israel Museum at Jerusalem. The objective of the Program was to bridge the conceptual gaps between institutions of higher learning that deal primarily with pure or basic science and schools that deal with the visual or plastic fine arts. It is hoped that the Program will develop into an international interdisciplinary school for postgraduate studies.

Research activities are concentrated upon the following fields: (a) the human being and his environment; (b) the computer as a tool and as a creative partner of man and (c) philosophy in relation to art and science. Graduate students in art or in science who have chosen from the above fields are supervised in their work by qualified experts.

2. Fields of research

A. *The human being and his environment*

The lack of imagination that has led to the failure of society to utilize the possibilities of modern technology to beautify and make more interesting the streets, buildings and skyline of the urban environment is a fact of our life [1]. For example, most cities and towns are characterized by drab public areas, which are made even more boring by nighttime electrical illumination. Street lighting using electricity has changed little, if any, in conception since gas lights were introduced in the 19th century. Why is not light projected from ground level or from road curbs? Why is not lighting varied for streets with buildings serving different purposes? Should

the same amount of illumination be provided at 10 o'clock at night as at 3 o'clock in the morning?

There is, of course, one exception where outdoor electric light is applied with seeming variety and that is for advertising purposes. Unfortunately, advertising signs are like an unchanging circus. Who would think of going to the same circus night after night? It is true that human beings have some capacity for ignoring experiences repeated time and time again, otherwise life in some cities would become unbearable. I find even traffic lights anachronous because they are patterned after railway signals, which are not an appropriate model. They are not only unresponsive to traffic density but an unimaginative component of the city environment as Eskolin has pointed out in *Leonardo* [2].

The outstanding problem of the man-made urban environment is how to make it so that it will satisfy as many human utilitarian and aesthetic needs as possible with the technical and economical means available. Research in the Program will be directed to carrying out basic studies of perception of form, light and sound and especially the effect of their variation with time on human positive and negative psychological reactions to them. Studies are also under way on the relationships between symbolic forms and information coding and a semantically meaningful urban environment.

It is hoped that these studies will lead to information that can be included in the educational curriculum down to the elementary school level.

B. *The computer as a tool and as a creative partner of man*

In our research work, the use of the random number approach for computer-produced music and visual art, of typewriter print-out of programmed graphics and of other approaches that have been tried [3–6] will be studied only from a historical point of view. The obvious need for professionals whose background is sufficiently strong both in computer technology and in art was one of the generating forces in the establishment of the Program.

I believe that it can be shown that a digital computer is more than a mere tool, that it can be considered as a scientist's or artist's creative

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partner. Potentially, this might lead to a faster and nonbiological human evolution, which would be superimposed on the very slow Darwinian evolutionary process.

Abstract algebra provides a powerful tool currently available for the representation and processing of information. Despite its power, there are still severe limitations in its ability to handle many complex patterns, such as pictures. Although the current methodology of this field is not yet capable of handling complicated graphic material and despite the relative poverty of symbolic notation available, I find every reason for optimism in investing effort to expand the range of abstract algebra. To this end, students under the Program are studying the representation and even the change in pattern with time of complex visual and musical designs. Developments in this field would not only help artists and scientists to communicate better but might also contribute to the progress of mathematics.

It is not enough to note passively and even to praise, the advances in knowledge that arise from time to time from man-computer interaction. A new field of study has arisen that attempts to facilitate and systematize the means to advance knowledge: heuristic programming. Furthermore, learning systems, a subfield of the study of artificial intelligence, produces machines with capabilities of accumulating information, ask for relevant information and play an active part in the creative partnership between man and machine. Clearly, these two critical areas of research should be of much importance in this Program.

C. *Philosophy in relation to art and science*

Discussions of the relationships or lack thereof between art and science have been presented by numerous authors to the readers of *Leonardo*. In the Bezalel art and science program two major philosophical areas are to be studied:

- (a) Past and present concepts, methods and techniques used in art, science and technology and their relationships.
- (b) Consideration of the possible role of the computer in the evolution of man.

3. Execution of the art and science program

There will be no attempt to establish within the Program an elite team that will master the relevant knowledge needed to solve the many problems connected with the relationships of art and science. The Program hopes to succeed through close collaboration with academies and universities as well as other willing institutions. Such collaboration forms the basis for interdisciplinary groups of floating composition and with floating roles for the members.

A library on art and science is being organized. A Jerusalem International Conference on Art and Science is planned for 1974 and is to be followed by a Jerusalem Biennale on Art and Science. Both the conference and the exhibition are planned to be biennial events.

The Program will be revised as experience is gained. Suggestions for the Program would be welcomed from readers of *Leonardo*.

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